

## Basement Impact Assessment

**162 Gladesmore Road**

**London, N15 6TH**

**Structural & Civil Engineering Only**



Project Ref: L17/095/05

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## **Preamble**

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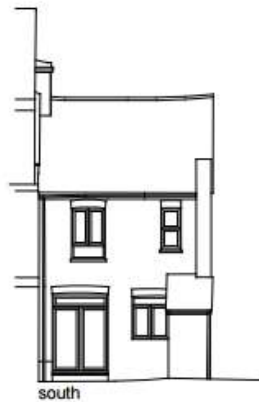
The conclusions and recommendations made in this report are limited to those that can be made on the basis of the research carried out. The results of the research should be viewed in the context of the work that has been carried out and no liability can be accepted for matters outside of the stated scope of the research. Any comments made on the basis of information obtained from third parties are given in good faith on the assumption that the information is accurate. No independent validation of third party information has been made by JMS Consulting Engineers Ltd.

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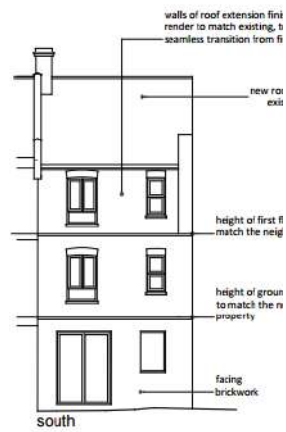
## **1.0 Introduction**

- 1.1 This report has been prepared to set out the proposed design philosophy and construction method statement for the proposed basement construction at 162 Gladesmore Road, N15 6TH. It will summarise the basis of the structural and civil engineering design and will be issued to all relevant parties including the Client, Local Planning Authority and Design team members.
- 1.2 The scope of the proposal is for the underpinning of the property and creation of a basement.
- 1.3 The report is based on the information produced by the clients Architects, & borehole data provided by British Geological Survey (BGS), and is intended to provide the basis for planning and may be subject to further design discussion and development with the successful Contractor.
- 1.4 This report is for the exclusive use of the Client and should not be used in whole or in part by any third parties without the express permission of JMS Engineers in writing.
- 1.5 This report should not be relied upon exclusively by the Client for decision-making purposes and may require reading with other material or reports.
- 1.6 The work carried out comprises a Basement Impact Assessment, which is in accordance with the procedures specified in the planning guidelines for the London Borough of Haringey. The aim of the work is to assess if the proposed basement will have a detrimental impact on the surroundings with respect to groundwater and land stability and in particular to assess whether the development will affect the stability of neighbouring properties, local and regional hydrogeology and whether any identified impacts can be appropriately mitigated by the design of the development.

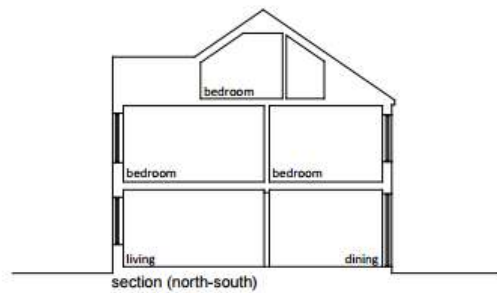
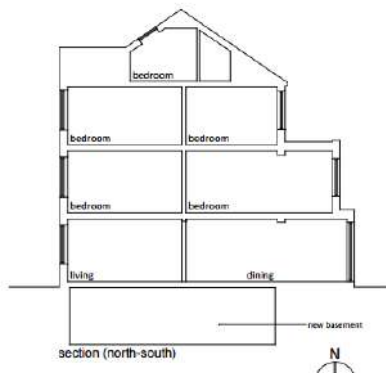
## 2.0 The Site & Area



Rear elevation as existing

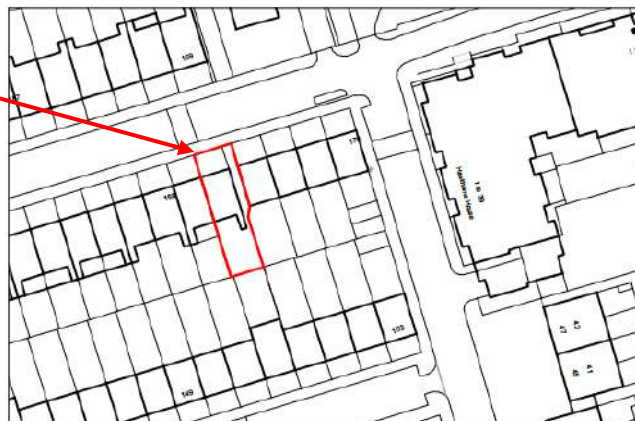


Rear elevation as proposed

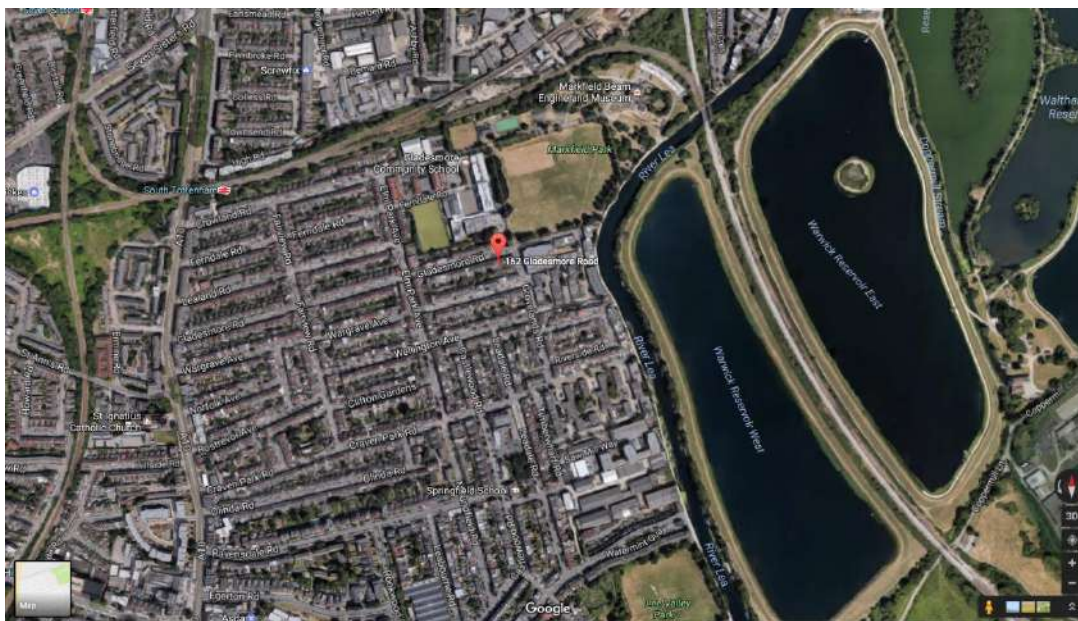
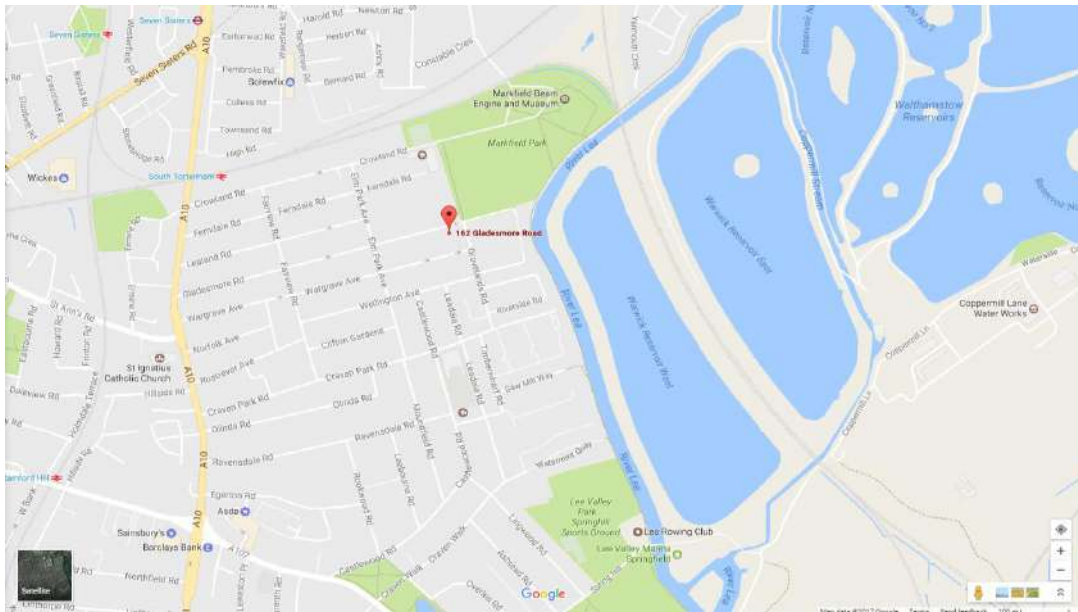


**Proposed & Existing Site Section**

Box indicates site –  
No.162 Gladesmore  
Road.



**Location Plan**

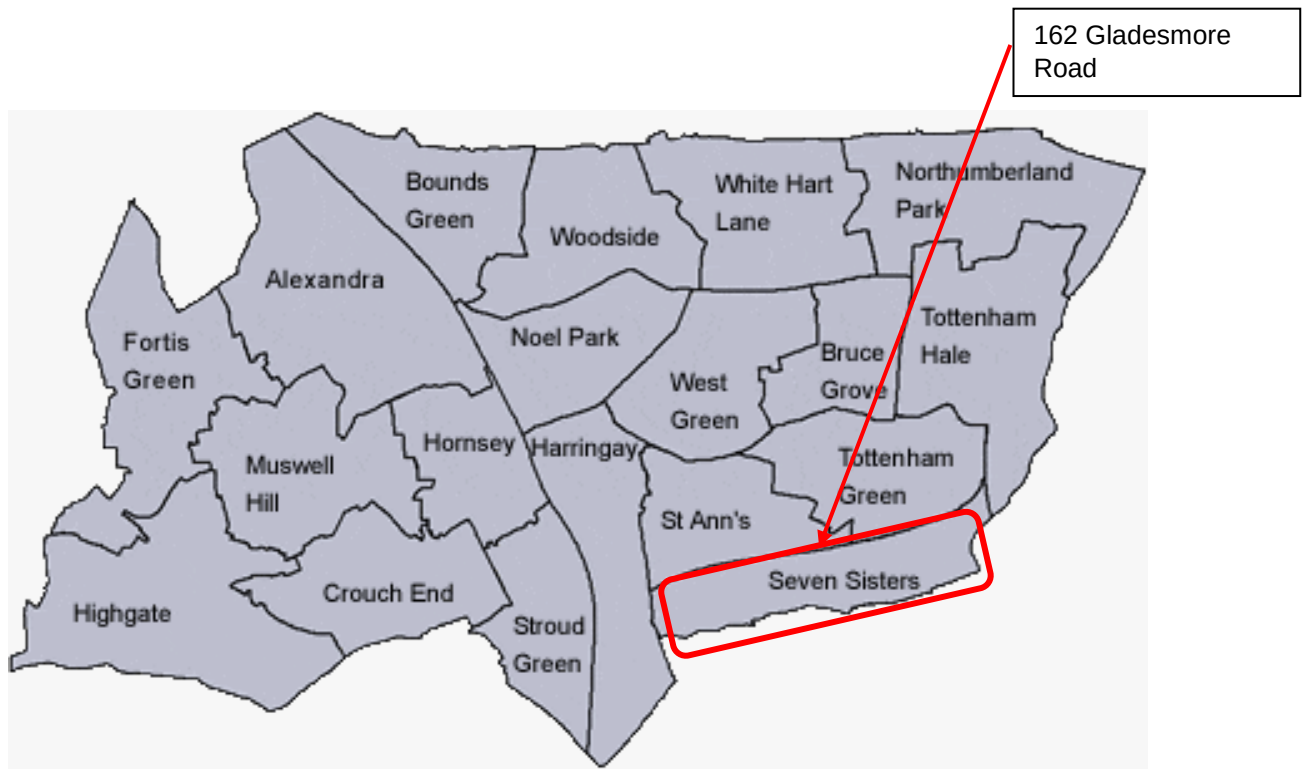


**Site Location as Shown on Google Maps**

Gladesmore Road lies within the Seven Sisters ward of the London Borough of Haringey.



The seven sisters ward lies on the south boundary of Haringey and borders the Borough of Hackney



This streetmap shows the extent of the Seven Sisters ward and the position of the property within it.



*This section contains materials from The London Borough of Haringey Website, The Natural History of Haringey: David Bevan, Haringey ward profiles and Haringey's Economic profile, Tottenham: Growth before 1850 and the Seven Sisters, London.*

The London borough of Haringey was created in 1965 with the amalgamation of three former municipal boroughs (Hornsey, Wood Green and Tottenham) and has an area of slightly over 11 square miles.

The Haringey borough was at the edge of a huge glacial mass last ice age, and there is evidence from both the stone age and the bronze age as well as discoveries suggesting Roman settlement and a Saxon invasion.

The borough was very rural up until the 18<sup>th</sup> century just with a few large country houses, however, when railways arrived in the 19<sup>th</sup> century this led to rapid urbanisation and developments, at present around 25% of borough remains as green space.

There is a varied geography and topography of Haringey with very high ground around Highgate and Muswell Hill, up to 130m above sea level. The land then falls sharply away to the flat low lying land beside the River Lea in the East. The Borough is also home to 5 distinct ancient woods and 3 notable above ground rivers. Haringey has achieved Green Flag status for eight of its parks, the highest number awarded to any London borough.

The Seven Sisters ward is at the very south of Haringey and close to the boundary of the Hackney borough. It is on the route of Ermie Street, a Roman road connecting London to York and an area once held by Waltheof II, Earl of Northumbria who held all land within the Tottenham Manor.

There is some speculation and mystery to the origin of the name 'The Seven Sisters'. It is believed the name is a reference to 7 elm trees, planted in a circle, around an oak tree in Page Green. The area was officially known as The Seven Sisters by 1732, although there is evidence from the early 1600s with references to 'an ancient walnut tree surrounded by a tuft of elms' this is also visible on a map from 1619. The name stuck with it as in 1840 the passing road connecting Tottenham and Camden town was named Seven sisters road, and in 1872 the Seven Sisters train station opened nearby.

It is documented that in 1852, the trees were in a sorry state so seven new trees were planted by the seven daughters of Mr J McRae. The tradition of planting the trees in a circle, by seven sisters, has continued to this day, with the trees being replanted a few times since.

The following historical maps indicate the development of this area over the period.

Published 1873 – Surveyed 1863-69



Our earliest map dating to the mid Victorian era, shows the entirety of the region later known as The Seven Sisters, with Page Green near the centre of the map. It is clear on the map the area is not very developed and is mostly agricultural land.

Published 1895 – Surveyed 1893-96



This second map, published only 22 years later shows a shot of page green, where we can see the area has transformed to very urban and densely populated area with lots of terraced housing in typical Victorian arrangement.



The final map is from the same period, but to a different scale, where we can see more of the surrounding area. When compared to a current day map, the streets and houses on plan remain relatively unchanged, confirming that all properties are, more or less, from the same period.

### 3.0 Site Geology

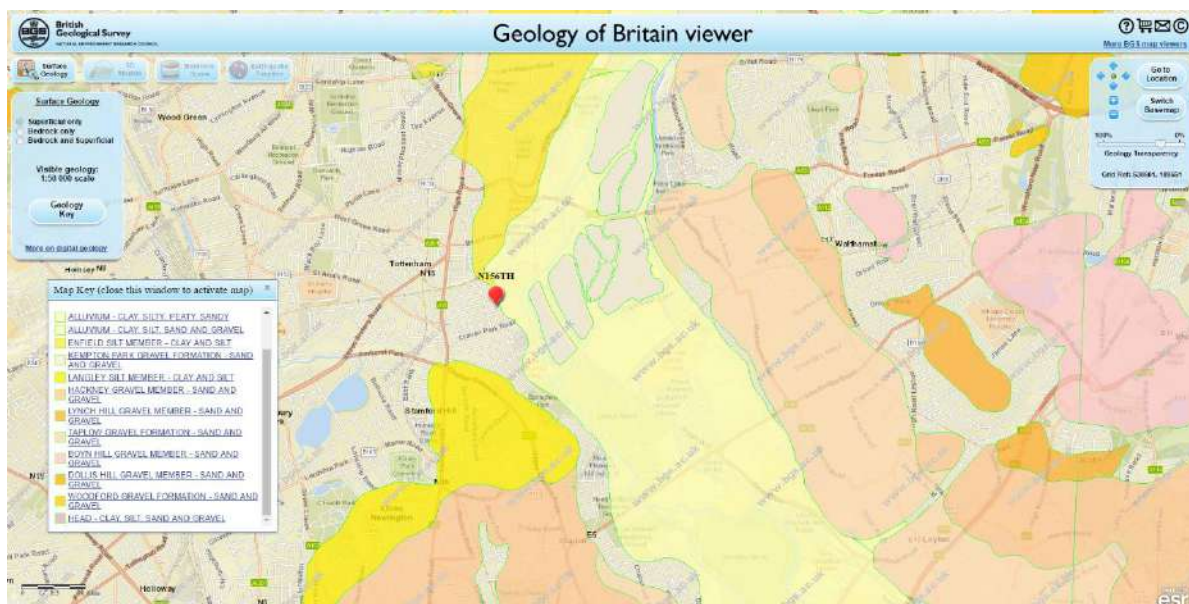
The 1:50 000 scale geological map for this area, made available by the BGS, shows the sites bedrock geology to be London Clay Formation comprising of Clay, Silt and Sand.

#### **Bedrock Geology**



The superficial drift deposits are not recorded at this location, but based on the surrounding area we could expect this to be a mixture of silty clay from river deposits, or an alluvium comprising of silt, sand, peat and gravel.

#### **Superficial Geology**



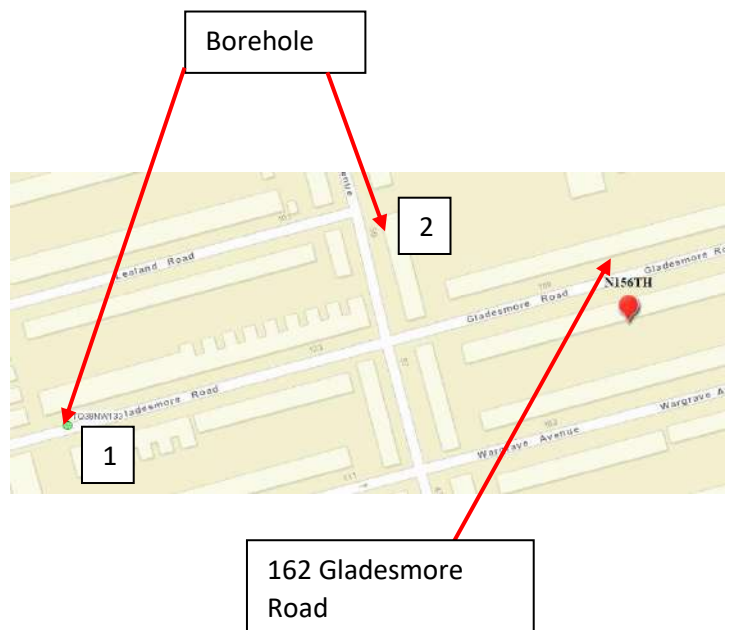
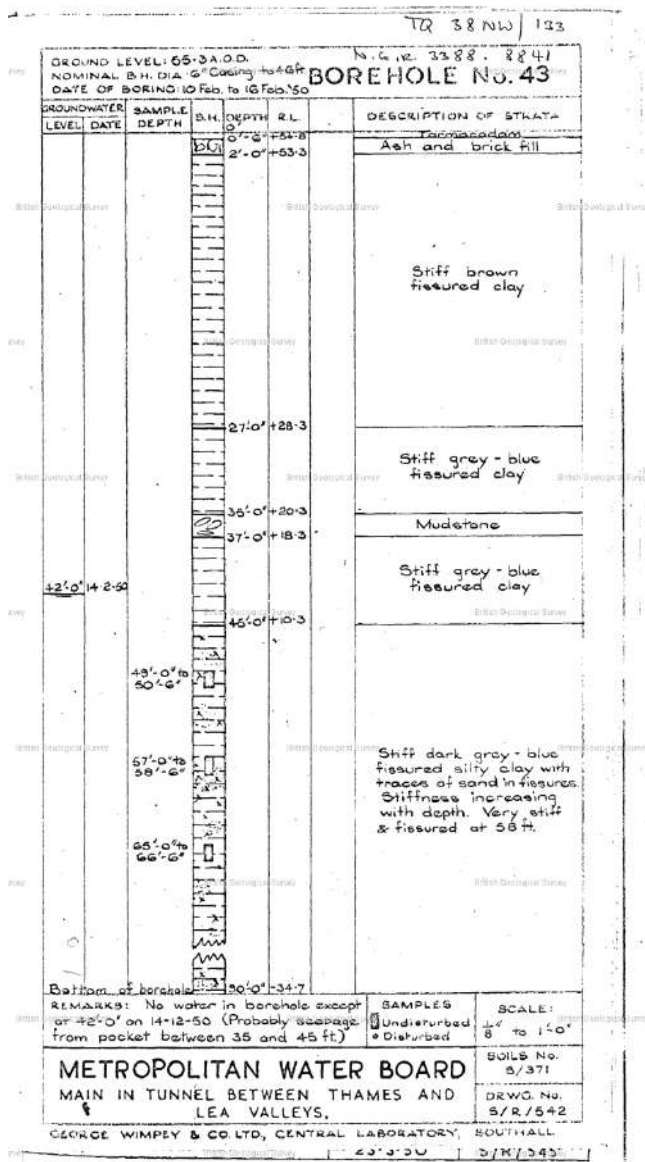
Most of Haringey is underlain with london clay and significantly below this, a layer of chalk,

which acts as the major aquifer of the london basin drained by the river Thames.

## Boreholes

This borehole log was provided by the BGS<sup>1</sup>. The sample was taken from approx. 300mm from site, as can be seen on the map, and is a fair representation of the expected soil and ground conditions on site as proved by lower depth excavations supervised by this Company in and around the area.

### Borehole 1



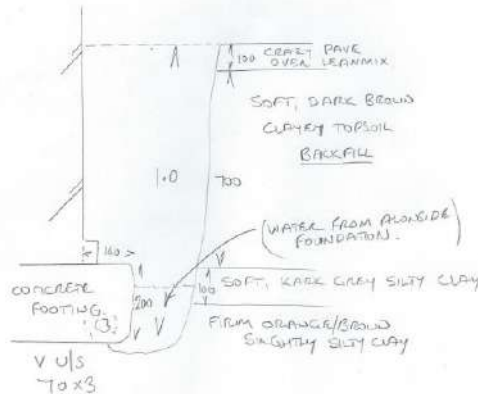
<sup>1</sup> Refer to: [http://scans.bgs.ac.uk/sobi\\_scans/boreholes/845903/images/12519797.html](http://scans.bgs.ac.uk/sobi_scans/boreholes/845903/images/12519797.html) [Accessed: 19/05/2017]

# Trial Pit

## POINT DRILLING SERVICES

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 Telephone: 860.232.8100 Fax: 860.232.8101

|                                               |                |
|-----------------------------------------------|----------------|
| SITE INVESTIGATION TRIAL PIT LOG              | DATE: 31.10.16 |
| SITE ADDRESS: 599 ELM PK AVE., STAMFORD HILL. |                |
| TRIAL PIT LOG REF:                            | DESCRIPTION:   |



KEY: DISTURBED SAMPLE V VANE TEST MP MACINTOSH PROBE TEST R ROOT SAMPLE

## POINT DRILLING SERVICES

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|                                               |                |
|-----------------------------------------------|----------------|
| SITE INVESTIGATION BOREHOLE LOG               | DATE: 31.10.16 |
| SITE ADDRESS: 599 ELM PK AVE., STAMFORD HILL. |                |

| DEPTH | DESCRIPTION                                                                           | SOIL/ROOT SAMPLE | TEST RESULT     | DEPTH OF TEST |
|-------|---------------------------------------------------------------------------------------|------------------|-----------------|---------------|
| 0     | COMPACT, DARK BROWN (DRY) SILTY TOPSOIL.                                              |                  |                 |               |
| 350   | SOFT, DARK BROWN, SILTY TOPSOIL CLAY FILL.                                            |                  |                 |               |
| 500   | COMPACT, (VERY MOIST) DARK BROWN, CLAYEY SILTY SANDY ASH-LAKE FILL.                   |                  |                 |               |
| 900   | SOFT, DARK ORANGE/BROWN/GREY MOTTLED SILTY CLAY                                       | •                | V 50            | 1.0           |
| 1.1   | FIRM ORANGE/BROWN SLIGHTLY SILTY CLAY WITH OCC. F <sub>1</sub> GRAVELS.               | •                | V 82, 84        | 1.5           |
| 1.6   | AS ABOVE, FIRM (DENSE) WITH NUM F <sub>1</sub> CLAYSTONE, GRAVELS. (SEEM)             |                  |                 |               |
| 1.75  | FIRM TO STIFF MID BROWN GREY YELL. SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTINGS. | •                | V 92, 90, 90    | 2.0           |
| 2.5   | AS ABOVE (STIFF)                                                                      | •                | V 118, 116, 116 | 2.5           |
|       | (3.1m CLAYSTONE) WATER FERRY                                                          | •                | V 126, 130, 128 | 3.0           |
| 3.5   | VERY STIFF, DARK BROWN GREY YELL. SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTINGS.  | •                | V 130+          | 4.0           |
| 5.0   | VERY STIFF, DARK BROWN SLIGHTLY SILTY CLAY WITH OCC ORANGE SILT PARTINGS.             | •                | V 130+          | 5.0           |
| 7.0   | VERY STIFF, DARK GREY/BLUE SLIGHTLY SILTY CLAY                                        | •                | V 130+          | 6.0           |
| 8.0   | BY END WET & OPEN. WATER ON COMPLETION 7.7m                                           | •                |                 | 8.0           |

KEY: • DISTURBED SAMPLE V VANE TEST MP MACINTOSH PROBE TEST R ROOT SAMPLE

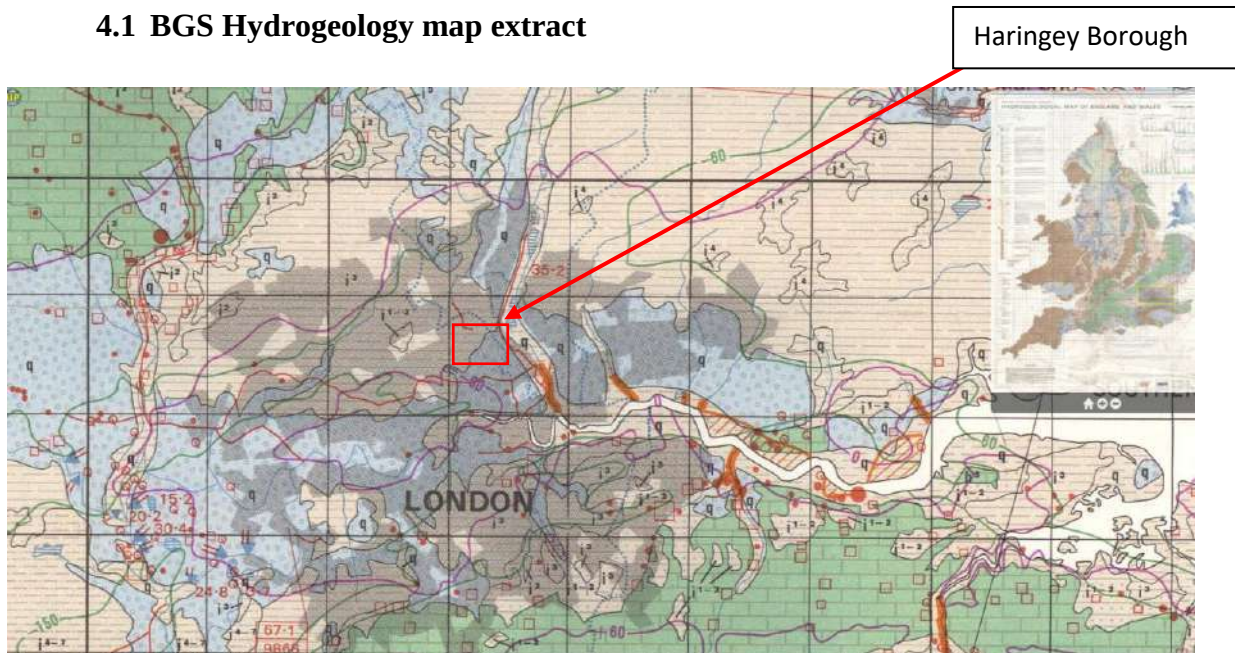
The borehole log indicates a stiff clay to a depth of 35ft (10.7m), underlain by a layer of solid mudstone.

The water table is indicated at 42ft (12.8m) and below this the ground is saturated. As the clay and mudstone are not particularly permeable, changes in groundwater level should be minimal.

Typical safe bearing capacity for stiff clays ranges between 150 – 300 kN/m (*Cobb*, 2015).

## 4.0 Hydrogeology

### 4.1 BGS Hydrogeology map extract



Key: Relates to areas in the box of interest

Blue: Quaternary Sands and Gravels – Include glacial, fluvioglacial and plateau gravels, river terrace deposits, raised beaches and marine sands and gravels of differing origin, but all of limited importance as aquifers.

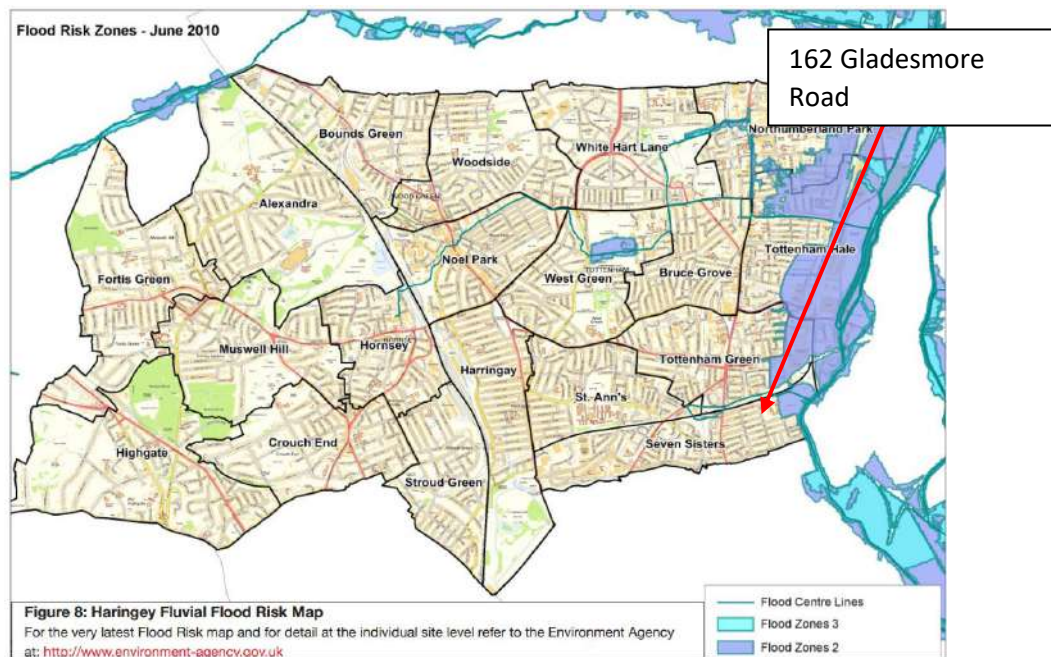
Yellow: All yellow areas defined as ‘Concealed aquifers; aquifers with limited or local potential.

The Hydrogeology study will enable:

- Identification of maximum probable flood at any location
- The variation in water production from catchments
- The relationship between a catchments surface water and groundwater resources
- Expected flood flows over a spillway, at a culvert, or in an urban storm drainage system
- Required resevoir capacity to allow adequate water for irrigation or municipal water supply in drought conditions

Every building must be designed and constructed in such a way that there will not be a threat to the building or the health of the occupants as a result of flooding and the accumulation of groundwater.

Basements affect groundwater flows as the displaced water has to find a new course around the area of obstruction, the newly diverted flow may have the potential to cause problems for nearby buildings.



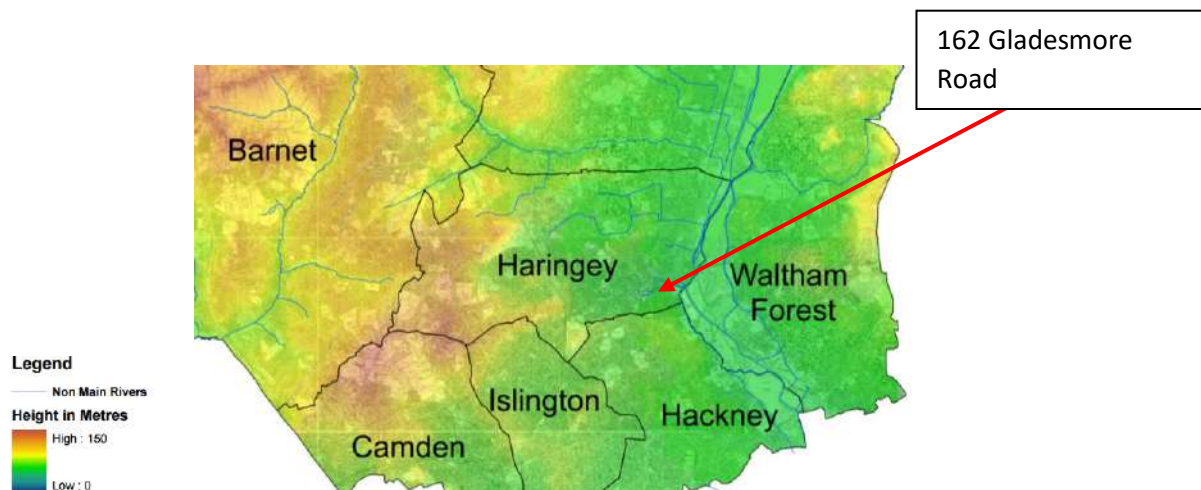
## 5.0 CPG4 Screening Flowcharts

For the purposes of this report reference has been made to Appendix E of the Arup document screening tools, which includes a series of questions within a screening flowchart for three categories; groundwater flow; land stability; and surface water flow.

### 5.1 Slope Stability

***1: Does the existing site include slope, natural or man-made, greater than 7° (approximately 1 in 8)?***

No. The following topography map shows flat ground around our area of interest in Haringey - all the sloping ground is all to the west of Haringey.



***2: Will the proposed re-profiling of landscaping at site change slopes at the property boundary to greater than 7 ° (approximately 1 in 8)?***

No. The proposal does not include landscaping that affects the boundaries.

***3: Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7 °?***

No. The neighbouring sites are at a similar gradient.

***4: Is the site within a wider hillside setting in which the general slope is greater than 7° (Approximately 1 in 8)?***

No. The wider gradient is less than 1:8.

***5: Is London Clay the shallowest stratum on the site?***

Yes. London Clay is the shallowest stratum – carry forward to scoping stage.

***6: Will any trees be felled as part of the proposed development and/or are there any proposed works within any tree protection zones where trees are to be retained?***

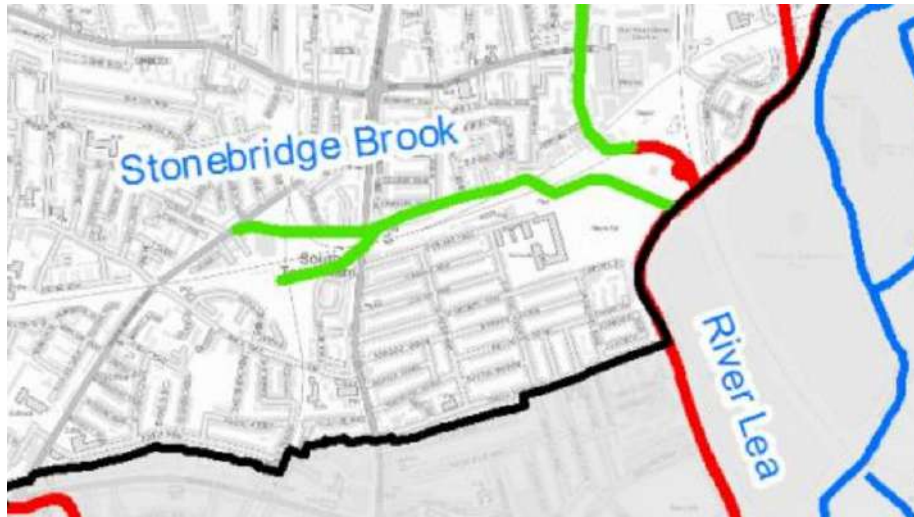
No. No trees are to be felled.

***7: Is there a history of shrink swell subsidence in the local area and/or evidence of such effects at the site?***

No. There is no such evidence to the existing building or neighbouring properties.

***8: Is the site within 100m of a watercourse, or spring line?***

No. The the River Lea, approx. 600m from the site, the only other near watercourse is stonebridge brook, approx. 350m from the site.



***9: Is the site within an area of previously worked ground?***

No. Historic records indicate that the site has only been built on in the late 18<sup>th</sup> Century & was built on land with agricultural or horticultural use prior to that.

***10: Is the site within an aquifer? If so, will the proposed basement extend beneath the water table such that dewatering will be required during construction?***

Yes – the site lays within an area considered to be secondary aquifer but the water table is approximately 7-8m below the base of the basement.

***11: Is the site within 50m of any ponds?***

No. The site is outside a 50m zone of any ponds.

***12: Is the site within 5m of a public highway or pedestrian right of way?***

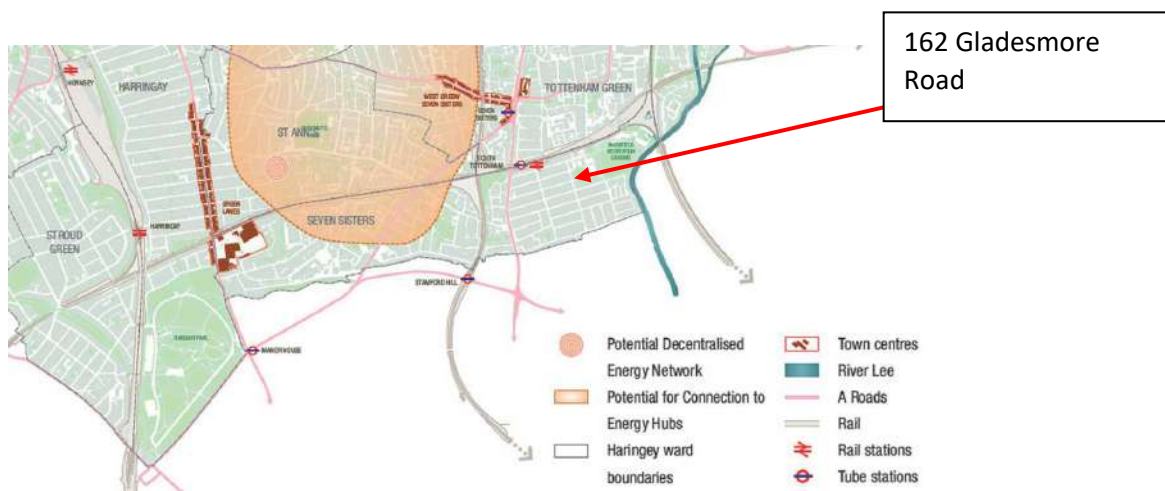
Yes, it abuts the public highway. Carry forward to scoping stage

**13: Will the proposed basement significantly extend the differential depth of basements relative to neighbouring properties?**

Yes. The proposed basement does not abut existing cellars. – carry forward to scoping stage.

**14: Is the site over (or within the exclusion zone of) any tunnels, e.g. railway lines?**

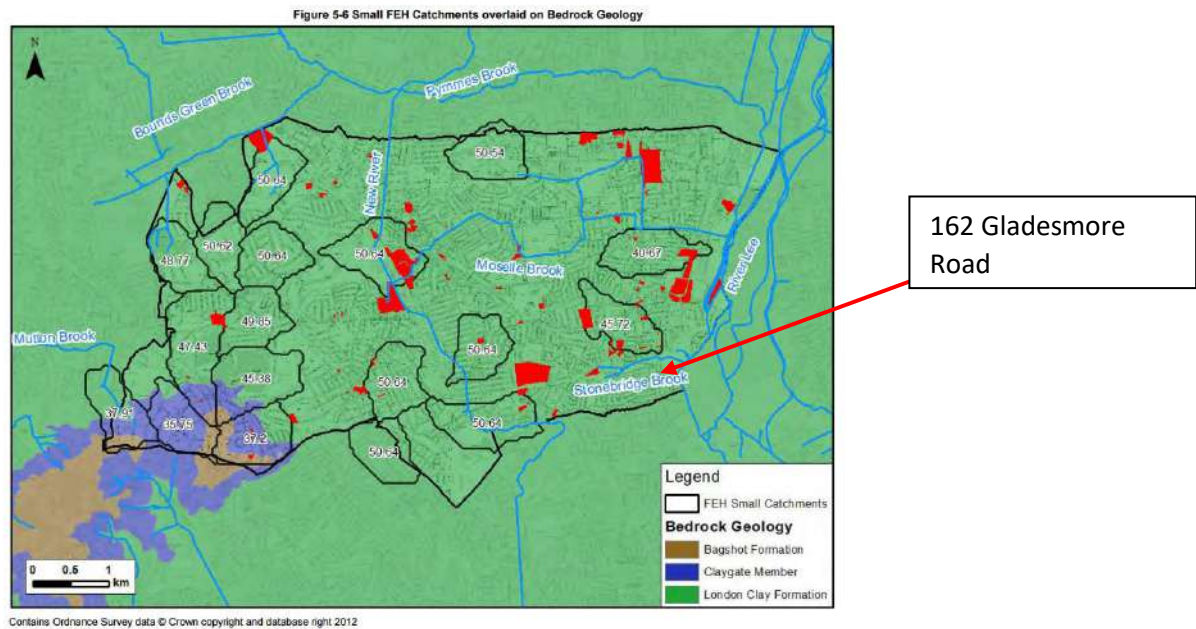
No – see Haringey Critical Infrastructure Map below:



## 5.2 Surface Flow and Flooding

### ***1: Is the site within a catchment area?***

No. The site is outside the catchment area. As shown on the map below



### ***2: As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run off) be materially changed from the existing route?***

No. It will be largely unaffected.

### ***3: Will the proposed basement development result in a change in the proportion of hard surfaces/paved external areas?***

No. The amount and proportion of hard standing areas will remain unchanged as the existing paved area is replaced by basement.

### ***4: Will the proposed basement result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?***

No. There will be no change in the surface water flow off-site as a result of this proposal. Surface water will be discharged via existing connection.

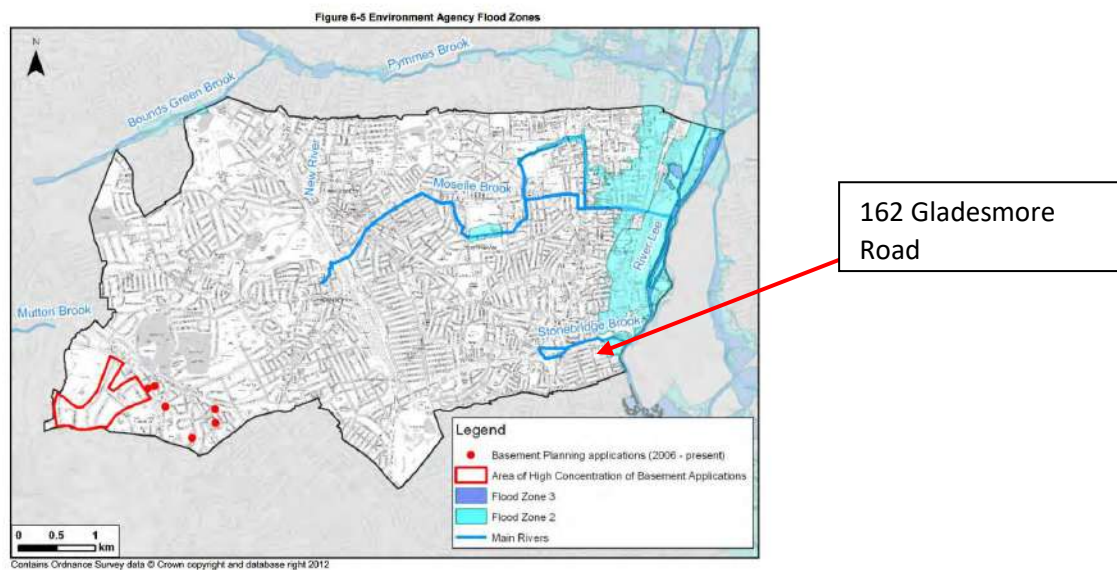
***5: Will the proposed basement result in changes to the quality of surface water being received by adjacent properties or downstream watercourses?***

No. There will be no change in the surface water flow off-site as a result of this proposal.

***6: Is the site in an area known to be at risk from surface water flooding? Or is the proposed basement below the static water level of a nearby surface water feature?***

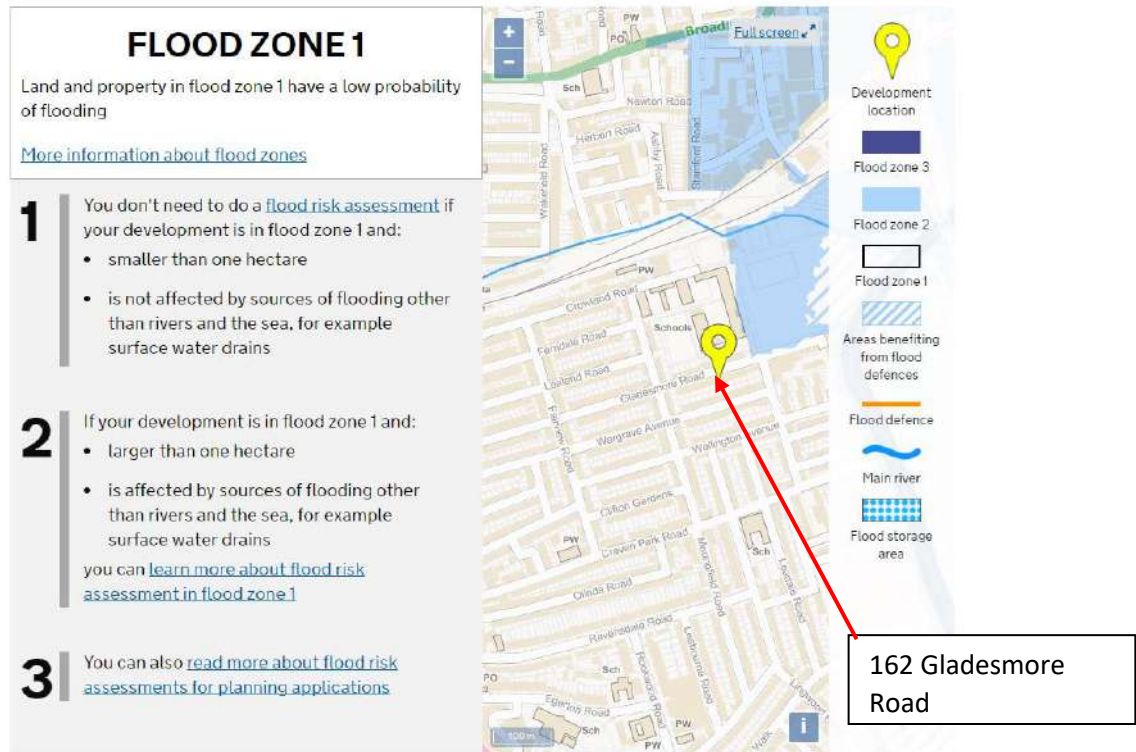
No. The map from the Haringey council shows areas of potential flood zones which the site falls outside.

Yes the river, however this is still approx. 152m away from site but is not prone to flooding.



# Flood probability

Your proposed development is in an area with a low probability of flooding

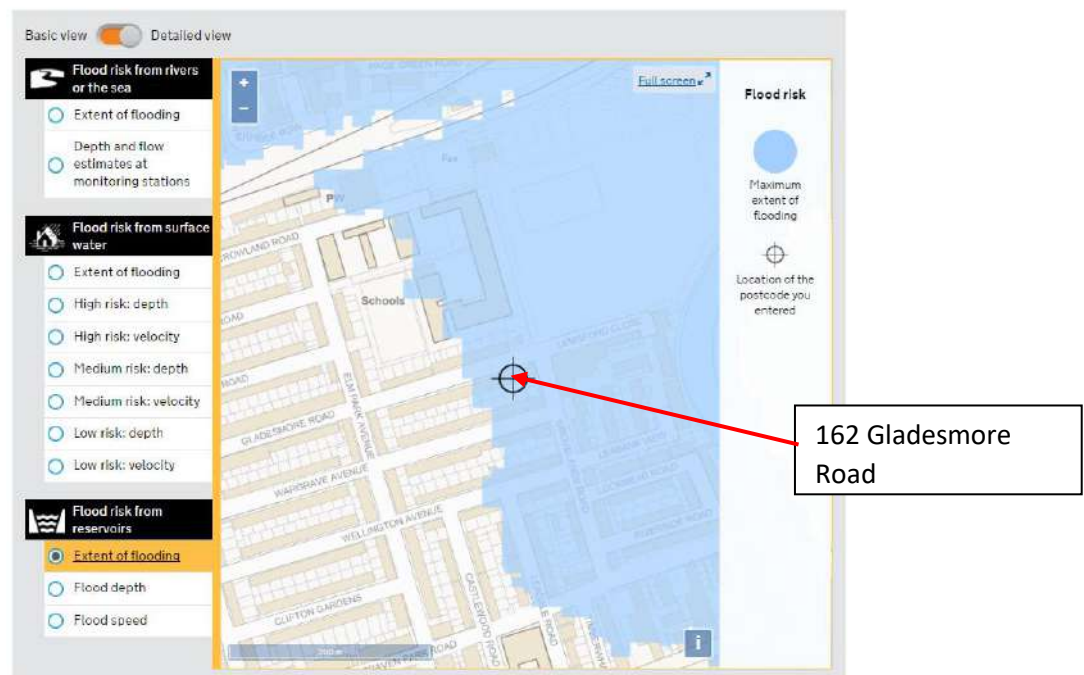


The property, however, lies within “flood from reservoir” risk zone as shown in the map below.

## Learn more about this area's flood risk

From the list on the left, select the information you're interested in. The map view will then update.

\*Detailed view shows more options.



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The main reservoirs affecting this area are:

- **King George V (grid ref. TQ3705597188)**
- **William Girling (grid ref. TQ3641495188)**
- **West Warwick (grid ref. TQ3441688592)**

According to the London Borough of Enfield information, a potential major source of flood risk is reservoir failure. The William Girling and King George V reservoirs in the Lee valley are considered to be two of the highest risk reservoirs in the country due to their size and proximity to densely populated areas. Although these reservoirs are owned and managed by Thames Water it is Enfield Council's responsibility to develop an off-site plan, which is to be activated in the event of reservoir failure. This is essentially an evacuation plan as if these reservoirs were to fail there would be insufficient time to protect properties or infrastructure, the aim would be to move people to safety as quickly as possible. The severity of such an event would be catastrophic; however, the risk of **failure is extremely low** – the annual probability is estimated to be less than 1 in 10,000 [*Local Flood Risk Management*, London Borough of Enfield, 2016].

The safety of the reservoir is the responsibility of the owners or operators who are required to maintain an adequate degree of protection. This is achieved by carrying out regular inspections, risk assessments and in the production and maintenance of Reservoir Flood Plans. The Environment Agency is the enforcement authority for the Reservoirs Act and ensures that its requirements are fulfilled [*Strategic Flood Risk Assessment*, London Borough of Enfield, 2008].

Reservoir flooding can be very different from other forms of flooding. It may happen with little or no warning and evacuation from the building will need to happen immediately. The likelihood of such flooding is very difficult to estimate, but it is probably less likely than flooding from rivers or surface water. It may not be possible to seek refuge from floodwaters upstairs as buildings could be unsafe or unstable due to the force of water from the reservoir breach or failure.

The Reservoir Inundation Maps (RIM) obtained from the Environment Agency represents a credible worst case 47 London Borough of Haringey (2012) Surface Water Management Plan for London Borough of Haringey -Section 3.2 of the LB of Haringey SWMP describes the limitations of the hydraulic models and their results 48 Environment Agency - Risk of flooding from Reservoirs available at <http://maps.environmentagency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&s>

cale=1&layerGroups=default&ep=map&textonly=off&lang=\_e&topic=reservoir Haringey Council - Strategic Flood Risk Assessment - February 2015 78 scenario.

In these circumstances it is the time to inundation, the depth of inundation, the duration of flooding and the velocity of flood flows that will be most influential. Given the large areas at risk of inundation from reservoir breach and the close proximity of the LB of Haringey to the source reservoirs the consequences of a reservoir breach are likely to be very high. The time to inundation will be low, giving little warning and opportunity to evacuate an at risk location.

The velocities are likely to be high resulting in high loads and forces acting on buildings and other structures that are inundated. This may result in structural damage. Where areas are below local ground level they may fill rapidly with flood water without warning. The event of a reservoir breach is extremely hazardous [*Haringey Council Strategic Flood Risk Assessment – Haringey Council, 2015*].

For further information, local authorities and EA should be contacted.

## **6.0 Scoping Stage**

The purpose of scoping is to assess in more detail the factors to be investigated in the impact assessment. Potential consequences are assessed for each of the identified potential impact factors.

It is considered that the scope of the investigation complies with the guidance issued by the Council and is therefore a suitable basis on which to assess the potential impacts.

### **6.1 Groundwater Flow**

- From previous excavations carried out in this area supervised by this Company, it has been established that ground water levels are below that of the proposed excavation depth and is reinforced by the findings of historic boreholes.

### **6.2 Slope Stability**

- London Clay is the shallowest stratum on this site and the structural design of the retaining walls and slabs will take this into account accordingly.
- The site lies within an area identified as a secondary aquifer. The nearby bore-hole records suggest that the water table is lower than the basement and associated works.
- The existence of basements in adjoining buildings is presumed to be absent. However, the structural engineering proposal for this scheme involves the use of underpinning to form the structural box below ground which should have no negative effect on neighbouring properties.
- Due to the limited soils information available the following parameters are to assumed within the designs:

Using  $k_0$ , the earth pressures are considered 'at rest'. Active pressure ( $k_a$ ) will be mobilised if the wall moves 0.25-1% of the wall height, while passive pressures ( $k_p$ ) will require movements of 2-4% in dense sand or 10-15% in loose sand/fill.

$k_0$  values adopted:

- 0.50-0.60 for normally consolidated clay,

- 0.35 for dense sand,
- 0.6 for loose sand/fill
- 1.0-2.8 for over-consolidated clays such as London clay.

*(source: Structural Engineer's Pocket Book, Eurocodes by Fiona Cobb, page 336)*

## **7.0 Structural Damage**

The estimated movements associated with the development are considered to represent a worst case scenario, particularly as the movements resulting from basement excavation will be minimised due to control of the propping in the temporary works and a regime of monitoring. By installing adequate temporary propping and new permanent works the anticipated movements caused by the development are to be Category 0 (negligible), with limited areas of Category 1 (Very Slight) damage at any location within the adjacent properties and in particular:

- The basement walls, in the permanent state, are propped at basement and ground floor level reducing lateral movement predicted to less than 2mm.
- The front wall, in the permanent state, is also propped at basement and ground floor level reducing lateral movement to virtually zero and subsequently, the impact on the highway and any services is zero.

## **8.0 Construction Method Statement**

This method statement has been prepared to provide information on the likely methods for Basement Construction for the Basement, subject to confirmation of details and final input from the successful contractor.

The final methods will be subject to the limitations and constraints noted in this document. Any revised matters associated with the Method Statement will be issued for review and comment prior to any site construction works.

### **8.1 Prior to Commencement of Work**

- 8.1.1 The method of construction is to be agreed by all parties, with specific reference to the potential for vibrations and noise from the underpinning process.
- 8.1.2 A detailed method statement for means of access, site logistics and intended vehicle movements, particularly spoil removal, will be agreed with the main contractor prior to commencing any site works and any variations reported accordingly.
- 8.1.3 Agreed working zones in relation to the Highways will be agreed prior to commencing any site works.
- 8.1.4 All services surveys, diversion agreements and temporary supply requirements will be agreed and approvals will be in place prior to commencement of works.
- 8.1.5 Existing building condition surveys will be carried out prior to commencing any piling works, of neighbouring property.

### **8.2 Sequence of Work**

*8.2.1 The key stages forming the core of the Construction Method Statement are:*

- Establish site access & hoarding.
- Investigatory works as required for full detailed design.
- Installation of underpinning in reinforced concrete pins according to structural engineer's design
- Excavation for and construction of basement levels slab.
- Internal waterproofing membranes, screeds and finishes.

The final sequence of working in detail will be agreed with the successful main contractor and any variations reported accordingly. The foregoing is an indication of the likely process for the

substructure works, subject to completion of all intrusive surveys, all agreements being in place and selection of the agreed final construction process subject to those intrusive site findings.

#### *8.2.2 Establish Access & Hoarding*

- The hoarding will be located around the property to enclose all works.
- All set up works to facilitate access will take account of the Method Statement for the project.
- A plywood hoarding will be erected with vertical standards, anchored to the ground. The hoarding will be fully secure with a lockable door for access. Suitable heights and colours will be in accordance with the Local Authority requirements.

#### *8.2.3 Investigation Works*

The excavation to approximately 3.5m deep for basement construction will result in a formation level in the stiff London Clay. The detailed design will be based on the findings of the soil investigation report.

Prior to construction, further investigation works will be required in order that heave movements may be checked for further analysis based on final loadings and levels. It would also be prudent to carry out a number of additional trial excavations, to depths as close to the full basement depth as possible to confirm the groundwater conditions and the potential for perched water.

### **8.3 Waterproofing Systems and Screed**

For all basement areas, the Architect will prepare design details in conjunction with a specialist contractor.

The waterproofing system will be installed in accordance with the Architects details in conjunction with the specialist contractor technical specifications once the basement slab is complete.

The floor finishes, which may include insulation and under floor heating, can then be laid in accordance with the Architects details. A cement and sand screed will be applied on the slab surface.

The height of the basement and relative level of the water table determines that Types A (barrier), B (structurally integrated) or C(drainage) protection against ingress of water will be satisfactory, as defined by BS 8102:2009. The basement will be constructed and detailed to achieve a Grade 3 Level of Performance, as defined by BS 8102:2009.

Table 2 Grades of waterproofing protection

| Grade                                                                                                                                                                                                                                                                                                                                                                                                                      | Example of use of structure <sup>A)</sup>                                                         | Performance level                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                                                                                                                                                                                                                                                                                                                                                          | Car parking; plant rooms (excluding electrical equipment); workshops                              | Some seepage and damp areas tolerable, dependent on the intended use <sup>B)</sup><br>Local drainage might be necessary to deal with seepage |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                          | Plant rooms and workshops requiring a drier environment (than Grade 1); storage areas             | No water penetration acceptable<br>Damp areas tolerable; ventilation might be required                                                       |
| 3                                                                                                                                                                                                                                                                                                                                                                                                                          | Ventilated residential and commercial areas, including offices, restaurants etc.; leisure centres | No water penetration acceptable<br>Ventilation, dehumidification or air conditioning necessary, appropriate to the intended use              |
| <sup>A)</sup> The previous edition of this standard referred to Grade 4 environments. However, this grade has not been retained as its only difference from Grade 3 is the performance level related to ventilation, dehumidification or air conditioning (see BS 5454 for recommendations for the storage and exhibition of archival documents). The structural form for Grade 4 could be the same or similar to Grade 3. |                                                                                                   |                                                                                                                                              |
| <sup>B)</sup> Seepage and damp areas for some forms of construction can be quantified by reference to industry standards, such as the ICE's <i>Specification for piling and embedded retaining walls</i> [1].                                                                                                                                                                                                              |                                                                                                   |                                                                                                                                              |

To achieve Grade 3 Performance we propose either a drained cavity installed in front of the concrete wall; or an applied waterproofing membrane applied and bonded to the internal faces of the piers. Waterproof concrete will also be employed.

## 8.4 Ground Model

### 8.4.1 Basement Retaining Walls

The following parameters are suggested for the design of the permanent basement retaining walls.

| <b>Stratum</b> | <b>Bulk Density<br/>(kg/m<sup>3</sup>)</b> | <b>Effective<br/>Cohesion<br/>(c'-kN/m<sup>2</sup>)</b> | <b>Effective<br/>Friction Angle<br/>(O'- degrees)</b> |
|----------------|--------------------------------------------|---------------------------------------------------------|-------------------------------------------------------|
| Made Ground    | 1800                                       | 0                                                       | 27                                                    |
| London Clay    | 2000                                       | 0                                                       | 25                                                    |

Although not encountered in the trial pits, based on the adjacent site information, groundwater is unlikely to be encountered within the excavation. However, consideration should be given to the risk of groundwater and surface water collecting behind the retaining walls and unless a fully effective drainage system can be ensured it would be prudent to assume a design water level equivalent to two-thirds of the retained height. The advice in BS 8102:20096 should be followed in the design of the basement retaining walls and with regard to waterproofing requirements.

### 8.4.2 Temporary Support to Underpinned Sections

It is anticipated that underpinning to deepen the existing foundations to the perimeter walls will be undertaken on a 'hit and miss' sequence, in a one or two stage sequence to be agreed with the temporary works engineer and under party wall agreement. Underpinning should be undertaken in short sections not exceeding 1.2 m in length, with no adjacent pin to be excavated until a minimum of 48 hours after the adjacent pin has been cast and dry-packed placed, with the sides of the excavation adequately shored and propped. Horizontal props and/or flying shores are to be provided to resist horizontal forces and it is anticipated that steel temporary props will be used with strut forces spread along the wall by steel waling beams fixed to the concrete stools. Although the detail of the propping is to be finalised there is the option to use hydraulic 'active' props where the propping force is applied prior to excavation in order to minimise movement at critical locations.

## 8.5 Ground Movements – Surrounding the Basement

On this site it is assumed that the mass concrete underpinning to deepen the existing side and rear walls will be of similar thickness as the walls above and with a footing of similar width. The increase in loading will be  $(24-18 \times 3.5\text{m}) = 21 \text{ kN/m}$  from the underpinning.

Experience with respect to the construction of underpinned walls beneath existing structures, suggests that ground movements should remain typically within the range of 2 mm to 5 mm following completion of the works provided that they are installed by a reputable and experienced contractor in accordance with the guidelines published by the Association of Specialist Underpinning Contractors. The estimated movements are considered to represent a worst case scenario, particularly as the movements resulting from basement excavation will be minimised due to control of the propping in the temporary works and a regime of monitoring

### **8.6 Movements within the Excavation (Heave)**

At this site unloading of the London Clay will take place as a result of the basement excavation and the reduction in vertical stress will cause heave to take place. Values of stiffness for the soils at this site are readily available from published data and the creation of the basement will result in a net unloading of about approximately  $45 \text{ kN/m}^2$ . Such a reduction would mean that by the time the basement construction is complete, approximately 12 mm of heave is likely to have taken place at the centre of the proposed excavations, reducing to less than 5 mm at the edges. In the long term, following completion of the basement construction, a further 8 mm of heave (at the centre) is estimated as a result of long term swelling of the underlying London Clay.

It is, however, important to bear in mind that such figures are based on an unrestrained excavation as computer models are unable to take account of the mitigating effect of existing structures, the stiffness of the proposed floor slab and proposed underpins which in reality will combine to restrict these movements within the basement excavation. The movements predicted at or just beyond the site boundaries are unlikely to be fully realised and should not therefore have a detrimental impact upon any nearby structures. In order to mitigate the effects of heave on the new building, the basement should be designed to transmit heave forces into the walls. Alternatively, a void or layer of compressible material could be introduced beneath the slab designed to be able to resist the potential uplift forces generated by the ground

movements. In this respect potential heave pressures to be accommodated are typically taken to equate to around 30% to 40% of the total unloading pressure.

## **9.0 Damage Assessment**

### **9.1 Damage to Neighbouring Structures**

In addition to the above assessment of the likely movements that will result from the proposed development, some of the neighbouring structures have been considered as sensitive structures, requiring Building Damage Assessments, on the basis of the classification given in Table 2.5 of C580.

The potential heave movements predicted have been included in the assessment section, which can therefore be considered as conservative, as these movements are likely to have a mitigating effect on the downward settlement due to the increase in load.

Subsequently, it is predicted that the damage to the adjoining and nearby structures would generally be Category 0 (negligible), with limited areas of Category 1 (Very Slight) damage due to differential movement from inconsistent loadings. On this basis, the damage that would inevitably occur as a result of such an excavation would fall well within the acceptable limits.

### **9.2 Monitoring of Ground Movements**

The predictions of ground movement should be checked by monitoring of adjacent properties and structures. Condition surveys of the above existing structures should be carried out before and after the proposed works. The precise monitoring strategy will be developed at a later stage and it will be subject to discussions and agreements with the owners of the adjacent properties and structures. Contingency measures will be implemented if movements of the adjacent structures exceed predefined trigger levels. Both contingency measures and trigger levels will need to be developed within a future monitoring specification for the works.

Trigger limits are recommended to be set as:

- **0-2mm** (Green)                      -No Action
- **2-4mm** (Amber)                    -Structural Engineer should be notified and the contractor to proceed with caution.
- **4mm+** (Red)                        -Structural Engineer should be notified and works halted on site until otherwise agreed with the Engineer.

## **10.0 Conclusion**

The proposed re-development of 162 Gladesmore Road can be achieved using standard construction techniques and materials.

Where mechanical means are necessary to construct permanent works these can be of a type that generates low vibrations to which the surrounding buildings have a form and construction that is robust and resistant to.

We can therefore conclude with confidence that the construction of the proposed development generally, and the subterranean basement in particular, will not affect the integrity of the surrounding building stock or overload the near-surface geology.

There are no critical utilities beneath the site that cannot be relocated easily to accommodate the construction and, as there is no change in use proposed there will be no significant increase in foul discharge to the sewer despite the increase in level of accommodation.

The techniques proposed for the subterranean element of the building and the nature of the underlying geology minimises the risk of instability, ground slip and movement.

The review of the proposals has concluded that the predicted damage to the neighbouring properties would generally be 'Negligible', with some limited areas of 'Very Slight'. On this basis, the damage that would inevitably occur as a result of such an excavation underpinning and subsequent excavation of the proposed basement, will in practice be separated by a number of weeks during which time construction will take place. This will provide an opportunity for the ground movements during and immediately after excavation to be measured and reviewed so that propping arrangements can be adjusted if required.

On Behalf Of

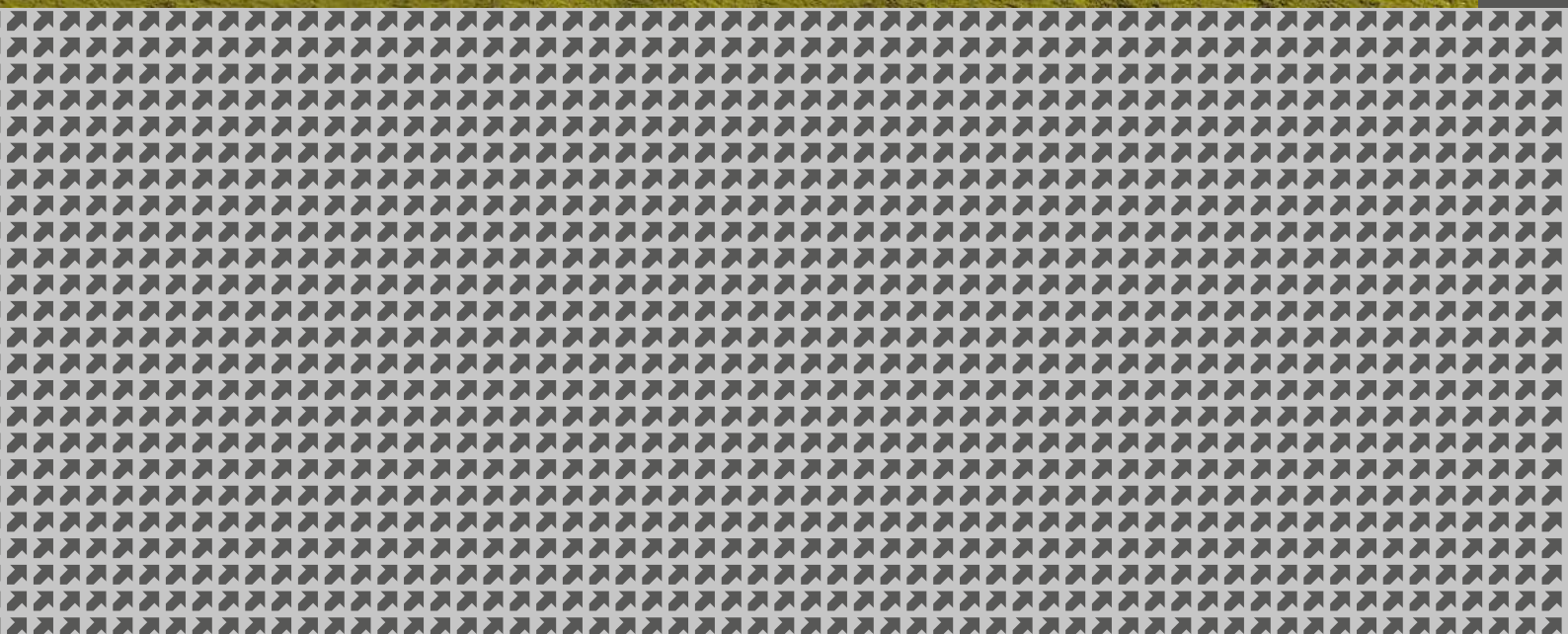
JMS Engineers (London) Ltd



Daniel Staines MStructE CEng BEng PgDip (Const. Management)

Delta Membranes

# Cavity Drain Waterproofing Type C Systems



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## ABOUT US

# Delta Membranes Systems Limited

Delta Membrane Systems Limited is a manufacturer and provider of specialist structural waterproofing solutions, covering Types A, B and C waterproofing, combination waterproofing, damp proofing, basement drainage, flood resilience and ground gas protection.

We aim to deliver excellence by putting our customers at the heart of everything we do.

Delta unites innovative products with highly skilled waterproofing design specialists. Our in-house team of technical consultants support our clients in providing comprehensive, reliable, and expert advice, identifying, and mitigating risk and establishing opportunities for added value.

Our projects include commercial and residential structures, new-build and refurbishment, housing developments and civil infrastructure. Our technical consultants cater to a diverse client base, including architects, developers, contractors, sub-contractors, engineers, and homeowners all centred on latest industry guidance, current legislation, standards, and best practice.

Delta proudly supports the Women of Waterproofing Networking Group. An independent networking group that promotes gender equality in the waterproofing sector, seeking to inspire, retain and attract females.

Delivering world-class solutions, Delta is an impeccable partner on every project.



## INNOVATION MANUFACTURER DESIGN SOLUTION



We have a dedicated, multi-disciplinary team creating, innovative, robust, and reliable waterproofing solutions. We strive for excellence and manufacturing synergy, utilising each team member's individual skills and own unique approach on design, collaborating to achieve exceptional results.



The Delta Specification team works with architects, designers, contractors, and engineers. Our team provides full consultation services, including CSSW Specification Reports. We offer advice on how Delta specifications can promote the successful outcome of any project.

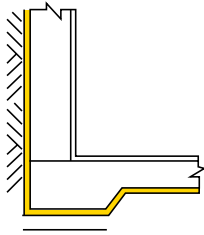
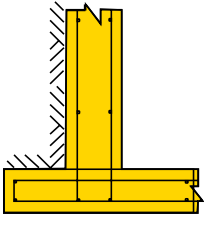
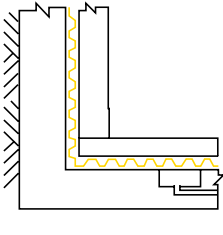


With extensive experience in the field of structural waterproofing, we draw upon knowledge and expertise to offer totally flexible on-site support. As part of our commitment to innovate through the development of best practice, our on-site support will complement any existing design and installation team. We aim to help support and develop the skills of your technicians and, if required, will also provide bespoke onsite training for your technical teams.

# Types of Waterproofing

There are many different approaches to structural waterproofing. The construction methods will in part contribute to the specification of types of waterproofing systems along with a full assessment of risk based on-site investigation, which will determine the overall structural waterproofing strategy.

## Structural waterproofing falls into 3 types

|                                                                                     |                                                                                     |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |    |
|  |  |  |
| Barrier Protection                                                                  | Structurally Integral Protection                                                    | Drained Protection                                                                    |

## BASEMENT DRAINAGE

A key component of a Type C, Drained Protection System is the drainage system. Often referred to in the industry as 'basement drainage'.

Type C, Cavity Drained Protection systems are water management systems. The Type C System manages water that penetrates the external shell of a structure by collecting it in a cavity formed between the external wall and an internal lining/wall. There is permanent reliance on this cavity to collect ground water seepage and direct it to a suitable discharge point. For Type C, Cavity Drainage Systems to function as intended, water ingress should be removed by a gravity drain/gravity drainage or mechanical pumping.



BS 8102:2022 gives recommendations and provides guidance on methods of dealing with and preventing the entry of water from external sources into structures that are partly or wholly below ground level.

It covers the use of:

- a) Waterproofing barrier materials applied to the structure
- b) Structurally integral watertight construction
- c) Drained cavity construction

Those responsible for the overall waterproofing design should be identified at the planning stage or as early as possible. All decisions made by others that might have an impact on the waterproofing design should be brought to the attention of the waterproofing specialist, design team and installing contractors. Final decisions and any recommendations should be approved by those taking overall responsibility for the design of the waterproofing.

BS 8102 further covers (but is not limited to):

- Types of construction
- Water table classification
- Scope and limitations
- Site evaluation
- Water-resistant design philosophies
- General construction issues
- Remedial measures



## British Standard 8102:2022 (Protection of Below Ground Structures Against Water Ingress. Code of Practice).

### NHBC Chapter 5.4

gives guidance on technical requirements for the waterproofing of basements and other structures below, or near to ground level, (these include but are not limited to):

- Design standards
- Compliance
- Statutory requirements
- Provision of information
- Waterproofing
- Ground conditions
- Structural stability
- Design considerations
- Thermal insulation and vapour control layers
- Waterproofing systems and surface finishes
- Rainwater drainage
- Handling, storage and protection

### Type C

One of the primary requirements of waterproofing design is the prevention of water ingress and the management of water and water vapour movement through and out of a structure. This ethos is identical for any below ground areas of a structure.

Type C waterproofing protection manages water that penetrates the external shell of a structure by collecting it in a cavity formed between the external wall and an internal lining/wall. There is permanent reliance on this cavity to collect ground water seepage and direct it to a suitable discharge point.

A Waterproofing Designer's philosophy defines what they wish to accomplish in the design of their waterproofing system and which principles they will use to do so. Fully assessing the risks and identifying a robust and suitable design philosophy is an important aspect when designing a continuous system, as this will not only directly impact in how users install the system but also in future maintenance which will directly impact on the property owner.

Continuity is crucial for successful construction and waterproofing. BS 8102:2022 places additional emphasis on good planning, correct sequencing and that site management processes are in operation.

Waterproofing measures should be designed on the basis that during the life of the structure water might come against any part of the structure that is at or below ground level or is earth retaining. Waterproofing should therefore be continuous.

To ensure waterproofing designs are durable and fit for purpose, correct detailing and implementation of penetrations are an important discipline. Whether pre- or post- construction these should be carefully detailed to minimize the risk of water ingress.

As part of a waterproofing solution Designers are required to include assessment of remedial treatment of their designs and be included as a contingency measure. As with all elements of construction, workmanship and quality control are crucial in designing for success.

As with all elements of construction, workmanship and quality control are crucial in designing for success.

BS 8102:2022 recognises the importance of transparency between manufacturer and installer in verifying compatibility between products.

A robust quality assurance process/integrity testing should always be conducted to avoid any potential mistakes.

Considerations for effects of climate change, burst water mains, flooding, etc. should be included in all designs.

Type C systems within the industry are considered one of the safest forms of waterproofing.

# Assessing Risk/Reducing Risk and Substrate Preparation



British Standard 8102:2022 (Protection of Below Ground Structures Against Water Ingress – Code of Practice) provides guidance and recommendations for methods of dealing with and preventing the entry of water from external sources into structures that are partly or wholly below ground level (earth retaining).

It covers the use of:

- Waterproofing barrier materials applied to the structure
- Structurally integral watertight construction
- Drained cavity construction

Those responsible for the overall waterproofing design should be identified at the planning stage or as early as possible. All decisions made by others that might have impact on the waterproofing design should be brought to the attention of the waterproofing specialist, design team and installing contractors. Final decisions and any recommendations should be approved by those taking overall responsibility for the design of the waterproofing.

A risk assessment should be carried out to include desk study, risk assessment of potential effects of climate change along with water table classification, inclusion of ground gas contamination and external risk. The assessment of risk should provide the justification for the proposed waterproofing design.

Design and construction should be kept as simple as possible. With consideration to floor/ceiling/wall junction(s), which should be designed to resist passages of water ingress. The joints between ceilings/walls/floors are particularly vulnerable areas and care should be taken to ensure these joints are sealed to ensure that no water or moisture can penetrate.

Substrates should be properly assessed and prepared. Substrates should be clean, crack-free, sound, free of substances (such as grease, bitumen, dust, paint or adhesive residues, etc.) and must comply with the relevant standards.

# DESIGN AND BUILD PHILOSOPHY

## Detailing

Correct detailing can successfully provide protection to the waterproofing solution.

### Categories that fall into detailing are:

- Service penetrations
- Wall/floor junctions
- Soffit wall joints
- Level changes
- Internal/External thresholds
- Linking to DPC
- Product compatibility
- Continuity
- Complex geometries

Use of correct materials for the specific site, applied in accordance with the manufacturer's instructions.

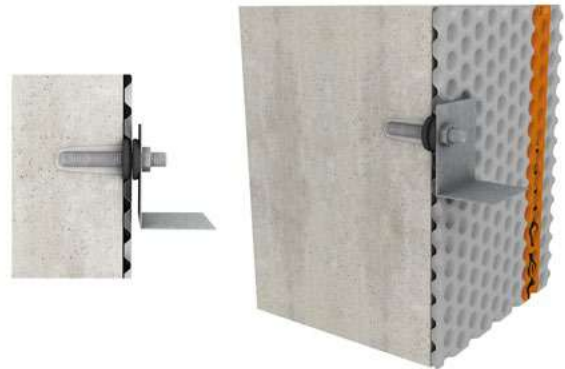
### Consequences of inadequate detailing can be:

- Water ingress
- Disruptive remedial works
- Separation of the structural elements/elevations
- Worst-case scenario, structural collapse

To design out defects in respect of service penetrations it is recommended to bring the services into the building from above ground, service ducts or light wells can allow for services to be brought in from above. Of course, this is not always possible and should be discussed with the waterproofing design team/manufacturer to ensure correct detailing to seal such elements to be watertight and durable.

Detailing can be complex, in all cases details that penetrate a waterproofing system should be detailed and installed in accordance with the manufacturer's guidelines.

Careful detailing plays an important role in waterproofing design. Whichever form of waterproofing system is considered or combination of systems, consideration should be given to the correct detailing to design out potential failures.



# Fire Protection/Euroclass

## Fire Protection/Euroclass

When designing an appropriate waterproofing system, a Waterproofing Design Specialist will always take into consideration the end use of a space to ensure they have designed a suitable solution that will meet both standards and user requirements along with functionality.

When designing the most appropriate waterproofing system to any given situation, various design factors will need addressing such as (but not limited to), final use of the building, the grade of waterproofing requirement under the British Standard, structural considerations based on the form of construction and in some cases, satisfying the requirements of building warranty providers.

By keeping a proactive approach to designing a system that meets current building regulations there is also an opportunity of future proofing designs to maximise the whole value of the project in the face of unpredictable, ongoing change.

## Euroclass Fire Ratings

Reaction to fire, often called the Euroclass system gives building products a classification. The 'Reaction to fire' classes test three properties of the building material: spread of fire, smoke intensity and burning droplets. Most building materials sold on the European market must be assigned a file indicating its fire resistance based on a Euroclass rating system. There are 7 Euroclasses of reaction to fire performance for construction products which extend from A1 to F.

| Euroclasses and the target safety level                                            |                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Euroclass                                                                          | Target safety level                                                                                                                                                                                             |
| A1                                                                                 | No contribution to fire even under fully developed fire conditions                                                                                                                                              |
| A2                                                                                 | Only negligible contribution to fire even under fully developed fire conditions; no spread of fire from the area of the primary fire in the fire development phase                                              |
| B                                                                                  | In the fire development phase, no spread of fire from the area of the primary and very limited contribution to the fire                                                                                         |
| C                                                                                  | Under the conditions of a fire in the development phases, very limited spread of fire and limited energy release and ignitability                                                                               |
| D                                                                                  | Under the conditions of a fire in the development phases, limited spread of fire and acceptable energy release and ignitability                                                                                 |
| E                                                                                  | In the case of a very small fire (match flame) acceptable reaction to fire (ignitability, flame spread)                                                                                                         |
| F                                                                                  | No requirements concerning the reaction to fire                                                                                                                                                                 |
| Additional assessment classes for smoke development and burning droplets/particles |                                                                                                                                                                                                                 |
| Smoke development                                                                  | s3 (there are no restrictions regarding smoke development)<br>s2 (the fully released amount of smoke, and the rise in smoke development are restricted)<br>s1 (stricter criteria than for s2 must be fulfilled) |
| Burning droplets/particles                                                         | d2 (there are no restrictions)<br>d1 (burning droplets not longer than the defined time)<br>d0 (dripping fire debris is not permitted)                                                                          |



### Maintainable Designs

Delta's Type C Waterproofing System should be designed and installed as a maintainable water management system. This is highlighted as a key requirement in BS 8102:2022, all components of the system should be accessible for both inspection and maintenance.

### Flood Testing/Integrity Testing

The integrity of the waterproofing system should be checked and inspected on installation and immediately upon completion. If there is a delay before final handover or the laying of permanent coverings, a second test is strongly recommended. Test objectives should be decided upon prior to the method of testing.

### Registered Installer Network

As manufacturers of quality systems, it is imperative to work with quality installation companies. At Delta, we pride ourselves that we've built a team of highly qualified, reliable, specialist Registered Installers.

Delta Registered Installers Network are an elite group of experienced Delta System installers who share our values – a dedication to quality, authenticity, and exceptional customer services.

Our Delta Registered Installer Partners all have extensive experience of working with and installing Delta Systems, meaning you can be confident of a quick, efficient installation, carried out with the minimum of disruption and fuss. All Delta Registered Installers adhere to a strict criteria and are required to attend training as well as demonstrating quality of workmanship before accreditation of the Registered Installer title, resulting in a meaningful scheme that provides unrivalled technical excellence.

### Commissioning and Servicing of Basement Drainage System

Immediately after the installation of the Type C, Cavity Drainage System, drainage channels and sump pumps should be tested. A requirement in BS 8102:2022 is for pumping devices to be checked, tested and fully commissioned by a suitably qualified engineer. Requirements for servicing and maintenance should be incorporated in both the design and upon completion should be included in the Operational and Maintenance Manual. A first inspection should be carried out on completion of the installation of the Type C system at handover and commissioning. It is recommended a second inspection should be within the first 3 months after installation.

Servicing of sump pump systems should be carried out no less frequently than annually. We recommend pumps running frequently due to higher water tables, water drainage, or weather conditions should be examined more frequently, we recommend every 6 months.

### Delta Pumps Registered Installer Network

Sump pump systems are a critical part of a Type C Drained protection systems and therefore must be maintained. We recommend a qualified pump engineer examines and services the pump equipment every 12 months. Pumps running frequently due to a higher water table, water drainage, or weather conditions should be serviced more frequently (every 3-6 months) subject to levels of water ingress.

Sump pumps, being mechanical devices, may fail if not maintained which could lead to a flooded basement and costly repairs. Regular servicing of sump pumps will improve efficiency and extend the life of the pumps.

All sump pumps will require commissioning along with regular maintenance and servicing. All Delta pump systems can be commissioned, maintained and serviced by a Delta Registered Pump Servicing provider or installing contractor.

Delta Registered Pump Servicing Network provider can offer a 5-year extended warranty period on Delta Pumps (subject to terms and conditions). Extended warranties are a way of getting extra protection for Delta Pumps in addition to the standard warranty offered.

Delta Registered Pump Servicing Network providers will register the Delta Pump for an Extended Manufacturer's Warranty.

### Guarantees

Delta Membrane Systems Limited offer a 30-year Product Guarantee on membranes, seals, and fixings when a Delta Registered Installer has installed a Delta, Type C Cavity Drainage System.



#### Additional Information

For additional information or assistance please contact:

Delta Membrane Systems Limited  
01992 523 523 or email [info@deltamembranes.com](mailto:info@deltamembranes.com)

# Free Lime

Free lime and mineral salts leaching from concrete walls and floors are one of the commonest causes of failure of a Type C, Drained Protection System.

Free lime and mineral salts leach from new construction by groundwater ingress, this then deposits itself within the cavity drainage system (behind and underneath membranes), within perimeter drainage channels and particularly within a sump chamber and around the sump pumps. The build-up of free lime within the Type C System will eventually cause a failure of the Waterproofing System.



## Common causes of Free Lime

Free lime and mineral salts found in groundwater (particularly hard water areas) can enter a structure through construction joints and cracks in the building fabric. Free lime is particularly prevalent in new construction and retrofit construction as a by-product of the hydration process within concrete and particularly in unhydrated dry pack joints above concrete underpinning. As groundwater passes through the structure it picks up the free lime, it then deposits this, as it passes through the cavity drainage system to the point of discharge.

## Minimising the impact of Free Lime

It is important when designing Type C, Drained Protection Systems that the issue of, and potential issue of, free lime is considered at the earliest stage. There are a number of ways to reduce the impact of free lime on Cavity Drainage Systems and these include:

- Inclusion of crystallisation systems, as a primary waterproof coating to structure
- Detailing all construction and dry pack joints
- Application of an anti-lime coating
- Maintainability of Type C System and ongoing maintenance
- Inclusion of a Sump Pump Notification System

## Crystallisation Systems

In depth crystalline active slurry systems or concrete admixtures aid reduction of free lime and its potential impact in Cavity Drainage Systems by reacting with the free lime in new concrete and masonry to form insoluble crystalline growths as part of the waterproofing process. The impact of using such systems is two-fold, primary resistance to the passage of water through the structure and reducing the levels of free lime available to impact on the Cavity Drainage System.

## Application of Anti Lime Coating

Anti-lime coatings such as Koster Polysil TG 500 should be applied over all new and existing structures prior to the installation of a Type C, Cavity Drained System. A Type C, Cavity Drained System cannot stop water picking up free lime as it passes through the structure, but it significantly reduces the amount of free lime picked up from the internal surfaces of the structure and reduces the amount of free lime impacting on the Type C System. Application of anti-lime coatings can reduce the frequency of future maintenance requirements.



**Why settle for less when you can choose the Delta MS 500 Fire Retardant Waterproofing System?** This robust Type C, Protection System is engineered to weather the toughest conditions. Invest in durability, invest in peace of mind.

Delta MS 500 Fire Retardant is more than just a product: it's a structured defence against unexpected disasters. Trust in our commitment to your safety and let's make your environment disaster-proof.

Fire retardants play a critical role in enhancing safety measures in homes or buildings. Their primary function is to delay the spread of fire, thereby providing occupants with crucial extra time to evacuate a building and firefighters with additional time to intervene. Moreover, they contribute significantly to preventing property damage, not only from the fire itself, but also from potential water damage arising from automated sprinklers or fire control efforts by local authorities..

## Features and benefits



8mm studded profile



Euroclass fire rating:  
B-S2, d0 (EN 13501.1:2018)



Suitable for waterproofing  
and damp proofing



Compressive Strength:  
>250 kN/m<sup>2</sup>



Resistant to Radon



BBA Approved



# MS 500 Fire Retardant

Our robust Type C, Protection System engineered to weather the toughest conditions, combining the benefits of a comprehensive waterproofing system with Euroclass fire retardant protection.



**Discover peace of mind today**

Call 01992 523 523 or email [info@deltamembranes.com](mailto:info@deltamembranes.com) for details



# TYPE C, CAVITY DRAINAGE MEMBRANES

## Delta MS 20

### Description

Delta MS 20 is an 20mm studded Type C, Cavity Drainage Membrane that is suitable for use on internal faces, floors or where a higher drainage capacity is required.

This High-Density Polyethylene (HDPE) cavity drainage membrane has an 20mm studded brown profile creating a large 10 litre per square meter void, ideal for high levels of water management. With its higher drainage capacity and compressive strength, this waterproof and vapour proof membrane can be used as part of a Type C waterproofing solution in accordance with BS 8102:2022 for the protection of below ground structures against the potentially adverse effects of ground water ingress.

Delta MS 20 provides an effective barrier to the transmission of salts and other contaminants.

Delta MS 20 is also suitable for tunnels, civil construction and for large commercial projects.

Please follow manufacturer's instructions for installation.

### Features

- 20mm studded profile suitable for higher volumes of water penetration
- Compressive Strength: >150 kN/m<sup>2</sup>
- Drainage capacity: 10 l/s m<sup>2</sup>
- BBA Approved
- BS 8102:2022 Type C Waterproofing Protection
- Suitable for Waterproofing and damp proofing
- Suitable for flood resilience (PFR)
- Resistant to chemicals, root penetration, rotproof

### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- J40/290 High-density polyethylene/polypropylene studded cavity drain membrane
- J40/47 High-density polyethylene/polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74

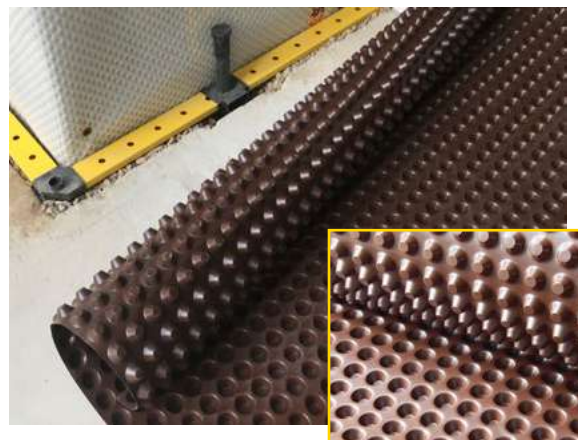
### Product details

DMS 009



### Associated products

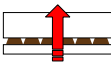
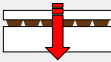
Delta Cornerstrip  
Delta Sealing Rope  
Delta Perimeter Drainage Channel  
Delta Basement Drainage Systems  
Delta MS 500



### Technical data

|                          |                                         |
|--------------------------|-----------------------------------------|
| Material                 | High Density Polyethylene (HDPE)        |
| Sheet Thickness          | 1mm                                     |
| Stud Height              | 20mm                                    |
| Roll Size                | 2m x 20m                                |
| Compressive Strength     | 150 kN/M <sup>2</sup>                   |
| Drainage Capacity        | 10 l/s m<br>600 l/min m<br>36 100 l/h m |
| Air volume between studs | 14 l/m <sup>2</sup>                     |
| Temperature Resistance   | -30°C to +80°C                          |
| Reaction to Fire         | EN13501-1 Class E                       |
| R Value                  | 0.18 M <sup>2</sup> K/W                 |

### 'R' Value Delta MS 20

| Direction of Heat Stream                                                                         | TR of 20mm air gap      |
|--------------------------------------------------------------------------------------------------|-------------------------|
| Horizontal  | 0.18 m <sup>2</sup> K/W |
| Upwards      | 0.16 m <sup>2</sup> K/W |
| Downwards    | 0.18 m <sup>2</sup> K/W |

The thermal resistance values are calculated following DIN EN ISO 6946

# Delta MS 500

## Description

Delta MS 500 is an 8mm studded Type C, Cavity Drainage Membrane that is suitable for use on internal faces of walls, floors and vaulted ceilings as a water management system for the protection of below ground structures against the potentially adverse effects of ground water ingress.

This High-Density Polyethylene (HDPE) cavity drainage membrane has an 8mm studded clear profile creating a 2.25 litre per square meter void suitable for use as part of a Type C waterproofing solution in accordance with BS 8102:2022 for the protection of below ground structures against the potentially adverse effects of ground water ingress, in waterproofing structures below ground level (basements) and isolating damp walls above ground level. The stud depth of 8mm provides a suitable air gap for use as a wall applied membrane.

Delta MS 500 provides an effective barrier to the transmission of salts and other contaminants.

Please follow manufacturer's instructions for installation.

## Features

- 8mm clear studded profile
- Compressive Strength: >250 kN/m<sup>2</sup>
- Drainage capacity: 2.25 l/s m<sup>2</sup>
- BBA Approved
- BS 8102:2022 Type C Waterproofing Protection
- Suitable for Waterproofing and damp proofing
- Suitable for flood resilience (PFR)
- Resistant to chemicals, root penetration, rotproof

## Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- J40/290 High-density polyethylene/polypropylene studded cavity drain membrane
- J40/47 High-density polyethylene/polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74

## Product details

DMS 005 2m x 20m

DMS 007 2.4m x 20m

## Associated products

Delta Cornerstrip  
Delta Qwikseal Plugs  
Delta Plugs  
Delta Sealing Tape  
Delta MS 20



## Technical data

|                          |                                                                                    |
|--------------------------|------------------------------------------------------------------------------------|
| Material                 | High Density Polyethylene (HDPE)                                                   |
| Sheet Thickness          | 0.5mm                                                                              |
| Stud Height              | 8mm                                                                                |
| Roll Size                | 2m x 20m<br>2.4m x 20m                                                             |
| Compressive Strength     | >250 kN/M <sup>2</sup>                                                             |
| Drainage Capacity        | 2.25 l/s m<br>135 l/min m<br>8 100 l/h m                                           |
| Air volume between studs | 5 l/m <sup>2</sup>                                                                 |
| Temperature Resistance   | -30°C to +80°C                                                                     |
| Reaction to Fire         | EN13501-1 Class E                                                                  |
| R Value                  | 0.12 M <sup>2</sup> K/W                                                            |
| Chemical Properties      | Resistant to chemicals, root penetration, rotproof, neutral towards drinking water |

## 'R' Value Delta MS 500

| Direction of Heat Stream | TR of 8mm air gap       |
|--------------------------|-------------------------|
| Horizontal               | 0.12 m <sup>2</sup> K/W |
| Upwards                  | 0.10 m <sup>2</sup> K/W |
| Downwards                | 0.12 m <sup>2</sup> K/W |

The thermal resistance values are calculated following DIN EN ISO 6946



# TYPE C, CAVITY DRAINAGE MEMBRANES

## Delta MS 500 Fire Retardant

### Description

Delta MS 500 Fire Retardant is an 8mm studded cavity drain membrane with a Euroclass fire rating of B-S2, d0 (EN 13501- 1:2018) suitable for use on internal faces of walls, floors and vaulted ceilings as a water management system for the protection of below ground structures against the potentially adverse effects of ground water ingress.

This High-Density Polyethylene (HDPE) cavity drainage membrane has an 8mm studded white profile creating a large 2.25 litre per square meter void suitable for use as part of a Type C waterproofing solution in accordance with BS 8102:2022 for the protection of below ground structures against the potentially adverse effects of ground water ingress, in waterproofing structures below ground level (basements) and isolating damp walls above ground level. The stud depth of 8mm provides a suitable air gap for use as a wall applied membrane.

Delta MS 500 Fire Retardant provides an effective barrier to the transmission of salts and other contaminants.

Please follow manufacturer's instructions for installation.

### Features

- 8mm studded profile
- Compressive Strength: >250 kN/m<sup>2</sup>
- Drainage capacity: 2.25 l/s m<sup>2</sup>
- BBA Approved
- Euroclass fire rating of B-S2, d0 (EN 13501- 1:2018)
- BS 8102:2022 Type C Waterproofing Protection
- Suitable for Waterproofing, damp proofing and flood resilience (PFR)
- Resistant to chemicals, root penetration, rotproof

### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- J40/290 High-density polyethylene/polypropylene studded cavity drain membrane
- J40/47 High-density polyethylene/polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74

### Product details

DMS 850



### Associated products

Delta Fire Retardant Fleece Tape  
Delta Ultra Fix Plugs  
Delta Sealing Tape  
Delta Basement Drainage Systems  
Delta MS 20  
Delta Sealing Rope



### Technical data

|                          |                                          |
|--------------------------|------------------------------------------|
| Material                 | High Density Polyethylene (HDPE)         |
| Sheet Thickness          | 0.5mm                                    |
| Stud Height              | 8mm                                      |
| Roll Size                | 2.4m x 20m                               |
| Compressive Strength     | >250 kN/M <sup>2</sup>                   |
| Drainage Capacity        | 2.25 l/s m<br>135 l/min m<br>8 100 l/h m |
| Air volume between studs | 5.4 l/m <sup>2</sup>                     |
| Temperature Resistance   | -30°C to +80°C                           |
| Reaction to Fire         | B-S2, d0                                 |
| R Value                  | 0.12 M <sup>2</sup> K/W                  |

# Delta AT 800

## Description

Delta AT 800 is an innovative Type C Drainage Membrane which conforms to BS 8102:2022 and BS 8485:2015+A1:2019, Table 7 achieving waterproofing and ground gas protection simultaneously.

Delta AT 800 offers maximum protection in just one application. Designed to offer drainage protection in Type C waterproofing in accordance with BS 8102:2022 this innovative membrane also offers barrier protection to ground gases Carbon Dioxide, Radon and Methane in accordance with BS 8485:2015+A1:2019, Table 7 with high adhesion to the application of flame retardants.

This Virgin Polymer profiled membrane has an 9mm studded brown profile creating a large 7.9 litre per square meter void suitable for use as part of a Type C waterproofing solution in accordance with BS 8102:2022 for the protection of below ground structures against the potentially adverse effects of ground water ingress, in waterproofing structures below ground level (basements) and isolating damp walls above ground level.

Please follow manufacturer's instructions for installation.

## Features

- 9mm studded profile
- Air volume between studs: 7.9 l/s m<sup>2</sup>
- An effective barrier to gas – including Methane, CO<sub>2</sub> and Radon
- Table 7, BS 8485:2015 +A1:2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings
- BS 8102:2022 Type C Waterproofing Protection
- Suitable for Waterproofing, damp proofing and flood resilience (PFR)
- Resistant to chemicals, root penetration, rotproof

## Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- BS 8485:2015+A1: 2019 Code of practice for the design of protective measures for methane and carbon dioxide ground gases for new buildings
- J40/290 High-density polyethylene/polypropylene studded cavity drain membrane
- J40/47 High-density polyethylene/polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74

## Product details

DMS 026

## Associated products

Delta Qwikseal Plugs  
Delta Sealing Tape  
Delta Cornerstrip  
Delta Gas Over Tape 150  
Delta LM 800



## Technical data

|                                     |                                     |
|-------------------------------------|-------------------------------------|
| Material                            | Highly stabilized Virgin HPDE       |
| Stud Height                         | 9mm                                 |
| Flat edge/self adhesive edge        | Yes/none                            |
| Roll Size                           | 2m x 20m                            |
| Air volume Between Studs            | 7.9 l/m <sup>2</sup>                |
| Contact area dimples/surface        | 700 cm <sup>2</sup> /m <sup>2</sup> |
| Diagonal Dimples per m <sup>2</sup> | 2500 pcs                            |
| Temperature Resistance              | -30°C to +80°C                      |
| Reaction to Fire                    | EN 13501-1 Class E                  |
| Straightness                        | Passed <75 mm/10m                   |

## DAMP PROOFING

# Delta PT 3mm Mesh

Delta PT 3mm mesh membrane has been developed specifically for addressing the issues of damp and contaminated walls, or where fast reinstatement of wall finishes is required after chemical damp proof injection.

Delta PT 3mm a High-Density Polyethylene (HDPE) low profile studded membrane with a heat welded polypropylene mesh provides a key for plaster, renders or dab fix of plaster boards.

Delta PT 3mm is impervious to moisture and moisture vapour creating a new barrier between old surfaces and new internal finishes. Delta PT 3mm effectively isolates damp walls and will prevent any new salts to deposit on surface plasters and decoration.

### Features

- 3mm studded profile
- BBA Approved
- Drainage capacity 2 l/s m<sup>2</sup>
- Air Volume between studs 2 l/s m<sup>2</sup>
- An effective barrier to the transmission of salts, liquid water and water vapour
- Provides key for plaster, renders or dab fix
- Resistant to chemicals, root penetration, rotproof and neutral towards drinking water

### Durability

Subject to normal conditions, Delta FM will provide an effective barrier to the transmission of moisture for the life cycle of the structure.

### Fields of Application

- Suitable for damp proofing
- Provides an excellent key for plaster, renders or dab fix
- Controls damp, salts and isolates other wall contaminants
- An effective barrier to the transmission of salts, liquid water and water vapour
- Suitable for new, existing, and retrofit projects including barn conversions

### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- J40/290 High-density polyethylene/ polypropylene studded cavity drain membrane
- J40/47 High-density polyethylene/ polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74



### Technical data

| Delta PT                 |                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------|
| DMS                      | 030/027                                                                                                              |
| Material                 | High Density Polyethylene (HDPE)                                                                                     |
| Sheet Thickness          | 0.4mm                                                                                                                |
| Stud Height              | 3mm                                                                                                                  |
| Roll Size                | 1m x 20m<br>2m x 20m                                                                                                 |
| Air Volume Between Studs | 2 l/m <sup>2</sup>                                                                                                   |
| Temperature Resistance   | -30°C to +80°C                                                                                                       |
| Reaction to Fire         | EN13501-1 Class E                                                                                                    |
| R Value                  | Theoretical value based on a supposed specific thermal conductivity of HPDE 0.42 W/m x K, the R value would be 0.001 |
| Sd-Value                 | 236.4 m                                                                                                              |
| Thickness                | 0.000921 m                                                                                                           |
| U-Value                  | 256.678                                                                                                              |
| Vapour Resistivity       | 1283.388 MNs/gm                                                                                                      |

### Product details

DMS 030 1m x 20m

DMS 027 2m x 20m

### Associated Products

- Delta Qwikseal Plugs
- Delta PT Plugs
- Delta Ultra Fix Plugs
- Delta Sealing Tape
- Delta Cornerstrip
- Delta LM 800



## DAMP PROOFING

# Delta PT (including Delta PT/Plaster Lath)

Delta PT is an 8mm studded Type C, Cavity Drainage Membrane that is suitable for use in basement waterproofing for new and existing structures.

Delta PT can also be used in above ground application to provide a damp proof barrier and to isolate plaster finishes from contamination. Delta PT is a High-Density Polyethylene (HDPE) 8mm studded membrane with a heat welded polypropylene mesh.

Delta PT is suitable as an impermeable damp proofing base for plaster or shotcrete (with suitable reinforcement) and as a water control and drainage membrane in tunnel construction or for remedial damp proofing and waterproofing of existing basements internally.

### Features

- 8mm studded profile
- BBA Approved
- Drainage capacity 5 l/s m<sup>2</sup>
- Compressive Strength: 70 kN/m<sup>2</sup>
- An effective barrier to the transmission of salts, liquid water and water vapour
- A "reversible" system, which will minimise damage to historical or heritage structures
- Resistant to chemicals, root penetration, rotproof, neutral towards drinking water

### Durability

Subject to normal conditions, Delta PT will provide an effective barrier to the transmission of water, water vapour and salts, for the life cycle of the structure.

### Fields of Application

- Used in new build construction and retrofit projects
- As protection for high quality floor finishes such as hardwood
- As protection for floor finishes such as screeds
- Air gap damp proofing membrane
- Creates a continuous air gap in substrates
- Damp pressure equalisation and ventilation
- Zero "down time" in fast track installation
- Excellent for detailing existing staircases and tight spaces
- Can be linked to other Delta Type C Membranes

### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- J40/290 High-density polyethylene/ polypropylene studded cavity drain membrane
- 40/47 High-density polyethylene/ polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74



### Technical data

|                          |                                                                                                                      |
|--------------------------|----------------------------------------------------------------------------------------------------------------------|
| DMS                      | 001/002                                                                                                              |
| Material                 | High Density Polyethylene (HDPE)                                                                                     |
| Drainage Capacity        | 5 l/sm <sup>2</sup>                                                                                                  |
| Stud Height              | 8mm                                                                                                                  |
| Roll Size                | 1m x 20m and 2m x 20m                                                                                                |
| Air volume between studs | 2 l/m <sup>2</sup>                                                                                                   |
| Temperature Resistance   | -30°C to +80°C                                                                                                       |
| Reaction to Fire         | EN13501-1 Class E                                                                                                    |
| R Value                  | Theoretical value based on a supposed specific thermal conductivity of HDPE 0.42 W/m x K, the R value would be 0.001 |
| Sd-Value                 | 236.4 m                                                                                                              |
| Thickness                | 0.000921 m                                                                                                           |
| U-Value                  | 256.678                                                                                                              |
| Vapour Resistivity       | 1283.388 MNs/gm                                                                                                      |

### Product details

DMS 030 1m x 20m

DMS 027 2m x 20m

### Associated Products

- Delta PT Plugs
- Delta Flexi Dri Plus Plugs
- Delta Ultra Fix Plugs
- Delta Cornerstrip
- Delta Sealing Tape
- PT Profile Strip



# DAMP PROOFING

## Delta FM

Delta FM is a Virgin High-Performance PE-VHD. Specifically designed for floor applications to combat capillary dampness and contamination.

The low stud profile (4 mm) minimises the impact upon existing floor levels but still provides an air gap to achieve damp pressure equalisation. The special low profile offered by Delta FM is excellent for detailing existing staircases and tight spaces. Delta FM can be linked to other Delta Type C, cavity drainage membranes. A fast-track application which allows for various floor finishes to be achieved with zero 'down time'.

Delta FM can be used in new build, remedial or refurbishment projects.

### Features

- 4mm studded profile
- Suitable for use on damp proofing walls, floors, and vaulting ceilings
- Compressive Strength: 700 kN/m<sup>2</sup>
- Fast track installation
- Durable, puncture and impact resistant
- Resistance to water, water vapour & salt transfer
- Suitable for floors

### Durability

Subject to normal conditions, Delta FM will provide an effective barrier to the transmission of moisture for the life cycle of the structure.

### Fields of Application

- Used in new build construction and retrofit projects
- As protection for high quality floor finishes such as hardwood
- As protection for floor finishes such as screeds
- Air gap damp proofing membrane
- Creates a continuous air gap in substrates
- Damp pressure equalisation and ventilation
- Zero "down time" in fast track installation
- Excellent for detailing existing staircases and tight spaces
- Can be linked to other Delta Type C Membranes
- 

### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of practice.
- J40/290 High-density polyethylene/ polypropylene studded cavity drain membrane
- J40/47 High-density polyethylene/ polypropylene studded cavity drain membrane
- Classification Pr\_25\_57\_51\_74



### Technical data

|                          |                                                           |
|--------------------------|-----------------------------------------------------------|
| DMS                      | O23                                                       |
| Material                 | Virgin high-performance PE-VHD                            |
| Material Application     | Special low stud profile for floor. Can be used on walls. |
| Sheet Thickness          | 0.6mm                                                     |
| Stud Height              | 4mm                                                       |
| Roll Size                | 2m x 20m                                                  |
| Compressive Strength     | 700 kN/m <sup>2</sup>                                     |
| Air Volume Between Studs | 2.6 l/m <sup>2</sup>                                      |
| Temperature Resistance   | -30°C to +80°C                                            |
| Reaction to Fire         | EN13501-1 Class E                                         |

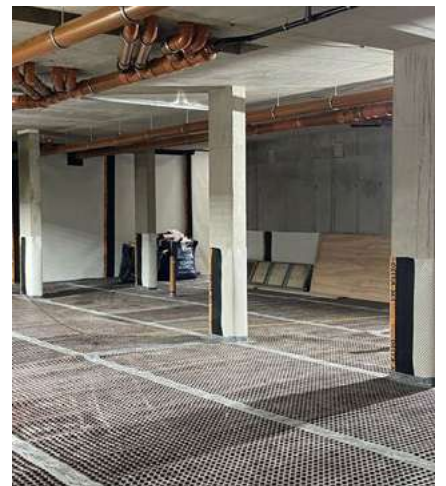
### Product details

DMS 023

### Associated Products

- Delta Cornerstrip
- Delta Sealing Tape
- Delta Perimeter Drainage Channel
- Delta Basement Drainage Systems
- Delta MS 500





# TYPE C, CAVITY DRAINAGE MEMBRANES

## Type C Ancillaries

|                                                                                     |                                                                                  |                                                                                      |                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | <b>Sealing Rope</b><br>DMS 011 4.75m x 10mm                                      |    | <b>Delta Mastic</b><br>DMS 013 400ml                                                                                                                                                                               |
|     | <b>Corner Strip</b><br>DMS 020 150mm x 20m                                       |    | <b>Delta Fix Adhesive</b><br>DMS 018 400ml (Fix Adhesive)<br>DMS 044 Fix Mixer Nozzles<br>DMS 043 Twin Cartridge Applicator                                                                                        |
|     | <b>Double Sided Tape</b><br>DMS 012 22.5m x 28mm                                 |    | <b>Puddle Flange</b><br>DMS 161 Various sizes available from 32mm to 160mm                                                                                                                                         |
|    | <b>Fire Retardant Fleece Tape</b><br>DMS 852 1mm x 220mm x 20m                   |    | <b>PT Profile Strip</b><br>DMS 016 2m length                                                                                                                                                                       |
|   | <b>Fleece Tape</b><br>DMS 238 100mm x 20m                                        |   | <b>MS Profile Strip</b><br>DMS 017 2m length                                                                                                                                                                       |
|  | <b>Delta Plugs</b><br>DMS 014 Box of 100                                         |  | <b>GL2 Brackets</b><br>DMS 049 Box of 100                                                                                                                                                                          |
|  | <b>Flexi-Dri Plus Plugs</b><br>DMS 239 Box of 100                                |  | <b>Joist Boots / Top Hats</b><br>Special order<br>Made to order                                                                                                                                                    |
|  | <b>Qwikseal Plugs</b><br>DMS 131 Box of 100                                      |  | <b>Water Based Epoxy Resin</b><br>DMS 485 2.5ltr White<br>DMS 486 2.5ltr Clear<br>DMS 487 2.5ltr Grey<br>DMS 488 2.5ltr Blue<br>DMS 144 5ltr White<br>DMS 148 5ltr Clear<br>DMS 149 5ltr Grey<br>DMS 150 5ltr Blue |
|  | <b>Ultra Fix Plugs</b><br>DMS 051 Box of 200<br>DMS 050 Box of 200 with Grommets |  | <b>Water Based Epoxy Resin</b><br>DMS 300 100mm x 20m<br>DMS 301 150mm x 20m<br>DMS 303 300mm x 20m<br>DMS 304 450mm x 20m<br>DMS 305 600mm x 20m<br>DMS 345 1000mm x 20m                                          |
|  | <b>PT Plugs</b><br>DMS 015-1 Box of 200<br>DMS 133-1 Box of 200 with Grommets    |                                                                                      |                                                                                                                                                                                                                    |
|  | <b>Delta Than</b><br>DMS 019 310ml                                               |                                                                                      |                                                                                                                                                                                                                    |

## Coverage Table

| Membrane                    | Measurement | Working m <sup>2</sup> | Fixings *Estimated                                                                                                                                                                                                                                                                                 | Application   |
|-----------------------------|-------------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| Delta MS 500 8mm            | 2m x 20m    | 38.6m <sup>2</sup>     | <ul style="list-style-type: none"> <li>• Qwikseal *(5 plugs per m<sup>2</sup>)</li> <li>• Delta Plugs sealed with rope *(5 plugs per m<sup>2</sup>)</li> </ul>                                                                                                                                     | Waterproofing |
| Delta MS 500 Large 8mm      | 2.4m x 20m  | 46m <sup>2</sup>       | <ul style="list-style-type: none"> <li>• Qwikseal *(5 plugs per m<sup>2</sup>)</li> <li>• Delta Plugs sealed with rope *(5 plugs per m<sup>2</sup>)</li> </ul>                                                                                                                                     | Waterproofing |
| Delta MS 500 Fire Retardant | 2.4m x 20m  | 46m <sup>2</sup>       | <ul style="list-style-type: none"> <li>• Ultra Fix *(5 plugs per m<sup>2</sup>) sealed with rope</li> </ul>                                                                                                                                                                                        | Waterproofing |
| Delta PT 8mm                | 2m x 20m    | 36m <sup>2</sup>       | <ul style="list-style-type: none"> <li>• PT Plugs sealed with rope *(18 plugs per m<sup>2</sup>)</li> <li>• PT Plugs with Grommets *(18 plugs per m<sup>2</sup>)</li> </ul>                                                                                                                        | Waterproofing |
| Delta PT 3mm                | 2m x 20m    | 38.6m <sup>2</sup>     | <ul style="list-style-type: none"> <li>• PT Plugs sealed with rope *(18 plugs per m<sup>2</sup>)</li> <li>• PT Plugs with Grommets *(18 plugs per m<sup>2</sup>)</li> </ul>                                                                                                                        | Damp Proofing |
| Delta PT 3mm                | 1m x 20m    | 19m <sup>2</sup>       | <ul style="list-style-type: none"> <li>• PT Plugs sealed with rope *(18 plugs per m<sup>2</sup>)</li> <li>• PT Plugs with Grommets *(18 plugs per m<sup>2</sup>)</li> </ul>                                                                                                                        | Damp Proofing |
| Delta Lath Clear 8mm        | 1.5m x 10m  | 14m <sup>2</sup>       | <ul style="list-style-type: none"> <li>• PT Plugs sealed with rope *(18 plugs per m<sup>2</sup>)</li> <li>• PT Plugs with Grommets *(18 plugs per m<sup>2</sup>)</li> </ul>                                                                                                                        | Damp Proofing |
| Delta MS 20 20mm            | 2m x 20m    | 38m <sup>2</sup>       | N/A                                                                                                                                                                                                                                                                                                | Waterproofing |
| Delta FM 4mm                | 2m x 20m    | 38.6m <sup>2</sup>     | N/A                                                                                                                                                                                                                                                                                                | Damp Proofing |
| AT800 9mm                   | 2m x 20m    | 38.6m <sup>2</sup>     | <ul style="list-style-type: none"> <li>• Delta Plugs *(5 plugs per m<sup>2</sup>) sealed with rope</li> <li>• Qwikseal Plugs with PU 907 to seal inside screw hole *(5 plugs per m<sup>2</sup>)</li> <li>• Fire Retardant Ultra Fix Plugs *(5 plugs per m<sup>2</sup>) sealed with rope</li> </ul> | Waterproofing |

## Fixings

| Membrane                     | Plugs*                                                        | Rope (10mm x 4.75m)                                                         | Delta Tape (28mm x 22.5m)                                 | Corner Strip (150mm x 20m)                                                                | Fleece Tape (100mm x 20m) | Fire Retardant Fleece Tape (220mm x 20m) |
|------------------------------|---------------------------------------------------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------|---------------------------|------------------------------------------|
| For Stud to Stud application | For sealing membranes together at overlaps and adjacent seals | For sealing wall to floor junctions, service penetrations and patch repairs | For PT Membranes ideal for plastering and rendering onto. | For sealing of membranes together, join or where overlapping is required and butt joints. |                           |                                          |
| Delta MS 500 8mm             | ✓                                                             | ✓                                                                           | ✓                                                         | ✓                                                                                         |                           |                                          |
| Delta MS 500 Large 8mm       | ✓                                                             | ✓                                                                           | ✓                                                         | ✓                                                                                         |                           |                                          |
| Delta MS 500 Fire Retardant  | ✓                                                             | ✓                                                                           | ✓                                                         |                                                                                           |                           | ✓                                        |
| Delta PT 8mm                 | ✓                                                             | ✓                                                                           | ✓                                                         |                                                                                           | ✓                         |                                          |
| Delta PT 3mm                 | ✓                                                             | ✓                                                                           |                                                           |                                                                                           | ✓                         |                                          |
| Delta Lath Clear 8mm         | ✓                                                             |                                                                             |                                                           |                                                                                           | ✓                         |                                          |
| Delta MS 20 20mm             |                                                               | ✓                                                                           |                                                           | ✓                                                                                         |                           |                                          |
| Delta FM 4mm                 |                                                               | ✓                                                                           | ✓                                                         | ✓                                                                                         |                           |                                          |
| AT800 9mm                    | ✓                                                             | ✓                                                                           | ✓                                                         | ✓                                                                                         |                           |                                          |

# BASEMENT DRAINAGE

## Drainage Design

When waterproofing a below ground structure with a Type C cavity drainage membrane system, a basement drainage system is also required to safely remove ground water ingress which percolates the structure.

This drainage system is made up of four key components - a submersible pump, often referred to as a sump pump, basement drainage channels, high level water alarm(s) and battery backup(s), larger projects may also require a control panel.

The first stage of a cavity drainage system install is to provide an accessible and maintainable drainage system. Whether new build or retrofitting, the drainage system is always the first step.

Drainage can be use of perimeter drainage channel or a modular drainage system.

Modular drainage systems are only possible where the construction is new or there is a new structural slab being cast.

Perimeter drainage channel can be used for new construction and retrofitting projects. Recesses for the perimeter drainage channel are created in the structural slab. Contrary to new build scenarios, when retrofitting there may be limitations to alterations to the existing slab, to overcome this problem a 50mm sacrificial screed detail can be used to create the required rebates.

With multi-level basements, we take a slightly different approach. Generally, with a new build multi-level basement, we tie the intermediate slab into the membrane for continuity of the waterproofing system. [Technical drawing 218-1(C)], as with all waterproofing projects, this is not always possible. Where not possible we use an alternative approach, such as the 126 Detail [Technical drawing 216-1-(c)].

Both perimeter drainage channels and modular drainage will efficiently disperse any water ingress which percolates the structure to a sump chamber. Once water is collected into the sump chamber, the water is then safe evacuated to a suitable discharge point. This is referred to as a sump pump system.

The sump chamber will collect and manage any water ingress which is collected in the cavity drain membranes via drainage system.

High-water level alarm, control panels and battery backups are a second line of defence for the basement drainage system, a high-level water alarm will notify building occupants if the sump pump system has stopped working or are working at different parameters, whilst battery backups will maintain a power supply to the sump pumps in the event of a power outage.

Sump pump systems protect a property against flooding.

As with any electrical equipment, basement sump pumps will require servicing and the entire drainage system will require regular maintenance to ensure it is working effectively.

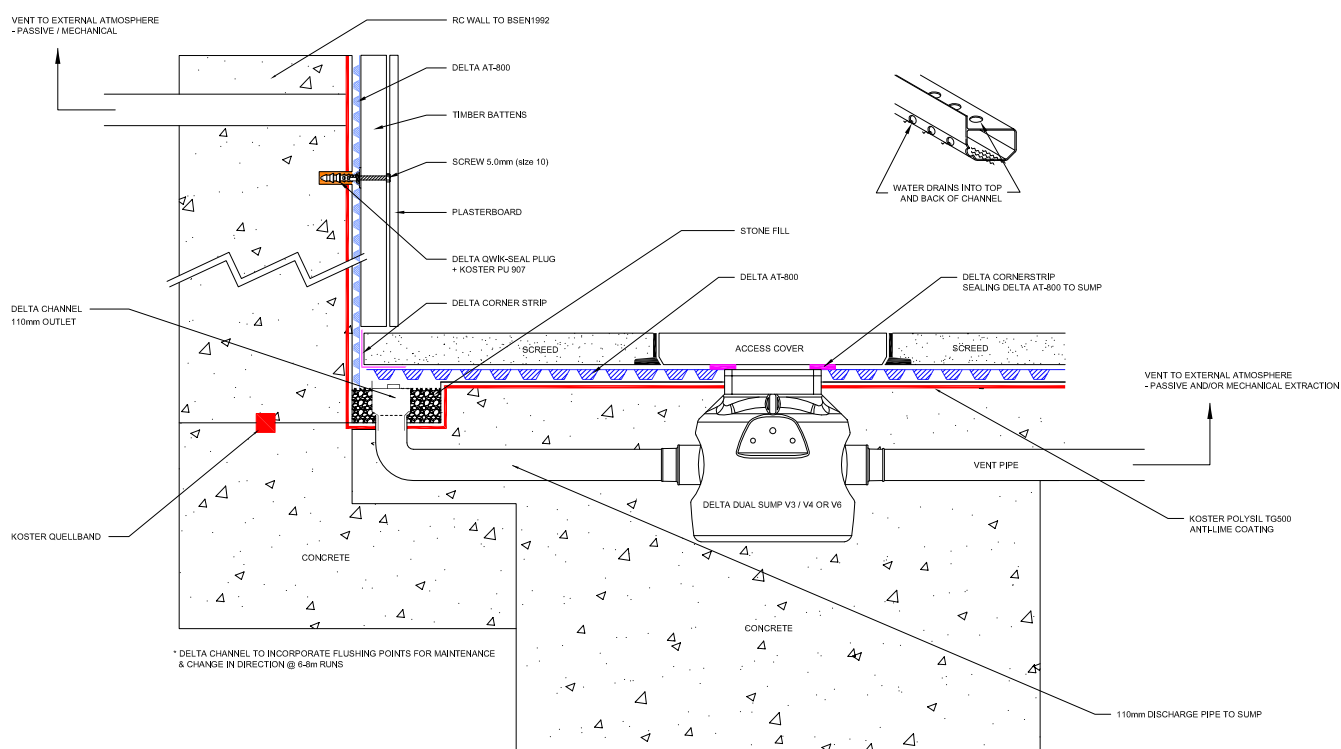
If you already have a cavity drainage waterproofing/ Type C system, installed, it is vitally important to maintain all equipment annually (as a minimum). If you are planning on having a cavity drainage waterproofing system installed in your property, always remember the system should be fully maintainable and regularly serviced.

Think of sump pumps as the beating heart of your basement, removing water ingress that could result in a flooded basement.



### Routine Maintenance Benefits:

- Reliable and cost-effective maintenance tailored to suit your property
- Reduced risk of breakdown leading to a flooded basement
- Increased life expectancy of equipment
- Fully trained engineers
- Ensures efficient operation of waterproofing system and minimises downtime
- All staff are confined space trained



The purpose of a sump chamber is to collect and discharge (to a suitable evacuation point) any water ingress which has collected behind the cavity drain membrane system.

Basement drainage 'pumped systems' should be engineered to cope with worst-case scenario of water ingress. It should always be assumed that ground water is expected to rise against any structure at some point during its service life. Waterproofing designs should always be to the full height of the external ground level with consideration to the connection with the dpc 150mm above ground level. This may be within the cavity or dressed externally with a flashing.

Drainage channels ideally should be installed in rebates and laid level at the wall/floor junction around the perimeter of the structure to allow water to drain by hydraulic gradient and to discharge passively into sump chambers. For larger projects, cross-floor span channels should be included in designs.

Inspection and access ports should be included in the perimeter drainage channel design. These allow for inspection, maintenance, and future cleaning of the drainage system.

The number of sump pump systems required for each project will (in part) depend on the overall basement size, perimeter, and the method of drainage. Type C membranes should be installed above drainage channels.

For each sump system, we recommend two pumps to reduce risk in case of mechanical failure of the duty pump. In the event of failure of the duty pump, the secondary back up pump will take over discharging water ingress, ensuring the basement drainage is functional, significantly reducing the risk of potential flooding.

Basement drainage systems are further enhanced with additional protection with high-water level alarm, control panels and battery backups as a second line of defence. A high-level water alarm will notify a building owner/occupier if the sump pump system has stopped working. Battery backups will maintain power supply to sump pumps in the event of a power outage.

Multi-level systems should be detailed to allow water ingress to bypass any intermediate suspended floor slab(s) to reach drainage installed at the lowest level of the structure. For multi-level systems we recommend the additional use of a Type A or Type B waterproofer to offer a continuous waterproofing approach.

Design considerations should be given to the serviceability and maintainability of the system, such as maintainable perimeter drainage and servicing of sump pumps.

## BASEMENT DRAINAGE

### Perimeter Drainage Channel

Perimeter Drainage Channel is a component part used within a Type C Cavity Drainage System for collection and control of water which ingresses. Delta Channel is a distinctive yellow, PVC drainage conduit designed to manage water ingress and hydrostatic water pressure in basements and below ground structures.

Delta Channel is bedded into a preformed rebate (recess/gully) at the floor/wall junction and is suited for use in conjunction with the Delta Membrane range. Preformed holes within the Delta Channel allow for water to enter, then drain into a suitable package pump station or suitable discharge point. Access points within the Delta Channel should be installed to allow for maintenance and inspection.

When using drainage channels these should be set directly below the level of the floor cavity membrane, so that the full drainage capacity of the system is available.

We recommend one Packaged Pump System should be installed for each 50 linear metres of channel; the length of each channel running to the Sump should not exceed 25m.

Delta Channel is supplied in 2 metre lengths and is available with or without an upstand. Delta Channel is 80 mm wide and 50 mm deep.

The Delta Channel is joined by a range of accessories such as Straight Connectors, Corner Pieces, T Pieces and Drainage Channel End Caps. Where it is not possible to recess the channel into the structural slab we recommend speaking to Delta's Technical Team.

A modular drainage system may also be adopted or combined with a Delta Channel System.

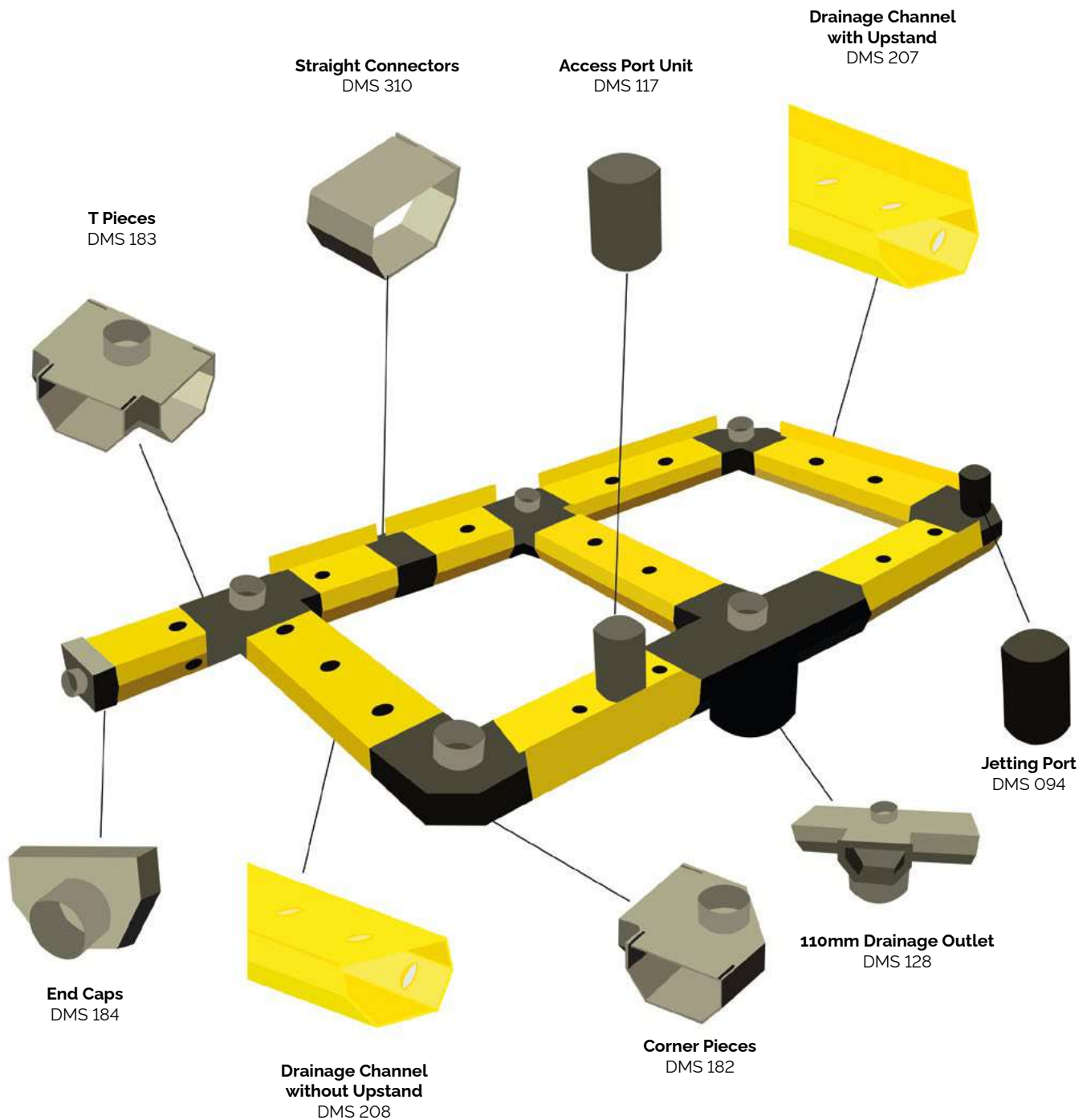
We recognise that every project has different requirements and therefore our Technical Team work together as one, to provide tailored solutions that meet specific needs. We manufacture all our packaged pump stations in-house from design, through to assembly and testing. Our Technical Team will help from specification to installation and maintenance.



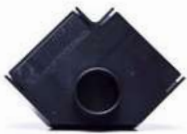
We recognise that every project has different requirements and therefore our Technical Team work together as one, to provide tailored solutions that meet specific needs.

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# Drainage Configuration



# Drainage Channel and Accessories

|                                                                                     |                                                           |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------|
|    | <b>Delta Channel with Upstand</b><br>DMS 207 2m length    |
|    | <b>Delta Channel without Upstand</b><br>DMS 208 2m length |
|    | <b>Straight Connectors</b><br>DMS 310                     |
|    | <b>Corner Pieces</b><br>DMS 182                           |
|   | <b>T Pieces</b><br>DMS 183                                |
|  | <b>End Caps</b><br>DMS 184                                |
|  | <b>110mm Drainage Outlet</b><br>DMS 128                   |
|  | <b>MS 20 Flushing / Access Port</b><br>DMS 124            |
|  | <b>Inspection Port (Jetting Eye)</b><br>DMS 094           |
|  | <b>Access Port Unit</b><br>DMS 117                        |
|  | <b>Drainage Connector</b><br>DMS 118                      |

|                                                                                     |                                       |      |      |      |      |
|-------------------------------------------------------------------------------------|---------------------------------------|------|------|------|------|
|    | <b>Pressure pipe, PVC Class E, 2m</b> | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E100 | E120 | E140 | E150 |
|    | <b>Tank connector</b>                 | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E110 | E130 | E145 | E155 |
|    | <b>90° elbow PL/PL</b>                | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E101 | E121 | E141 | E151 |
|    | <b>45° elbow PL/PL</b>                | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E102 | E122 | E142 | E152 |
|   | <b>Tee-piece PL/PL</b>                | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E105 | E125 | -    | -    |
|  | <b>Coupling (socket) PL/PL</b>        | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E103 | E123 | E143 | E153 |
|  | <b>Socket union PL/PL</b>             | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E106 | E126 | -    | -    |
|  | <b>Male threaded adaptor</b>          | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E104 | E124 | E144 | E154 |
|  | <b>Coupling PL/TH</b>                 | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E107 | E127 | -    | -    |
|  | <b>Barrel nipple PL/TH</b>            | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E108 | E128 | -    | -    |
|  | <b>Barrel nipple TH/TH</b>            | 1¼"  | 2"   | 2½"  | 3"   |
|                                                                                     |                                       | E109 | E129 | -    | -    |

|                                                                                                            |                                       |       |          |      |
|------------------------------------------------------------------------------------------------------------|---------------------------------------|-------|----------|------|
|                           | <b>Coupling TH/TH</b>                 |       |          |      |
|                                                                                                            | 1¼"                                   | 2"    | 2½"      | 3"   |
|                                                                                                            | E111                                  | E133  | -        | -    |
|  | <b>Delta 2" to 1¼" Reducer Kit</b>    |       |          |      |
|                                                                                                            | 2" to 1¼"                             |       |          |      |
|                                                                                                            | E219                                  |       |          |      |
|                           | <b>Reducing socket, PL/PL</b>         |       |          |      |
|                                                                                                            | 2" to 1½"                             |       |          |      |
|                                                                                                            | E160                                  |       |          |      |
|                           | <b>Reducing bush, PL/TH</b>           |       |          |      |
|                                                                                                            | 1½" to 1¼"                            |       |          |      |
|                                                                                                            | E161                                  |       |          |      |
|                          | <b>Male iron, low pressure</b>        |       |          |      |
|                                                                                                            | 1¼"/32 mm                             |       | 2"/50 mm |      |
|                                                                                                            | E112                                  |       | E132     |      |
|                         | <b>Backnut, ABS c/w rubber washer</b> |       |          |      |
|                                                                                                            | 2" BSP                                |       |          |      |
|                                                                                                            | E134                                  |       |          |      |
|                         | <b>O-ring for socket union</b>        |       |          |      |
|                                                                                                            | 1¼"                                   | 2"    |          |      |
|                                                                                                            | E114                                  | E115  |          |      |
|                         | <b>110mm saddle clamp, reinforced</b> |       |          |      |
|                                                                                                            | 1¼"                                   | 2"    | 2½"      | 3"   |
|                                                                                                            | E113                                  | E133  | E146     | E156 |
|                         | <b>Rubber drain coupling</b>          |       |          |      |
|                                                                                                            | 50-65mm                               |       |          |      |
|                                                                                                            | E174                                  |       |          |      |
|                         | <b>Rubber wall seal</b>               |       |          |      |
|                                                                                                            | 50mm                                  | 110mm | 160mm    |      |
|                                                                                                            | E168                                  | E169  | E170     |      |
|                         | <b>Brass gate valve</b>               |       |          |      |
|                                                                                                            | 1¼"                                   | 2"    |          |      |
|                                                                                                            | E187                                  | E188  |          |      |

|                                                                                    |                                |      |     |    |
|------------------------------------------------------------------------------------|--------------------------------|------|-----|----|
|  | <b>Brass swing check valve</b> |      |     |    |
|                                                                                    | 1¼"                            | 2"   | 2½" | 3" |
|                                                                                    | E191                           | E193 | -   | -  |

---

|                                                                                    |                                      |  |  |  |
|------------------------------------------------------------------------------------|--------------------------------------|--|--|--|
|  | <b>Delta V3/4/6 non-return valve</b> |  |  |  |
|                                                                                    | 1¼"                                  |  |  |  |
|                                                                                    | E195                                 |  |  |  |

---

|                                                                                    |                                        |      |  |  |
|------------------------------------------------------------------------------------|----------------------------------------|------|--|--|
|  | <b>PP, industrial pipe clip, black</b> |      |  |  |
|                                                                                    | 1¼"                                    | 2"   |  |  |
|                                                                                    | E114                                   | E115 |  |  |

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|                                                                                    |                               |  |  |  |
|------------------------------------------------------------------------------------|-------------------------------|--|--|--|
|  | <b>Solvent cement, WDF-05</b> |  |  |  |
|                                                                                    | 250 ml                        |  |  |  |
|                                                                                    | E175                          |  |  |  |

---

|                                                                                     |                           |  |  |  |
|-------------------------------------------------------------------------------------|---------------------------|--|--|--|
|  | <b>PVC cleaning fluid</b> |  |  |  |
|                                                                                     | 500 ml                    |  |  |  |
|                                                                                     | E176                      |  |  |  |

---

|                                                                                      |                        |  |  |  |
|--------------------------------------------------------------------------------------|------------------------|--|--|--|
|  | <b>PTFE tape, roll</b> |  |  |  |
|                                                                                      | 12mm x 12m             |  |  |  |
|                                                                                      | E177                   |  |  |  |

# SUBMERSIBLE PUMPS

## Delta V3 Submersible Pump

### Description

The Delta V3 Submersible Pump has been specifically designed for below ground application.

Offering elite performance, the Delta V3 achieves high levels of efficiency thanks to its optimised hydraulic systems and reliable motors.

Fitted with a magnetic float switch the Delta V3 provides variable level control and maximum travel stop.

The powerful vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

A straightforward locking disk enables adaption of the pump to external control systems.

The Delta V3 Submersible Pump is suitable for collecting ground water from a Cavity Drained System.



V3

V4/V6

### Features

- Suitable for ground, surface, storm, and grey water applications
- Maximum flow rate up to 2.9 l/s
- 1.25" BSP threaded pump outlet
- Superior vortex hydraulics for blockage free pumping
- Internal thermal protection
- Designed for easy installation
- Available with float locking disc for manual level control

### Product details

DMS 116-1



## Delta V4 Submersible Pump

### Description

The Delta V4 Submersible Pump is light-weight and corrosion-proof due to its high-quality plastic casing. Thanks to its noise-absorbing, abrasion proof and impact-resistant features, the Delta V4 is a popular choice with waterproofing professionals.

The Delta V4 is suitable for double depth basements with a head height of 8 m.

The powerful Vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

The Delta V4 is supplied free standing for quick installation.

### Features

- Suitable for ground, surface, storm, and grey water applications
- Maximum flow rate up to 3.3 l/s
- 1.25" BSP threaded pump outlet
- Superior vortex hydraulics for blockage free pumping in critical conditions
- Internal thermal protection
- Designed for easy installation
- Available with float locking disc for manual level control

### Product details

DMS 216-1



## Delta V6 Submersible Pump

### Description

The Delta V6 Submersible Pump is a reliable heavy-duty pump. The Delta V6 is suitable for double and triple depth basements with a head height up to 12 m.

The Delta V6 Submersible Pump is suitable to collect ground water from a 150 m<sup>2</sup> basement and surface water from 12 m<sup>2</sup> of light well area. The Delta V6 Submersible Pump is suitable for pumping of surface water.

The powerful vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).

The Delta V6 is supplied free standing for quick installation.

### Features

- Suitable for ground, surface, storm, and grey water applications
- Maximum flow rate up to 3.9 l/s
- 1.25" BSP threaded pump outlet
- Superior vortex hydraulics for blockage free pumping in critical conditions
- Internal thermal protection
- Designed for easy installation
- Available with float locking disc for manual level control

### Product details

DMS 084-1



## Delta Foul V3 Submersible Pump

### Description

The Delta Foul V3 Submersible Pump is designed as a compact and cost-effective solution for collection of foul and/or grey water from basements, below ground structures and ground floor extensions.

The robust and reliable Delta Foul V3 is an exceptionally popular choice with waterproofing professionals due to its generous sized motor, thermal overload protection and ease of installation.

The powerful Vortex pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation). With a 45mm solids clearance the Delta Foul V3 offers reliable and effective discharging..

The Delta Foul V3 can be supplied free standing or on pedestal mounting for permanent installation.

The Delta Foul V3 Submersible pump is not suitable for collecting ground water from a Cavity Drained System.

### Features

- Maximum flow rate up to 6.3 l/s
- Maximum head (lift height) 12m
- 2" BSP threaded pump outlet
- Includes float, elbow and outlet reducer adaptors
- Trouble free operation
- Free flowing impeller (preventing clogging)
- Corrosion resistant stainless-steel shaft and bi-rotational mechanical seal
- Designed for easy installation
- Available with pedestal mounting

### Product details

DMS E029 (Manual)

DMS 120-1 (Automatic)



## PACKAGED PUMPS

### Delta Dual V3 Packaged Pumping Station

#### Description

The Delta Dual V3 packaged pump station has been specifically designed to work in harmony with Cavity Drained Systems to collect Ground Water via a perimeter drainage channel or modular drainage. Manufactured from superior High-Density Polyethylene (HDPE) this packaged pump station can withstand hydrostatic forces encountered in applications with high water tables. Pumping applications are invariably demanding – typically operating in unsympathetic, arduous, or extreme environments, where quality matters.

The powerful Vortex pump offers innovative design and advanced technology making it extremely dependable even when subjected to continuous use (subject to correct installation).

The Delta Dual V3 pump offers unrivalled capabilities. The Delta Dual V3 sump offers versatility of collecting water from external light wells. The Delta Dual V3 packaged pump station includes chamber, all internal pipe work and two powerful Delta V3 pumps. The Delta Dual V3 pump station is suitable for collecting ground water from a 150m<sup>2</sup> basement and surface water from a maximum 12m<sup>2</sup> light well.



#### Product Description

DMS 164-1



### Delta Dual V4 Packaged Pumping Station

#### Description

The Delta Dual V4 packaged pump station has been designed specifically to work in unity with the Delta Cavity Drained System (Type C waterproofing) to collect ground water via a perimeter channel or modular drainage.

Delta's robust and distinguished package pumps are capable of diverse applications where quality matters. Using advanced pump design techniques our packaged pump systems are unrivalled.

The Delta Dual V4 offers a higher discharge head to the Delta V3 pump(s). The Delta Dual V4 pump station is suitable to collect ground water from a 150m<sup>2</sup> basement that requires a head height of up to 8 m. The Delta Dual V4 is capable of pumping 12m<sup>2</sup> of surface area in addition to ground water.

The Delta V4 pump station includes chamber, all internal pipework and two powerful Delta V4 Pumps.

The Delta Dual V4 pump station should not be used to collect grey water from showers and hand basins, or foul water from a water closet.



#### Product Description

DMS 217-1



## Delta Dual V6 Packaged Pumping Station

### Description

Manufactured to the highest of quality, the Delta Dual V6 package pump station can meet the requirements of the toughest environment. The Delta Dual V6 has the capabilities to discharge water ingress from surface areas over 150m<sup>2</sup> or basements that require a head height up to 10 m.

The Delta Dual V6 packaged pump station has been distinctively designed to work in harmony with the Delta Type C System, to collect groundwater via a perimeter drainage channel or modular drainage. Manufactured from high-density polyethylene (HDPE), this package pump station can effortlessly withstand the strongest hydrostatic stress.

The Delta Dual V6 pump station package includes chamber, all internal pipe work and two powerful Delta V6 Submersible Pumps. The system's pumps are factory-set to activate at different levels, providing both primary and secondary protection. The powerful Delta V6 Submersible Pump offers innovative design and advanced technology making it extremely reliable even when subjected to continuous use (subject to correct installation).



### Product Description

DMS 079-1



## Delta V3 Foul Packaged Pumping Station

### Description

The Delta Foul V3 Packaged Pumping Station has been specifically designed to collect foul and/or grey water from basements, below ground structures and ground floor extensions.

Superior design, precision manufacturing and high-quality assurance has made Delta a trusted name for package pump stations. The robust and reliable Delta Foul V3 is an exceptionally popular choice with waterproofing professionals due to its generous sized motor, thermal overload protection and ease of installation. The powerful vortex pump offers innovative design and advanced technology making it extremely dependable even when subjected to continuous use (subject to correct installation).

The Delta Foul V3 chamber is manufactured from virgin tank grade HDPE and is capable of withstanding hydrostatic forces encountered in applications with high water tables.

The Delta Foul V3 includes a chamber, all internal pipework, and a powerful Delta Foul V3 Submersible Pump.



### Product Description

DMS 165-2



Experience the edge of innovation with the Delta HLA Plus, a sleek and dependable high-water level alarm, perfectly engineered for real-time monitoring of pumping stations.

The Delta Pumps App promises to provide seamless navigation, user-friendly interfaces, and a wealth of features designed to safeguard your pumping stations, peace of mind is just a tap away. Activate your keyholder notifications on the app and receive instant *alertifications* to any registered device.

The Delta HLA Plus is dedicated to safeguarding your property, offering live, in-depth data on all pumping

station activities. It's not just about monitoring; it's about proactively reducing risks.

Adaptable and intelligent, the Delta HLA Plus is ideal for managing ground and surface water pumping stations. Don't just monitor, take control with Delta HLA Plus.

Stay informed about your pumping system's status 24/7. Witness events as they unfold. The Delta HLA Plus is packed with features offering crucial protection where it's needed most.

**Don't wait! Harness the power of Delta HLA Plus today.**

## Features and benefits



Smart protection for pumping stations



Real time notifications – any device, anywhere, any time



Monitors pump station activities



Tracks and records



Instant access to pump station activity via the Delta Pumps app



Indicates changes in pump activity (frequency and duration)



Linked pumping stations



WiFi or LAN/Ethernet connection



Service due reminders



All keyholders receive alerts via email and push notifications

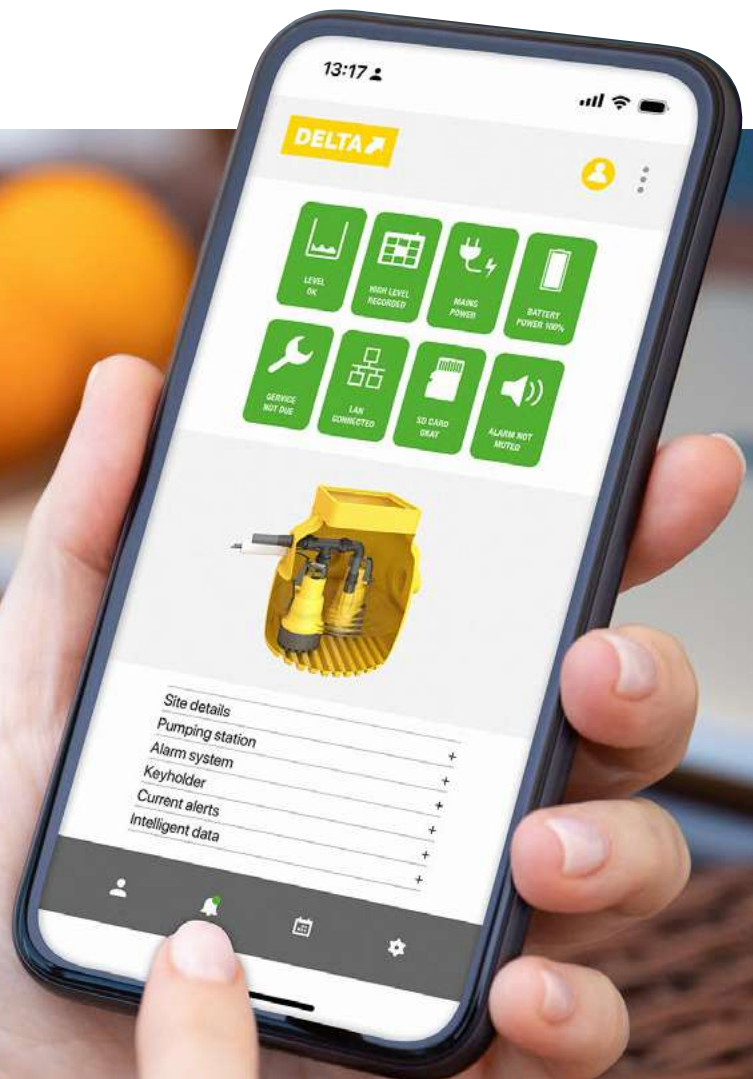


Subscription-free Delta Pumps App



# Delta HLA Plus

An advanced high-water level alarm system, specifically designed for real-time tracking and monitoring of pumping stations, providing a reliable tool in your hands.



**Discover peace of mind today**

Call 01992 523 523 or email [info@deltamembranes.com](mailto:info@deltamembranes.com) for details

## HIGH LEVEL ALARMS

### Delta HLA Plus

#### Delta HLA Plus - Groundwater

##### Description

Designed to put property owners in control.

The Delta HLA Plus can be retrofitted in any existing ground water or surface water pumping system. Please refer to Delta's Technical Guidance Notes on how to register a new Delta HLA Plus device(s).

Where pump stations are installed in high-risk areas, we recommend adding a Delta Level Float to enhance features on the Delta HLA Plus into an 'Intelligent' High-Water Level Alarm and Monitoring System, not only detecting when a high-water level occurs in a sump pump chamber, but also to monitors sump pump activation(s), and changes in sump pump activation(s) (both frequency and duration).

##### Product details

DMS 531



#### Delta HLA Plus Intelligent - Groundwater

##### Description

The Delta HLA Plus Intelligent is supplied with a Delta Level Float and is compatible with all Delta V3, V4 and V6 ground water/surface water pumping stations. Delta HLA Plus can also be retrofitted to any existing ground water/surface water pumping station.

The Delta HLA Plus 'Intelligent' is a highly advanced High-Water Level Alarm Monitoring System. The Delta Level Float transforms the Delta HLA Plus ('Smart' High-Water Level Alarm) into an 'Intelligent' High-Water Level Alarm, not only detecting when a high-water level occurs in a sump pump chamber, it also monitors sump pump activity – number of activation(s), and changes in sump pump activation(s) (both frequency and duration). This additional information allows for real time calculation of flow, volumes of discharge over given periods, changes in level of activity within the pumping station including decline in pump performances. For full features of the Delta HLA Plus 'Intelligent' Pump Station Monitoring Device, all devices are required to be registered for free on the Delta Pumps App.

The Delta HLA Plus Intelligent has both proactive and preventive functions. Real-time analysis of your pumping station enabling service, maintenance, or repair requirements to be detected and implemented at the earliest stage.

##### Product details

DMS 538



## Delta HLA Plus Intelligent - Groundwater 800 Series Ground / Surface Water

### Description

The Delta HLA Plus Intelligent is a highly advanced High-Water Level Alarm Monitoring System.

The Delta HLA Plus Intelligent has both proactive and preventive functions. Real-time analysis of your pumping station enabling service, maintenance, or repair requirements to be detected and implemented at the earliest stage.

The Delta HLA Plus Intelligent is compatible with all ground and surface water Delta 800 Series packaged pump stations.

The Delta HLA Plus Intelligent can be retrofitted in any existing sump pump chamber/sump pump system that manages ground and/or surface water.

### Product details

DMS 539



## Delta HLA Plus Foul Water/800 Series

### Description

The Delta HLA Plus is a smart High-Water Level Alarm and Monitoring System, capable of delivering real-time monitoring and notification services, for Foul and Delta 800 Series packaged pumping stations.

Designed to put property owners in control - On any device, anywhere at any time. For any important or time-sensitive notifications, the Delta HLA Plus allows property owners to engage in real-time with their basement drainage system, using the Delta Pumps App. The Delta Pumps App offers Delta HLA Plus owners an uncomplicated way to register devices. All monitoring and notification services are offered for free once devices are registered.

The Delta HLA Plus can be retrofitted in any existing sump pump chamber/sump pump system that manages foul or larger packaged pumping station, such as the Delta 800 Series.

### Product details

DMS 532



## HIGH LEVEL ALARMS

# Delta HLA Plus Level Float

### Description

The Delta HLA Plus Level Float enables additional monitoring features of the Delta HLA Plus Device, enabling for in-depth information on sump pump activities (including - Frequency of Pump Activation(s), Duration of Activation(s), Fixed Depth(s), Fixed Volume(s)) based on pump chamber diameter)) within pumping stations.

The Delta HLA Plus Level Float transforms the Delta HLA Plus 'Smart' High-Water Level Alarm into an 'Intelligent' High-Water Level Alarm. The Delta HLA Plus has both proactive and preventive functions. Real-time analysis of your pumping station enables service, maintenance, or repair requirements to be detected and implemented at the earliest stage.

The Delta HLA Plus is a High-Water Level Alarm and Monitoring System, capable of delivering real-time monitoring and notification services, for groundwater, surface, and foul water pumping stations. On any device, anywhere, any time.

The Delta HLA Plus Level Float is compatible with all Delta HLA Plus devices.

The Delta HLA Plus level Float is robust and reliable. It is insensitive to turbulence within the chamber and features gold contacts for high conductivity, durability and resistance to corrosion and oxidation.

Standard features such as instant notifications, real time monitoring and live performance data of sump pump systems are available out of the box on all Delta HLA Plus devices. For full features of the Delta HLA Plus Intelligent Pump Station Monitoring Device, all devices are required to be registered for free on the Delta Pumps App.

Please refer to Delta Technical Guidance Notes and Delta HLA Plus Product Data Sheets for further information.



### Features

- ☐ A mechanically activated control switch offering additional features of Delta HLA Plus device
- ☐ Suitable for ground, surface, and storm water applications
- ☐ Not sensitive to turbulence
- ☐ Available in Normally Open operation only
- ☐ Adjustable activation range: 20 mm to 170 mm
- ☐ Gold contact for high conductivity, durability and resistance to corrosion and oxidation
- ☐ Includes 10-metre cable, mounting bracket and stainless-steel clip
- ☐ Available once device has been registered on the Delta Pumps App – [www.deltamembranes.com](http://www.deltamembranes.com)

### Associated products

- Delta HLA Plus
- Delta Dual V3/4/6 packaged pumping stations
- Delta 800 groundwater packaged pumping station

### Product details

DMS 536



# HIGH LEVEL ALARMS

## Delta Pumps App

### Creating your free account

Create a free account on the Delta Pumps App to manage your Delta HLA Plus/Delta HLA Plus Intelligent Device(s).

Visit <https://pumps.deltapumpsapp.com>

1. Create your Account
2. Choose "New Customer" and "Create account" at the bottom of the log in page.
3. Enter your email address.
4. Create and confirm your Password.
5. Enter title and contact details
6. Choose from being a Delta Customer, Delta Registered Pump Installing Contractor or a Property Owner
7. Once you have created your user account you will be able to **Add Delta HLA Plus/Delta HLA Plus Intelligent Device(s)** to your account.



### Setting up your Delta HLA Plus/HLA Plus Intelligent Device



To set up your Delta HLA Plus/Delta HLA Plus Intelligent Device:

1. Open the Delta Pumps App:  
<https://pumps.deltapumpsapp.com>  
On any mobile or android device via a browser window or using your mobile device's camera scan the QR code found on your Delta HLA Plus/Delta HLA Plus Intelligent Device (or its packaging). Alternatively, use a PC to register your Delta HLA Plus/Delta HLA Plus Intelligent Device.
2. Choose "Returning Customer". Enter in email address and password used to create an account.
3. Tap "Register Device" on the top menu.
4. Enter Serial Number of the Device and press "continue".
5. Complete required fields.

**Thank you for choosing Delta HLA Plus/Delta HLA Plus Intelligent!**

Your device will now be shown on your account.

## HIGH WATER LEVEL ALARMS

# High Water Level Alarm & Battery Backups

### Delta HLA - Foul

#### Description

The Delta HLA Foul is designed to detect high water levels within a foul sump pump (submersible pump) chamber. The Delta HLA Foul is an independent high water level alarm with a clear display on the front fascia via LED, which acts as a warning system in the event of:

- power failure to the Delta HLA Foul
- a high water level situation in the chamber/sump
- a high water level situation is recorded
- a service due

#### Product details

DMS 191-1



### Delta HLA - Groundwater

#### Description

The Delta HLA Groundwater is designed to detect high water levels within a groundwater/surface water sump pump (submersible pump) chamber. The Delta HLA Groundwater is an independent high water level alarm with a clear display on the front fascia via LED, which acts as a warning system in the event of:

- power failure to the Delta HLA Groundwater
- a high water level situation in the chamber/sump
- a high water level situation is recorded
- a service due

#### Product details

DMS 190-1



### Delta HLA - 800 Series

#### Description

The Delta HLA 800 Series is designed to detect high water levels within a Delta 800 Series sump pump (submersible pump) chamber. The Delta HLA 800 Series is an independent high water level alarm with a clear display on the front fascia via LED, which acts as a warning system in the event of:

- power failure to the Delta HLA 800 Series
- a high water level situation in the chamber/sump
- a high water level situation is recorded
- a service due

#### Product details

DMS 191-1



## Delta UPS V3

### Description

If power failure occurs, the Delta UPS V3 automatically powers the Delta V3 pump. It can provide power for 30 minutes continuously, based on a 3.5 m head. This is equivalent to 30 hours protection, in accordance with PCA guidance of a minimum of three activations per hour.

### Product details

DMS E021



## Delta UPS V4/6

### Description

The Delta UPS V4/6 is specifically designed for basement drainage systems (submersible pumps/sump pumps) when there is a loss of mains power. It will power one Delta V3, Delta V4, or Delta V6 Submersible Pump during a power outage, keeping basements dry.

The Delta UPS V4/6 can provide power to a Delta V6 pump for 30 minutes continuously, based on a 3.5 m head. This is equivalent to 30 hours protection, in accordance with PCA guidance of a minimum of three activations per hour.

### Product details

DMS E022



## Delta Battery Backup Foul V3

### Description

The Delta Battery Backup Foul V3 is specifically designed to provide power to one Delta Foul V3 Packaged Pumping Station or a Delta Single Foul 800 Packaged Pumping Station when there is a loss of network power. The Delta Battery Backup Foul V3 will keep submersible pumps running during power outage(s).

The Delta Battery Backup Foul V3 will provide power for more than 3 days\* (30 minutes continuously) to one Delta Foul V3 pump in case of a loss of network power. If power failure occurs, the pump automatically takes power from the Delta Battery Backup Foul V3.

### Product details

DMS E030



## BATTERY PACKS

# Delta Battery Backups

### Delta Battery Backup V3

#### Description

The Delta Battery Backup V3 will provide power for 60 minutes run time/5 days back up\* to one Delta V3 pump in case of a loss of mains power. If power failure occurs, the pump will automatically take power from the Delta Battery Backup V3.

Simple to use and easy to install – the Delta Battery Backup V3 will clearly display status and comprehensive fault codes. \*Based on PCA guidance of minimum 3 activations per hour for 24 hours.

#### Product details

DMS E023



### Delta Battery Backup V3 Plus

#### Description

The Delta Battery Backup V3 Plus will provide power for 120 minutes run time/10 days back up\* to one Delta V3 pump in case of a loss of mains power. If power failure occurs, the pump will automatically take power from the Delta Battery Backup V3 Plus.

Simple to use and easy to install – the Delta Battery Backup V3 Plus will clearly display status and comprehensive fault codes. \*Based on PCA guidance of minimum 3 activations per hour for 24 hours.

#### Product details

DMS E024



### Delta Battery Backup V4/6

#### Description

The Delta Battery Backup V4/6 will provide power for 45 hours\* to one or two Delta V6 pumps (not simultaneously) in case of a loss of mains power. If power failure occurs, the pumps(s) automatically take power from the Delta Battery Backup V4/6 .

Simple to use and easy to install – the Delta Battery Backup V4/6 will clearly display status and comprehensive fault codes. \*Based on PCA guidance of minimum 3 activations per hour.

#### Product details

DMS E026



## Delta Battery Backup V4/6 Plus

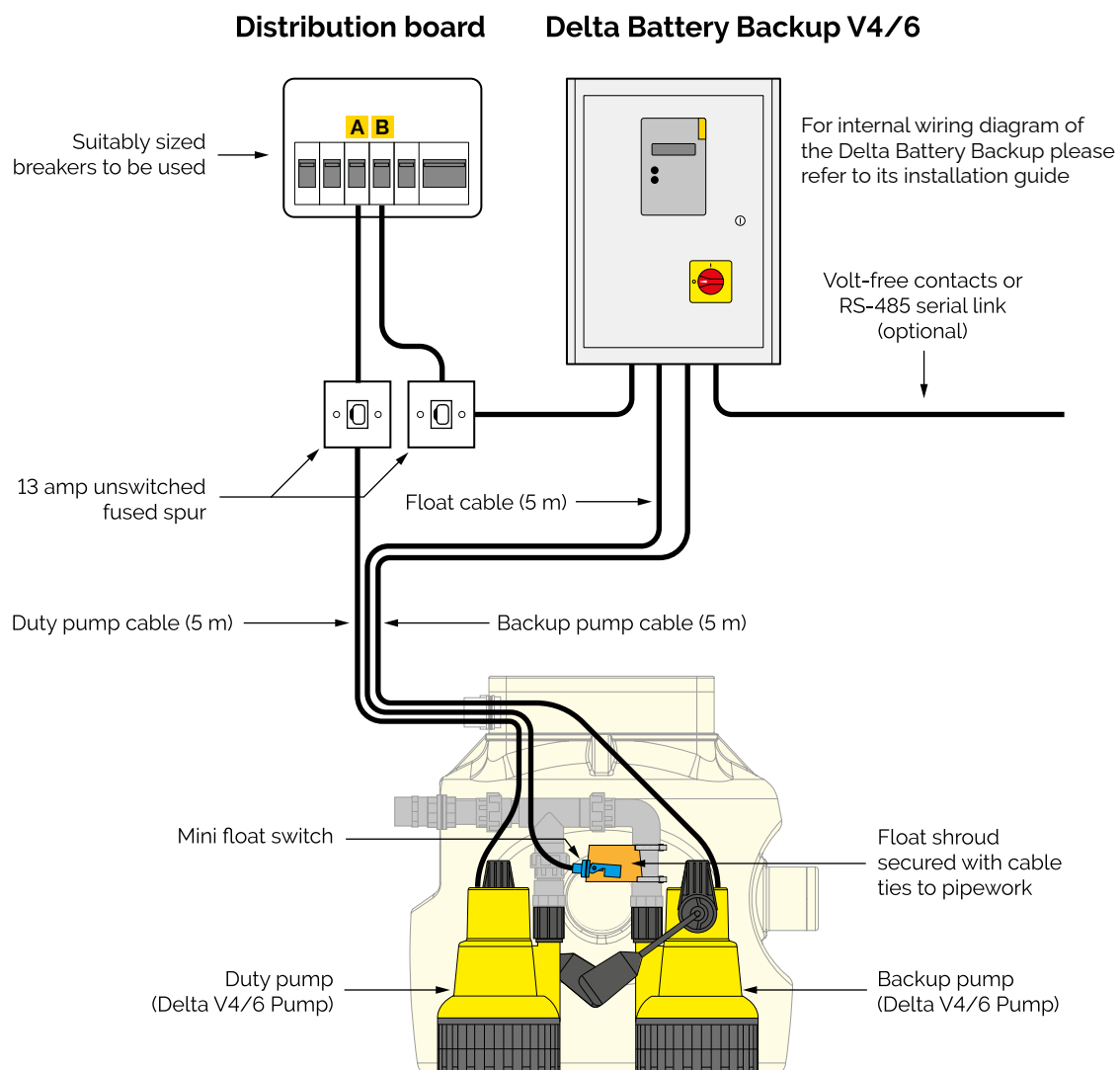
### Description

The Delta Battery Backup V4/6 Plus will provide power for 90 minutes run time/7 days back up\* to one Delta V4/V6 pump (not simultaneously) in case of a loss of mains power. If power failure occurs, the pump will automatically take power from the Delta Battery Backup V4/6 Plus.

Simple to use and easy to install – the Delta Battery Backup V4/6 Plus will clearly display status and comprehensive fault codes. \*Based on PCA guidance of minimum 3 activations per hour for 24 hours.

### Product details

DMS E027



PACKAGED PUMPS

Delta Bespoke 800 Series Groundwater



Description

The Delta Bespoke 800 Series of Packaged Pumping Stations are available in depths from 1250mm to 2000mm and with varying pumping capabilities from the Delta Dual V3 to powerful Delta Dual V6 pump.

The robust and reliable Delta Bespoke 800 Series Packaged Pumping Station has been specifically designed to collect ground and surface water from basements, below ground structures.

Typical applications include (but are not limited to) Type C, Cavity Drained Waterproofing solutions and/or surface water from roofs, buried roofs, terraces and patios (subject to selection criteria).

Delta Bespoke 800 Series – system includes: a polyethylene chamber, 1¼" PVC internal pipework, two Delta V3, V4 or V6\* sump pumps, 110mm inlet, 50mm cable duct, 110mm vent and 2" discharge.

This product is specifically designed for below ground applications where hydrostatic water pressure may be present. We recommend surrounding the Delta Bespoke 800 Series with concrete to prevent movement. An access cover is not supplied, as these are generally site specific and installed in the final finish. If required, the chamber will accept a standard 450mm x 600mm cover and frame. Inlets can easily be drilled and sealed on site, making this product straightforward to install.

The Delta Bespoke 800 Series - Groundwater is not suitable for collecting foul or grey water.

Product Details

|                       |          |
|-----------------------|----------|
| <b>Delta Dual V3</b>  |          |
| 800-1250 Pump Station | DMS-E001 |
| 800-1500 Pump Station | DMS-E002 |
| 800-1750 Pump Station | DMS-E003 |
| 800-2000 Pump Station | DMS-E004 |

|                       |          |
|-----------------------|----------|
| <b>Delta Dual V4</b>  |          |
| 800-1250 Pump Station | DMS-E005 |
| 800-1500 Pump Station | DMS-E006 |
| 800-1750 Pump Station | DMS-E007 |
| 800-2000 Pump Station | DMS-E008 |

|                       |          |
|-----------------------|----------|
| <b>Delta Dual V6</b>  |          |
| 800-1250 Pump Station | DMS-E009 |
| 800-1500 Pump Station | DMS-E010 |
| 800-1750 Pump Station | DMS-E011 |
| 800-2000 Pump Station | DMS-E012 |



# Delta Bespoke 800 Series Foul



## Description

The Delta Bespoke 800 Series of Package Pumping Stations are available in depths from 1250mm to 2000mm.

The robust and reliable Delta Bespoke 800 Series - Foul Packaged Pump Station has been specifically designed to collect foul and/or grey water from basements, below ground structures and ground floor extensions or where foul water cannot be drained by gravity.

For kitchen applications we recommend fitting a grease trap prior to the pump station installation.

This product is specifically designed for below ground applications where hydrostatic water pressure may be present. However, we recommend surrounding the Delta Bespoke 800 Series - Foul with concrete to prevent movement. A manhole cover is not supplied as these are generally site specific and installed in the final finish.

The Delta 800 Series Foul Packaged Pumping Station can be installed at the initial building stage or retro fitting to existing buildings.

The Delta Bespoke 800 Series - V3 Foul is not suitable for collecting ground water from a cavity drained membrane system.

## Product Details

### Delta Single V3 Foul

|                       |          |
|-----------------------|----------|
| 800-1250 Pump Station | DMS-E013 |
| 800-1500 Pump Station | DMS-E014 |
| 800-1750 Pump Station | DMS-E015 |
| 800-2000 Pump Station | DMS-E016 |

### Delta Dual V3 Foul (inc control panel)

|                       |          |
|-----------------------|----------|
| 800-1250 Pump Station | DMS-E017 |
| 800-1500 Pump Station | DMS-E018 |
| 800-1750 Pump Station | DMS-E019 |
| 800-2000 Pump Station | DMS-E020 |



## DELTA 1000 SERIES - BBA PACKAGED PUMPING

# Delta Pluto Package Pumping Station

### Description

The Delta Pluto Package Pumping Station is available in association with TT Pumps and has been specifically designed to work in harmony with Cavity Drained Systems to collect Groundwater via a perimeter drainage channel or modular drainage.

This package pump station can withstand hydrostatic forces encountered in applications with high water tables. Pumping applications are invariably demanding – typically operating in unsympathetic, arduous, or extreme environments, where quality matters.

The powerful Delta Goliath/Delta Blue 50 (foul water) pump offers innovative design and advanced technology making it extremely dependable even when subjected to continuous use (subject to correct installation).

The Delta Pluto Package Pumping Station sump offers versatility of collecting water from external light-wells. The Delta Pluto packaged pump station includes chamber, all internal pipe work, valves and pumps. The Delta Pluto Package Pumping Station is suitable for collecting ground water from a 150m<sup>2</sup> basement and surface water from a maximum 12m<sup>2</sup> light well.

The extension turret is an innovative design that allows the installer to change the depth of the chamber installation to suit site specific levels. Due to possibility of site complications and changing requirements, it would be useful to be able to extend the depth of the tank. The extension turret is placed on top of the tank and clamped and sealed in place and can be cut at set increments to adjust the height of the pumping station chamber. The focus on this is to aid in reducing of installation time and to provide product flexibility in site conditions.

The Delta Pluto (150, 400, 550) Package Pumping Stations are not suitable for collecting foul water, for foul water applications the Delta Blue 50 should be specified.

### Features

- BBA Approval and Accreditation
- Suitable for ground, surface, storm, and grey water applications
- Flow rate up to 7.5 l/s at up to 11m head
- Chamber manufactured from superior virgin tank grade HDPE enabling the Delta Pluto Package Pumping Station to withstand hydrostatic forces encountered in applications with high water tables
- Quick and simple installation
- 156 litre operating storage
- Supplied with Delta Goliath / Foul Blue 50 powerful Delta Pluto Pumps
- Suitable for residential, commercial and heritage projects



### Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of Practice
- NBS Specification R18 (Clause 310) Pumping Stations and Pressure Pipelines

### Product Details

#### Delta Dual Pluto

|                                                          |          |
|----------------------------------------------------------|----------|
| 150 including TT HLA Duty                                | DMS T001 |
| 400 including TT HLA Duty                                | DMS T002 |
| 550 including TT HLA Duty                                | DMS T003 |
| Delta Pluto Dual Foul Blue 50 (including TT HLA Duty)    | DMS T004 |
| Delta Pluto Extension Turret (inc clamping kit and seal) | DMS T009 |

UK  
CA CE



# Delta Bespoke Mercury Foul



## Description

The Delta 1000 Series - Mercury Foul Packaged Pumping Station is available in association with TT Pumps. The robust and reliable Delta 1000 Series - Mercury Series Packaged Pumping Station has been specifically designed and manufactured in the United Kingdom to provide an efficient and economical way of installing a sewage/drainage pumping station.

The extension turret is an innovative design that allows the installer to change the depth of the chamber installation to suit site specific levels. Due to possibility of site complications and changing requirements, it would be useful to be able to extend the depth of the tank. The extension turret is placed on top of the tank and clamped and sealed in place and can be cut at set increments to adjust the height of the pumping station chamber. The focus on this is to aid in reducing of installation time and to provide product flexibility in site conditions.

The Delta 1000 Series – Mercury Foul Package Pumping Station, is not suitable for collecting ground water from a cavity drained membrane system.

## Features

- BBA Approval and Accreditation
- Pump chambers are well engineered and manufactured, and have passed rigorous and detailed testing, site inspections and factory production control assessment
- Each pump chamber is made of strong, medium-density polyethylene
- Smooth internal walls aid the hygienic disposal of effluents, to avoid smells and septicity.
- Comes complete with pipework pre-assembled in the chamber, ready for installation into the ground, after which the pumps and control equipment are added.
- All packaged pumping stations are supplied with controls for fully automatic operation, and a high-level alarm indicator
- Units can be adapted to suit individual requirements at manufacturing stage
- Packages are available on short lead-times to fit in with tight construction schedules.

## Specification

- BS 8102:2022 Protection of below ground structures against water ingress. Code of Practice
- BS EN 10256-4:2000 Gravity drainage systems inside buildings - Wastewater lifting plants
- Construction (Design & Management) Regulations 2015
- Construction (Design & Management) Regulations (Northern Ireland) 2016

## Product details

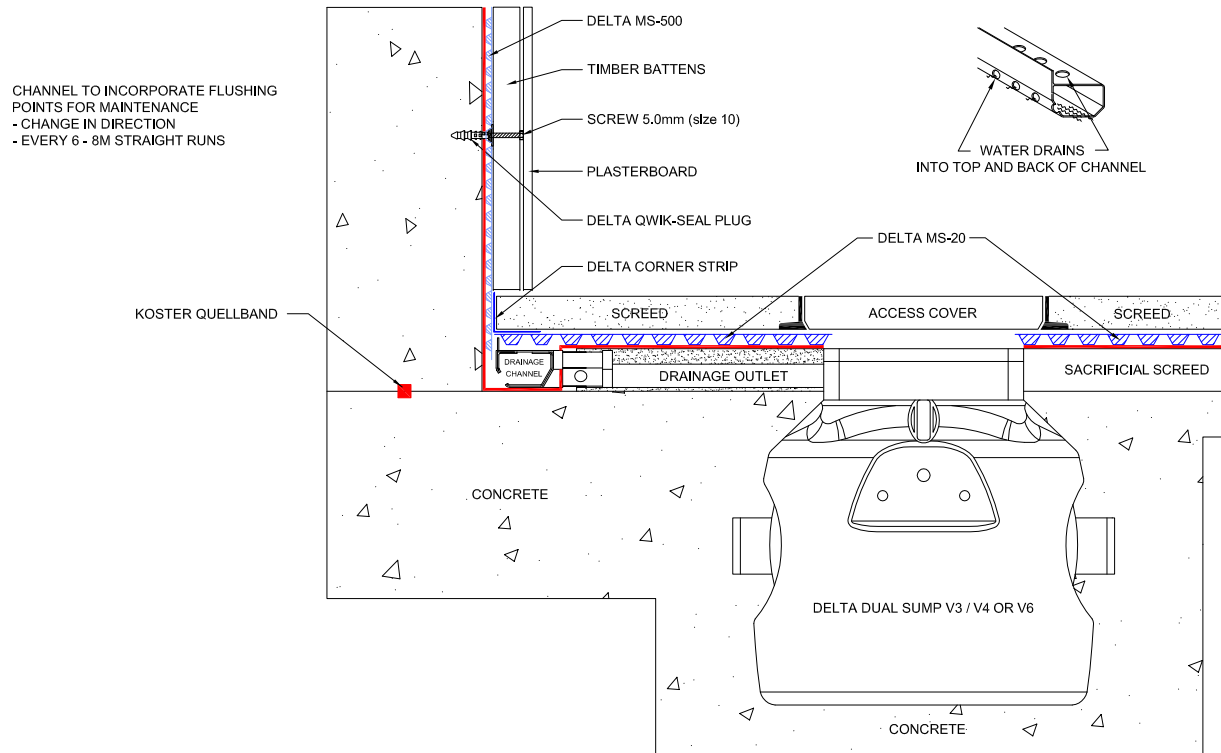
|                  |          |
|------------------|----------|
| Mercury DGO 50   | DMS T005 |
| Mercury DGO 75   | DMS T006 |
| Mercury DGO 100  | DMS T007 |
| Mercury DGO 150  | DMS T008 |
| Extension Turret | DMS T010 |



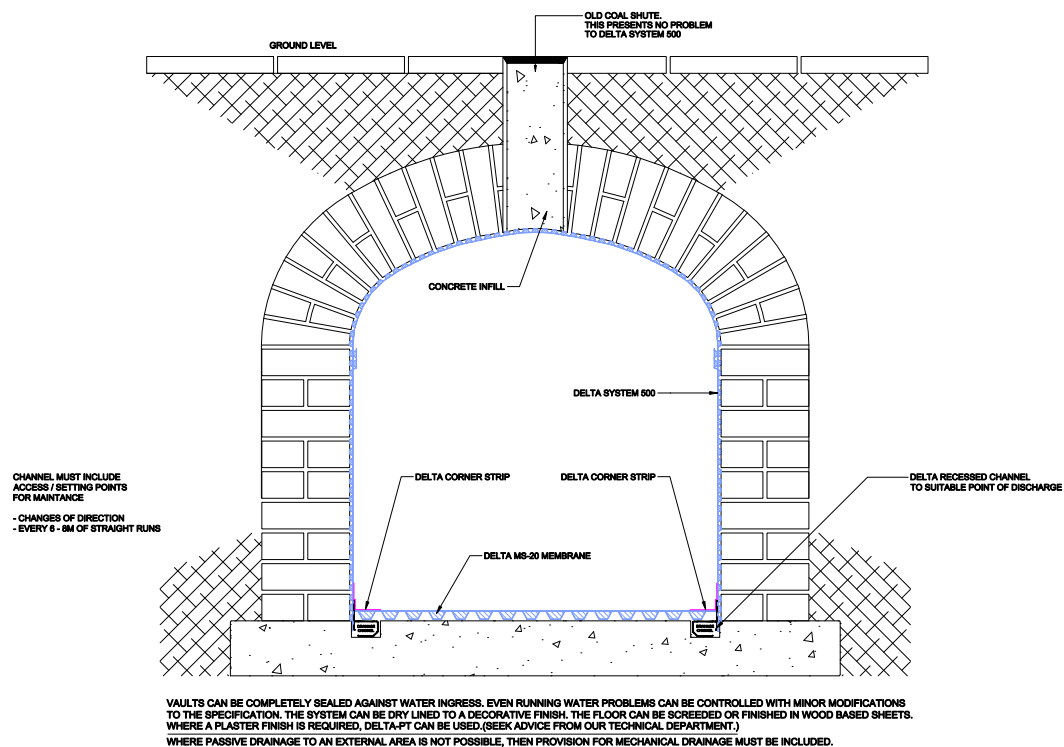
# TECHNICAL DRAWINGS

## Type C Waterproofing Drainage

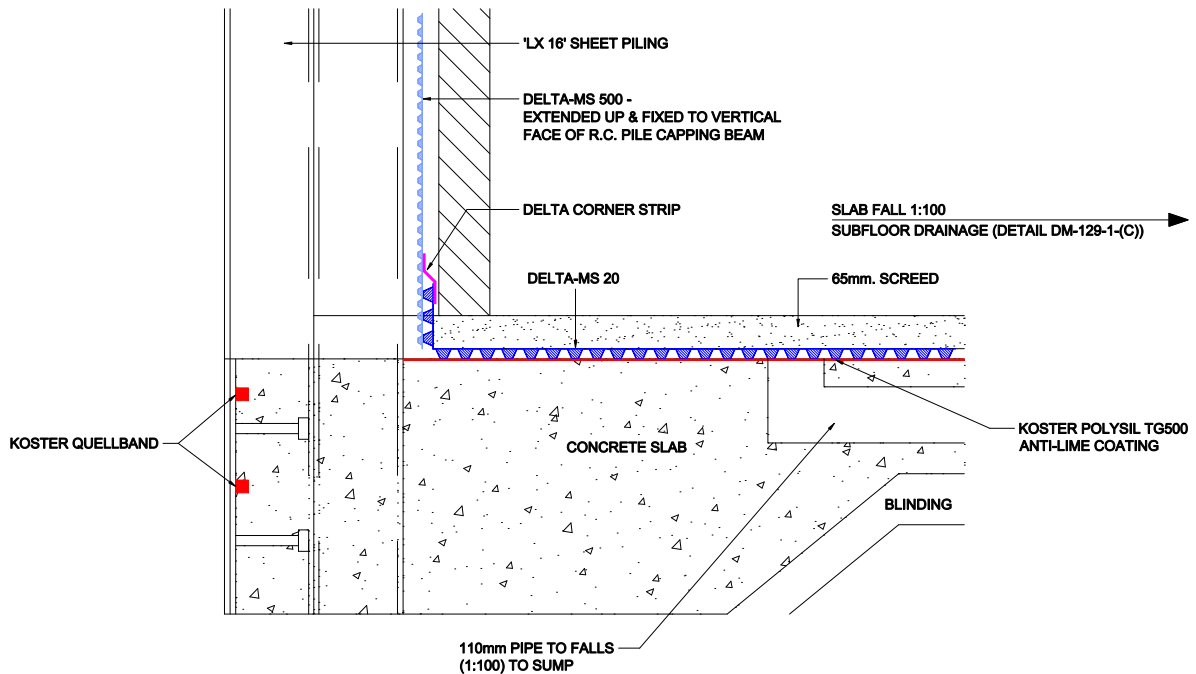
### DRAINAGE CHANNEL IN SCREED INTO SUMP PUMP



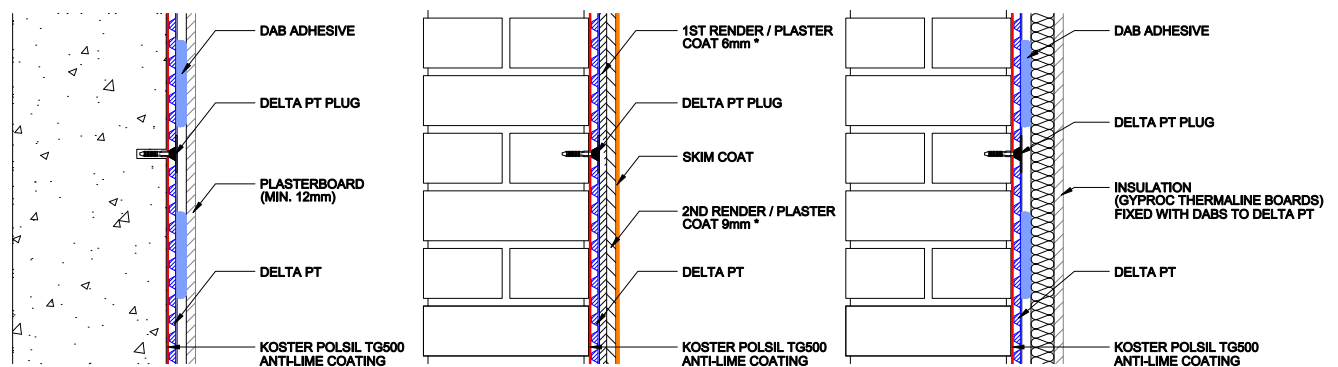
### PAVEMENT VAULT



## MS 500 - SHEET PILED WALLS - MODULAR SYSTEM



## DELTA PT - WALL FINISH OPTIONS

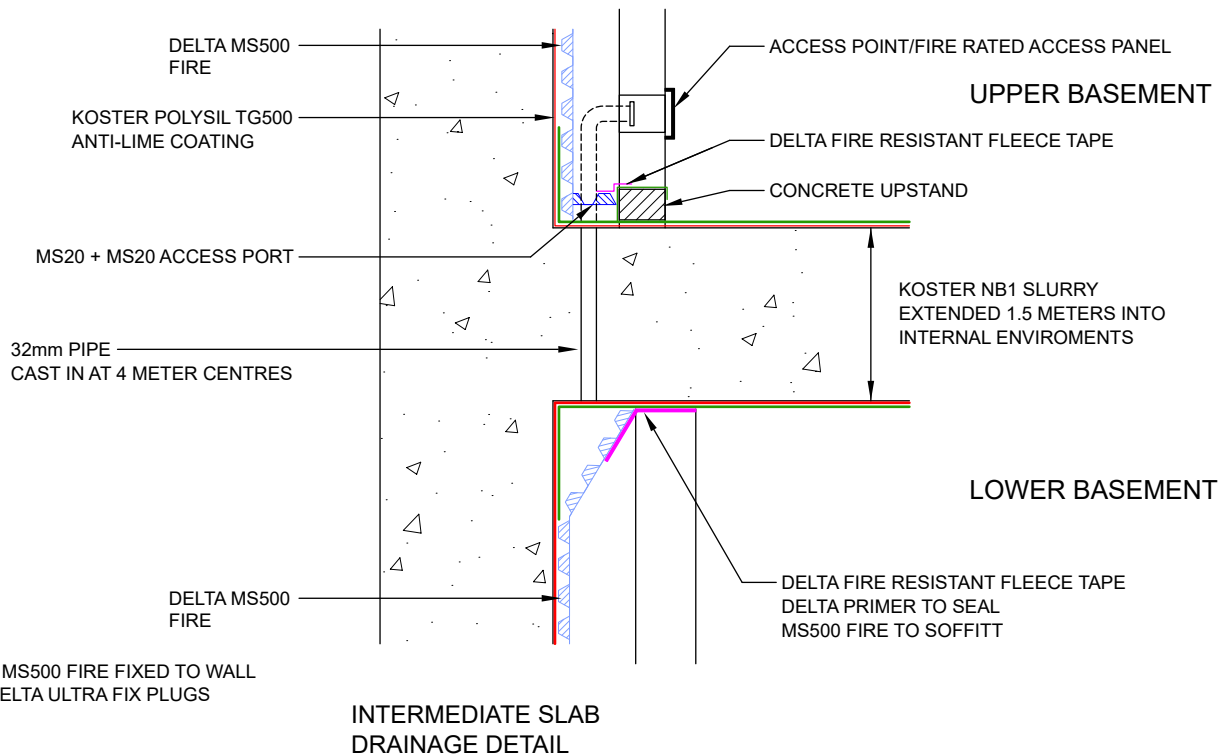


\* RENDER: 1:1:6 CEMENT: LIME: SAND  
 PLASTER: TARMAC WHITEWALL  
 (FOR OTHER PROPRIETARY PLASTERS PLEASE CONTACT DELTA TECHNICAL)

# TECHNICAL DRAWINGS

## Type C Waterproofing Drainage

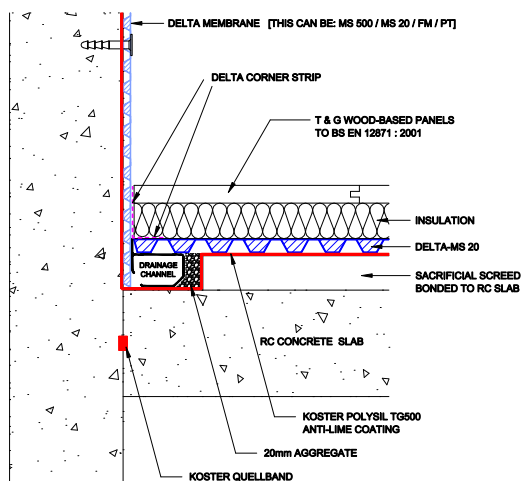
### MID LEVEL BASEMENT - MID FLOOR DRAINAGE OPTION



### SACRIFICIAL SCREED

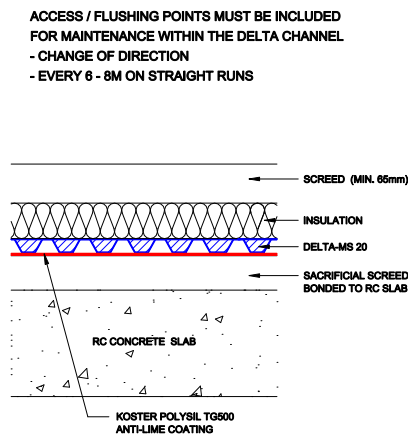
#### OPTION 1

DRAINED PROTECTION WALL AND FLOOR APPLICATION  
- WITH DRAINAGE CHANNEL ON SLAB  
SACRIFICIAL SCREED / T & G FLOOR PANELS



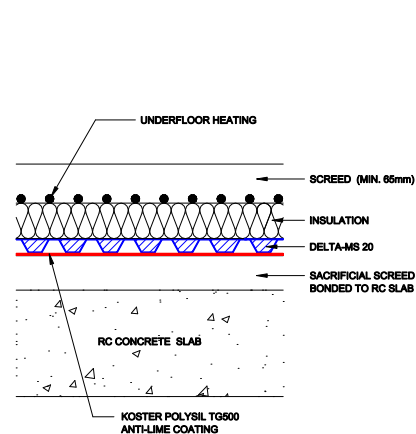
#### OPTION 2

DRAINED PROTECTION WALL AND FLOOR APPLICATION  
- WITH DRAINAGE CHANNEL ON SLAB  
SACRIFICIAL SCREED / SCREED FINISH

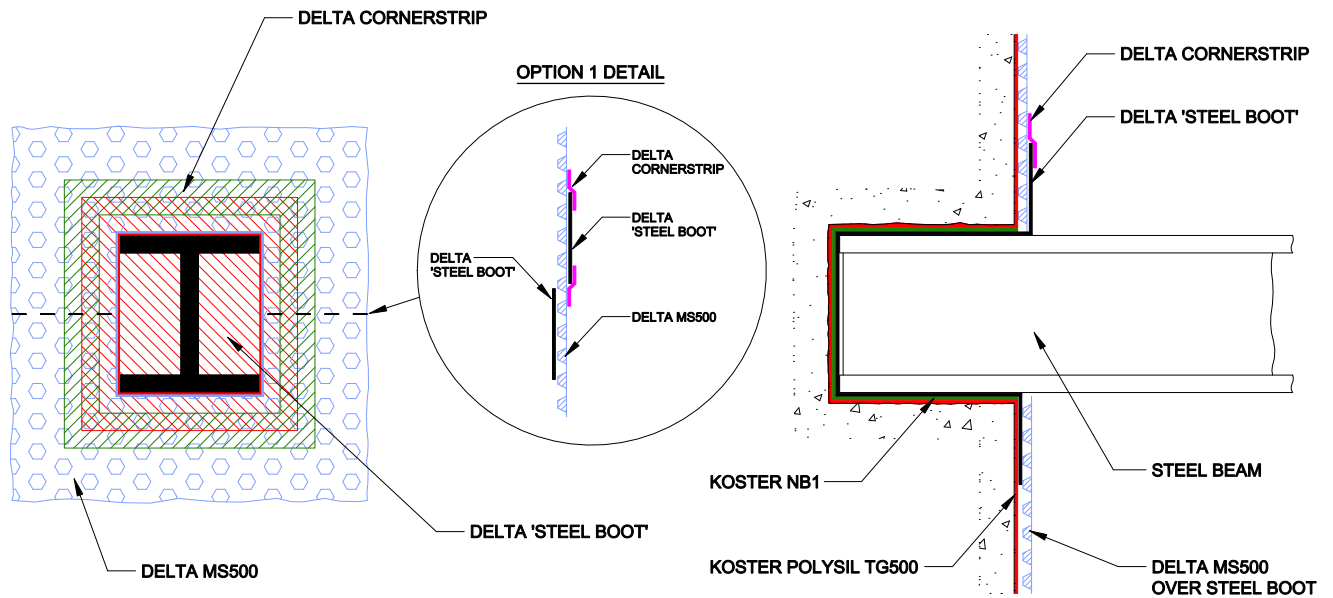


#### OPTION 3

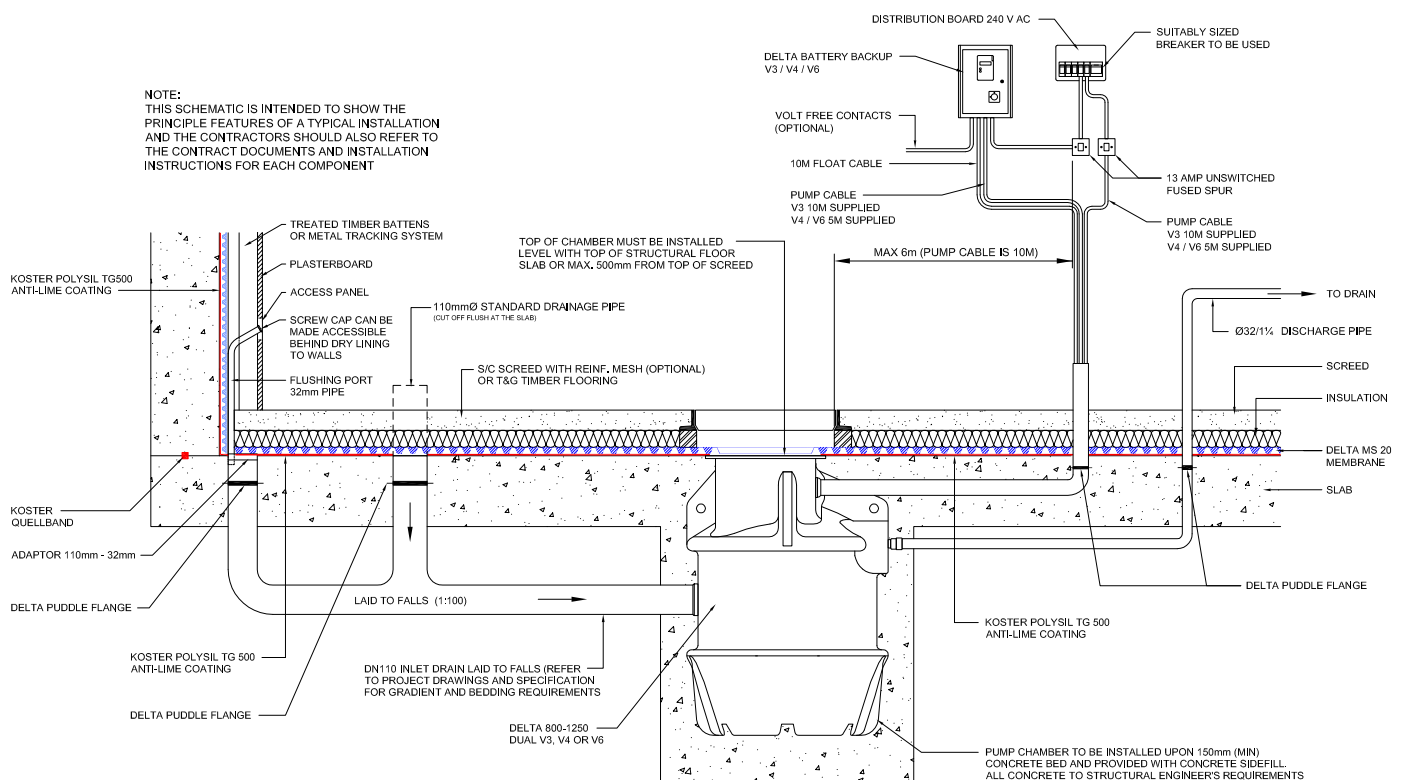
DRAINED PROTECTION WALL AND FLOOR APPLICATION  
- WITH DRAINAGE CHANNEL ON SLAB  
SACRIFICIAL SCREED / SCREED WITH UNDERFLOOR HEATING



## DELTA MS 500 / DELTA BOOT TO STEEL BEAM END



## COMPLETE MODULAR SET UP DETAIL / + DELTA BATTERY BACK UP



**HEAD OFFICE**

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01992 523 523 | [info@deltamembranes.com](mailto:info@deltamembranes.com) | [www.deltamembranes.com](http://www.deltamembranes.com)

# CONSTRUCTION MANAGEMENT PLAN

CMP Environmental and Traffic Management

**162 Gladesmore Road, Tottenham, London, N15 6TH**

**Planning Consent HGY/2024/1290**

Erection of single storey ground floor rear extension;  
part first floor extension; erection of Type 3 roof  
extension; front porch, and basement excavation



[www.amensons.com](http://www.amensons.com)

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## Document Control

| Authorisation Record |        |                    |                                     |          |
|----------------------|--------|--------------------|-------------------------------------|----------|
|                      | Name   | Role               | Signature & Date                    |          |
| Prepared by:         | SGP    | Principle Designer |                                     |          |
| Reviewed By          | MA     | Project Manager    |                                     |          |
|                      |        |                    |                                     |          |
|                      |        |                    |                                     |          |
| Brief Change History |        |                    |                                     |          |
| Version              | Status | Date               | Summary of changes and contributors | Approver |
| 0.1                  | Draft  | 06/05              | Initial Draft                       | SGP      |
|                      |        |                    |                                     |          |
|                      |        |                    |                                     |          |

## Project Team Details and Organisation

|                   |                                        |
|-------------------|----------------------------------------|
| Development Name: | 162 Gladesmore Road                    |
| Site address:     | 162 Gladesmore Road, Tottenham, London |
| Site postcode:    | N15 6TH                                |

|                                  |                 |
|----------------------------------|-----------------|
| Construction Project Manager:    | Mr Yoel Deutsch |
| Phone number:                    | 07875834647     |
| Email:                           |                 |
| Logistics provider contact name: | Yoel            |
| Phone number:                    | 07875834647     |
| Email:                           |                 |

|                         |            |            |
|-------------------------|------------|------------|
| CMP Produced by:        |            |            |
| Name                    | Signature  | Date       |
| Amensons                | Susanne P. | 06/05/2026 |
| CMP Accreditation date: |            |            |
| CMP Reviewed by:        |            |            |
| Name                    | Signature  | Date       |
|                         |            |            |
| CMP Accreditation Date: |            |            |

|                                      |                  |
|--------------------------------------|------------------|
| Site contact details (in hours):     | Yoel 07875834647 |
| Site contact details (out of hours): | Yoel 07875834647 |

## **General Notes and Policy Context**

This Construction Management Plan is produced for submission to the BOROUGH OF HARINGEY Planning Department for planning application only and should not be used for any other purposes, e.g. Party Wall Awards.

Full Building Regulation Approval should be obtained prior to the commencement of works on site, and any works carried out prior to this are undertaken at the Client's own risk.

The works are to be carried out to the approval and satisfaction of the Building Control Officer, to accepted good building practice and with full compliance and in accordance with all relevant British Standards and Codes of Practice.

### **NATIONAL POLICY**

#### **National Planning Policy Framework (NPPF), 2021**

The NPPF was revised on 20 July 2021 and sets out the government's planning policies for England and how these are expected to be applied. This revised Framework replaces the previous National Planning Policy Framework published in March 2012, revised in July 2018 and updated in February 2019, which advocated a 'presumption in favour of sustainable development', which requires local authorities, in their Local Plans to positively seek opportunities to meet the development needs in their area; and meet objectively assessed needs, having sufficient flexibility to adapt to rapid change. The NPPF is also a 'material consideration' in determining planning applications.

### **REGIONAL POLICY**

#### ***The London Plan* (2021)**

The London Plan encourages travel via sustainable modes of transport and looks to encourage freight movements via major transport routes. The London Plan seeks to promote the uptake of the Fleet Operators Recognition Scheme (FORS) as well as innovative freight solutions that minimise congestion, maximise safety and minimise the impact of construction. The London Plan seeks to promote sustainable construction principals to reduce emissions.

#### ***The Mayor's Vision Zero***

The Mayor, TfL and the Metropolitan Police Service have published London's first Vision Zero action plan, which sets out bold and ambitious plans to eliminate deaths and serious injuries from London's transport network. The Mayor's Vision Zero "aims to eliminate all deaths and serious injuries on London's transport system".

**Policy T4:** Assessing and Mitigating Transport Impacts; current and planned transport access, capacity and connectivity. Development proposals should not increase road danger.

**Policy T7:** Deliveries, Servicing and Construction, which call attention to that safe, clean and efficient deliveries and servicing for developments and requires Construction Logistics Plans and D&S Plans.

**Policy D14:** sets out requirements to reduce, manage and mitigate noise. LPP D14 also seeks to separate noise generating uses from housing or ensure that there is appropriate mitigation where this is not possible, and minimise noise from development and to improve health and quality of life.

## **HARINGEY LOCAL POLICY**

### **LB Haringey Local Plan (Strategic Policies and Development Management, 2017)**

(formerly the Core Strategy) March 2013 at the time of writing the development plan for the borough remains the 2013 Strategic Policies and Consolidated with alterations since 2017.

**SP7: Transport Delivering Regeneration and Access**

In line with London Plan policies, the Local Implementation Plan and the Mayor's Transport Strategy, the Council will work with its partners to promote key infrastructure proposals to support Haringey's regeneration and local/strategic access to London, employment areas and local services.

#### ***Policy DM1 Movement***

States development should minimise disruption for local communities through effective management, including through optimisation of collection and delivery timings.

#### ***Development Management Local Plan Policies (DPD 2017)***

This document contains the development policies that elaborate on the Core Strategy. It will be used by Haringey Council to determine planning applications, together with other guidance documents.

#### ***Area Action Plans***

These documents allocate sites and provide specific planning policy and guidance for areas in the Borough where significant regeneration or investment needs to be managed. The Area Action Plans address the specific challenges of the identified areas by setting out the Council's plans and proposals for land use, physical development and environmental improvements in the areas.

in compliance with:

Policies T4, T7 and D14 of the London Plan 2021

Policy SP0 of the Haringey Local Plan 2017

Policy DM1 of the Development Management DPD 2017

The Control of Pollution Act 1974

## **1. INTRODUCTION**

Amensons Ltd have been appointed by Eade Planning Ltd to produce a Construction Management Plan to discharge the planning condition 6 of planning application HGY/2024/1290 for the development at 162 Gladesmore Road, Tottenham, London, N15 6TH.

This document includes specifics and an overview to Demolishing and Construction Method and Management Plan including Traffic Management on and around the development. Enabling third parties to understand the nature of the works and the various construction activities associated with the development.

Generic statements herein are to be further developed into plans, procedures and detailed method statements as the project develops. This Plan will be used as the background for the detailed construction method and risk assessments and will be included in all specialist trade contractor portions of the works. The approved details will be implemented and retained during the demolition and construction period.

This construction Management Plan (CMP) is to be used to manage the work of the Contractor on site. CMP is a live document that will be updated by the construction/site manager, once appointed, to include relevant information and address any issues that may have been identified through consultation with local residents as the project progresses.

DETAILS PURSUANT TO THIS APPLICATION SEEKS TO DISCHARGE: Condition 6:

“Notwithstanding the submitted details and prior to commencement of the development hereby approved a Construction Management Plan shall be submitted to and approved in writing by the Local Planning Authority, detailing the programme of works and providing details in respect of the construction traffic movements, material and plant storage areas, details of necessary suspended car parking spaces, details of conveyor and gantry to transfer material over the footway. The approved details thereafter shall be implemented throughout the project period.

Reasons: To ensure there are no adverse impacts on the free flow of traffic on local roads and to safeguard the amenities of the area consistent with Policies T4, T7 and D14 of the London Plan 2021, Policies SP0 of the Haringey Local Plan 2017 and with Policy DM1 of The Development Management DPD 2017”

## **1.1 Planning reference number**

Application number HGY/2024/1290.

## **1.2 Site address**

The site is located on 162 Gladesmore Road, Tottenham, London, N15 6TH.

## **1.3 Project Details and Overview**

The proposal includes the erection of a single storey ground floor rear extension with a basement below, a part first floor extension, a Type 3 loft/roof extension, and a new front porch. The rear extension will have a flat roof with a skylight. The roof extension will have a pitched finish to match the existing. External materials shall match the existing building precisely in colour, size, shape and texture in accordance with Planning Condition 3.

External materials will match the existing house connecting the matching brickwork with a flat roof.

The proposed development results in a multi-storey dwelling extending from basement level to loft floor, with rooms including bedrooms, bathrooms, kitchen, dining, living, and ancillary spaces across all floors.

## **1.4 Site Description and Context**

The application site is one residential property, composed of a ground floor, first floor and loft space. The property is located on Gladesmore Road. The area is characterised by residential properties and the defined area outlined in the House Extension in South Tottenham SPD (2013).

No underground infrastructures are present beneath/close to the site. The site is located within Good public transports of PTAL 4 and close to Stamford Hill and South Tottenham Stations. The site is directly adjacent to Gladesmore Community School on Crowland Road.

The site is not in a Conservation Area, and it does not situate within the vicinity of any Listed Building.



location plan 1:1250

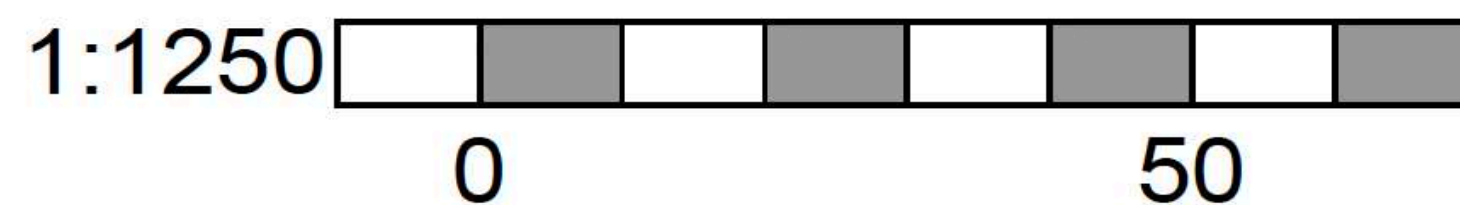
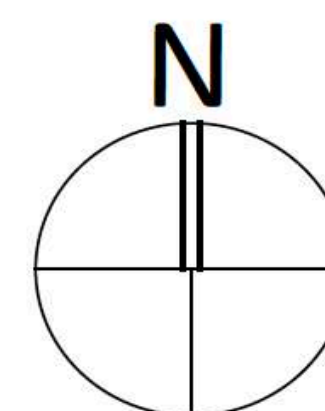


Figure 1- SITE BLOCK PLAN



Figure 2- AERIAL VIEW

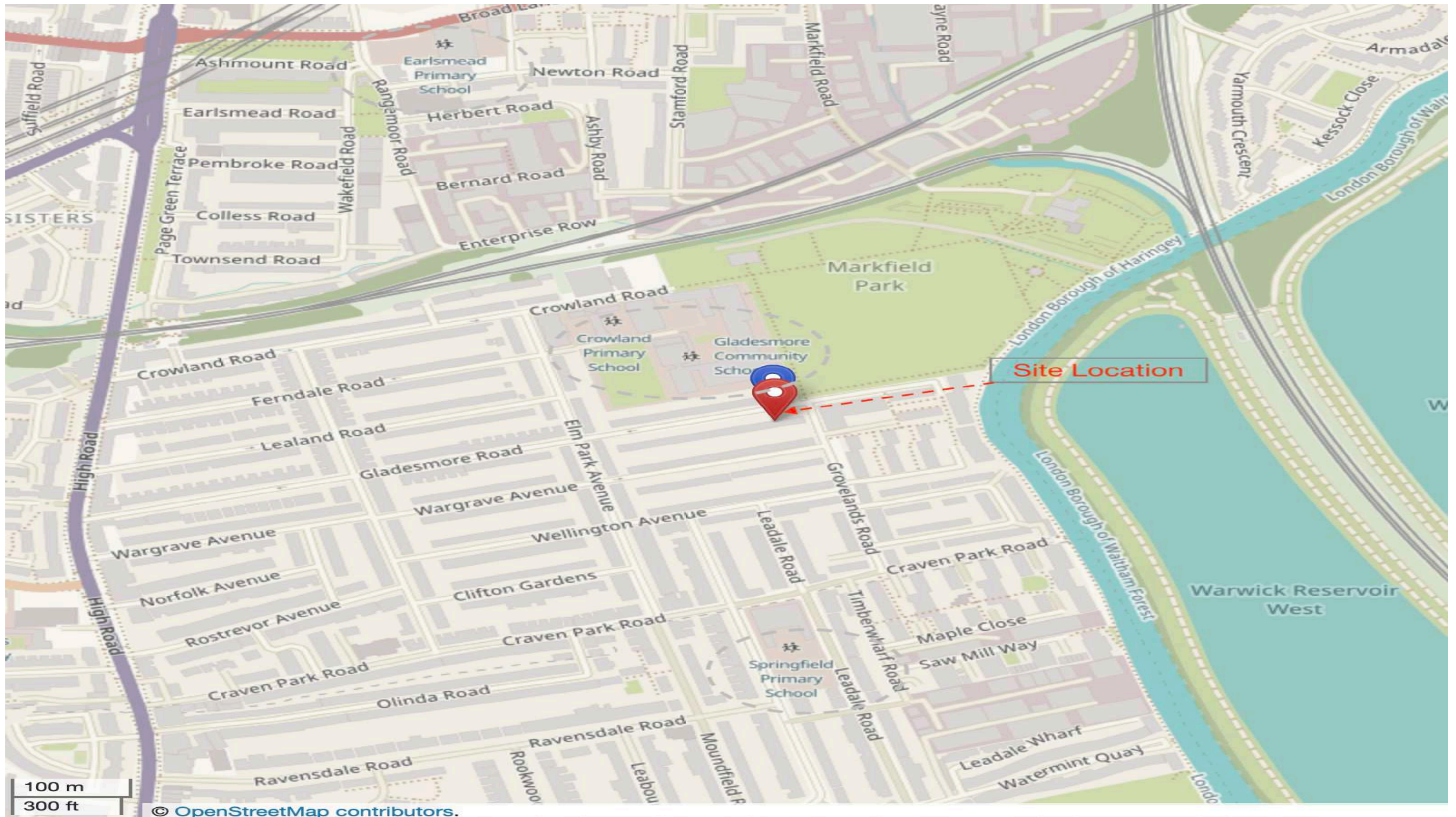


Figure 3 - Regional LOCATION & SENSITIVE RECEPTORS

## **2. CONSTRUCTION MANAGEMENT**

The following sections outline the key elements for consideration. This document demonstrates our commitment to manage, control and where possible mitigate our impact on the local community of Haringey N15 6TH and its wider infrastructure. Many of the issues identified will be further developed and dealt with in the contractor's detailed site-based Construction Management Plan. Method statements will be prepared and agreed for all major site operations in advance of the relevant works commencing.

### **2.1 SOIL INVESTIGATION INFORMATION**

Amensons Structural Engineering has been involved in a number of basement development projects in London and has thus had experience with the London Clay and the area.

Based on the Basement Impact Assessment, the soil investigation reveals the following key details: Geology: The site is primarily underlain by the London Clay Formation, consisting of clay, silt, and sand. Borehole data indicates stiff clay extending to a depth of approximately 10.7m (35ft), followed by a layer of solid mudstone. The water table is deep, identified at approximately 12.8m (42ft). Because the clay and mudstone have low permeability, groundwater levels are expected to remain stable. The stiff clays on-site have a typical safe bearing capacity ranging between 150–300 kN/m<sup>2</sup>. The report notes a risk of ground heave (up to 12mm at the center) due to the unloading of London Clay during excavation, though impact on nearby structures is predicted to be negligible.

### **2.2 HYDROGEOLOGY REVIEW**

The hydrogeology review for 162 Gladesmore Road indicates a low risk of impact on the local water environment: Borehole data shows the water table is approximately 12.8m deep, which is significantly below the proposed basement excavation depth. The site sits on London Clay, which has very low permeability. This means the basement is unlikely to obstruct significant groundwater flows or cause "damming" effects for neighboring properties. While the site is within a secondary aquifer zone, the depth of the water table means no dewatering is required during construction. The site is in a low-probability flood zone (Zone 1) for surface water and rivers. However, it is noted as being within a reservoir flood risk zone, though the likelihood of such an event is considered extremely low.

A Waterproofing Design Specialist will attend site, undertake site investigations, produce reports and manage documentation in relation to the construction stage and structural design, ensuring at all stages that sufficient protection is designed into the project by the architect and the structural Eng. Getting the design correct prior to freezing design for build. Once the basement slab is complete, this system will be installed as per the architectural layouts and manufacturers technical specification. DELTA internal waterproofing cavity membrane suggested at planning design stage and Appendix B provides details and design philosophy on Delta Membranes Cavity Drain Waterproofing Type C Systems by the manufacturer data sheets.

## **2.3 Drainage**

New building is to be erected which may increase the amount of rainwater runoff. The additional hard standing area to be drained is, however, low. Providing sustainable drainage has been considered, however the scope for doing so is somewhat limited owing to the clay soil characteristics precluding the use of soakaways.

A Non-Return Valve (NRV) or Backwater Valve will be incorporated into the drainage design to be installed in horizontal sewage pipes within the building or in manholes/access chambers outside the building to prevent surface water back-flowing from a main public surface water into the drainage system which can result in significant flooding and consequential damage.

The surface water drainage plan for the development focuses on maintaining the existing flow patterns to ensure no negative impact on the surrounding area: The proposal will not materially change the volume or peak run-off of surface water compared to the existing site (p. 22).

All surface water will continue to be discharged via the existing drainage connections. The proportion of hard-standing/paved areas will remain unchanged, as the new basement simply replaces the footprint of the existing paved area (p. 22). The report confirms there will be no change to the quality of surface water received by adjacent properties or downstream watercourses (p. 23).

## **3. METHODOLOGY STATEMENT AND THE SEQUENCES OF WORKS**

The following sections outline the key elements for consideration. This document demonstrates our commitment to manage, control and provide details of the excavation, temporary works and construction techniques, including details of the potential impact of the subterranean development on the existing and neighbouring structures and where possible mitigate our impact on the local community of Gladesmore Road and its infrastructure. Many of the issues identified will be further developed and dealt with in the contractor's detailed site-based Construction Management Plan.

Method statements will be prepared and agreed for all major site operations in advance of the relevant works commencing. This report includes a suggested sequence of construction for the basement works and suggested temporary propping details to demonstrate how the works could be constructed. The final sequence of construction and temporary works will be the responsibility of the eventual main contractor and construction stage structural engineer, but these details will be reviewed and commented upon by qualified chartered engineer.

In brief, the structural works, below ground floor level are the excavation and extension of the basement under proposed ground floor extension area. The proposal will include exposing the rear ground floor's walls, including alterations to rear fenestration for the basement and ground

floor. Extension of the basement to the rear below proposed ground floor's extension and creating new reinforced walls to the rear and both sides along proposed basement area.

Structural works above ground level are the rearrangement of ground floor and rear extension, new staircases and a second floor including loft space over existing footprint with a main roof.

A review of how best to construct the basement extension was undertaken and it was concluded that the most efficient form of construction would be to install the basement perimeter walls by underpinning the party walls and installing the RC front and rear retaining walls in a 1.2m wide underpinning sequence and backfilling after each bay is installed.

With all walls installed and forming a ridged RC box, then undertake excavation to install the horizontal propping to all sides, then excavate to the basement slab formation level and install the RC basement slab. The RC walls and floor slabs will then be connected to the existing below ground walls with movement connections provided at design / construction stages.

The first phase of excavation will be carried out to the perimeter of newly extended ground floor and side walls (basement' RC walls). Rear GF wall and its foundation will be secured.

Underpins will be carried out at identical excavation on the rear and both side extensions under extended ground floor. Two 1m wide trenches can be dug on external side of the basement and party wall. L-shaped RC walls are to be cast, and trench is to be supported.

This process will be repeated for the retaining walls to the pavements both side in adjacent gridlines. A temporary support will be installed in the same manner and may be at slightly lower level so it will not be in the way of the ground floor. When this is complete it will mean that all four walls are rigidly propped apart at ground level and secured below the new basement floor level by the outstand toe on the new reinforced concrete retaining wall.

As part of the design and to control ground movement, a scheme will be agreed as part of the party wall agreements to install a movement monitoring system to monitor movement and vibration during the basement works.

Upwards extension and forming the second floor and space loft will then commit after securing RC basement and ground floor walls including steelworks according to the structural engineer design and temporarily support in place. Support design must account for vertical and lateral loads as well as possible movements. Once the main roof completed and structure secured, all internal and external finishes will commence. This includes the waterproofing of the basement and the flat roof finishes. Scaffolding will be required, and all potential highway approval and licensing will be attained by the contractor according to the scaffold and site set up design.

Appendix A shows Indicative sequence of works referencing to the proposal drawings.

Further detailed structural engineering design and site investigation will be used by the contractor for demolishing and construction of the proposed development.

## 4. PROGRAMME OF WORKS

It is estimated that the duration of works described will be 20 weeks. The key elements of the development with regards to the potential impact on the surrounding area are:

- Site Investigation: numbers of boreholes will be undertaken and existing structure exposed.
- Installation of Temporary Supports, scaffold and structural stability. Licensing and Hoarding.
- Strip out and Demolishing of the existing rear wall opening and Basement Excavation.
- Foundation works, Underpinning and GF flat roof over extended area including new RC walls and Floor to the formed basement.
- First Floor extension.
- Second floor, loft and roof construction. Provision of Main Services Connections.
- Waterproofing to the basement and roof.
- External Finishes including new fenestration.
- Internal decoration and finishes.

### 4.1 Hours of construction work

#### **Delivery Hours Outside AM/PM Rush Hours**

##### **Hours Of Works**

Monday to Friday 08:00-18:00 hours

Saturdays 08:00-13:00 hours

Sundays and Public Holidays **No Works and Deliveries**

##### **Delivery Hours**

**Monday to Friday 09:30- 14:30 hours**

**Saturdays 08:00-13:00 hours**

It is proposed that the majority of deliveries will be scheduled outside rush hour/ school run for example 9.30-12.30 am to avoid congestion. Any deliveries outside of this time will be pre-arranged with the neighbours with 12 hours' notice [letters through post boxes & noticeboard]. Any requests to carry out such works outside of these working hours will be directed to the Local Authority at least seven days in advance, together with details of the works (including the expected noise levels) and why these cannot be carried out during the normal working hours.

### 4.2 Programme Sequences

#### **Enabling works**

Site set ups and works enabling construction works to commence:

- Ensure all services are located and Capped off / Disconnected as required prior to commencing any building works.
- Existing drainage to be diverted if required.
- Erect temporary hoarding to the site boundaries for safekeeping and environmental

- protection. Trees Protection if required and the site clearance including strip out.
- Demolition of the existing structures and temporary structural stability.
  - Any demolishing methodology and design together with the temporary propping, will be designed by the structural engineer and verified by the Chartered Structural Engineer.

### **Bulk Demolishing and Excavation**

Once the Structural support has been designed and placed the bulk excavation and demolishing will commence. Existing rear terrace under GF extended area will be excavated and the Ground Floor area within existing structure will be prep, secure and enclosed to accommodate the storage and welfare units. Rear and Front Garden is also available to use for the site set up.

The skip and loading platform for the takeaways will be placed at front garden within an enclosed space. Muckaway will be transferred via bulk bags to loading platform for wait and load. The site access needs to be amended and made safe as the excavation progresses due to the front garden spacing and only access to the site. Rear garden will stay open as storage area. Derbies will also be transferred to a skip at front garden then removed by bulk transport. It is to the successful contractor's discretion to finalise appropriate methodology based on site accessibility and resources following structural engineer sequences of foundation works and NO crushing of materials will take place on site. Phase 1 will focused on excavation and mock away. To be read and implement in conjunction with the temporary support design, structural engineer sequences of works, basement assessment and the master project programme.

### **SUBSTRUCTURE**

Substructure are those activities involved in preparing the site for construction such as structural works of underpinning, foundation, basement RC wall & Floors, Waterproofing and the ground floor structural reconfigurations. This includes the removal of material, haulage, tipping, stockpiling and leveling, with no crushing of materials will take place on site, to minimise the impact on the adjacent road and properties. Concrete pouring commences on this stage.

It is necessary and to maintain the stability of adjacent structures, temporary works must be installed to provide support to all retained load-bearing walls to adjacent properties located along the perimeter of the new extension. qualified engineer will provide temporary support.

No works requiring the installation of any temporary works will commence on site without all the necessary drawings, calculations, and method statements in place which have been approved by the Structural Engineer. Existing structure support and scaffolding access at ground level require structural temporarily design that dose not interfere with this work.

Prior to the commencement of the works the basement and ground works contractor will provide detailed RAMS for all aspects of the construction for approval by the engineer.

## **SUPERSTRUCTURE**

Once the Underpinning, RC structure and the foundation for the basement extension completed, masonry and structural steel work of the new ground floor extension will be completed. Basement walls, floors and ceiling will conclude structurally, and finishing will apply. At this stage the existing ground floor as well as garden areas will still be open and safe to use as storage and welfare with skip at front garden within enclosed hoarding as per approval and licensing in place for loading and unloading. Pending Demolishing and construction stage, a full project programme will include site set up arrangements during excavation and muck away and concrete pouring to adjust loading via parking bay and pedestrian suspension and licensing.

[Figure 4 – Drafted Construction Programme – Packages](#)

## [APPENDIX C –LOGISTIC PLANS and TFL TOOL](#)

## **5. Communication**

A dedicated member of the contractor's team will be given the role of community liaison. This person will have prior experience in this role. He or she will handle any queries, concerns and complaints from neighbors and maintain a logbook detailing such enquiries / follow-up actions.

The community liaison will discuss the works program with those neighbors directly adjoining the site to ensure they are aware of the works involved and to address any concerns beforehand.

Contact details will be displayed on the hoarding surrounding the site and distributed to adjoining neighbors as form of notices to start and any major works such as bulk removal.

Demolition and construction stages notices to the neighbors including Bulk Delivery and loading Notices 72 hours in advance. Pedestrians may require redirections during loading and unloading with adequate notices and signage and traffic marshal present during wait and load.

Notice for H&S and traffic management will be carried by qualified traffic marshal.



## CONSTRUCTION LOGISTICS PLANNING TOOL (OUTPUTS)

Sheet 1 of 2

### CONSTRUCTION PROGRAMME OVERVIEW

| Construction phase                 | Start    | End      |
|------------------------------------|----------|----------|
| Site Setup                         | Jul-2026 | Jul-2026 |
| Enabling and Demolishing           | Jul-2026 | Jul-2026 |
| Structural                         | Aug-2026 | Sep-2026 |
| Super-structure                    | Sep-2026 | Nov-2026 |
| External                           | Nov-2026 | Nov-2026 |
| Fit-out, testing and commissioning | Oct-2026 | Nov-2026 |

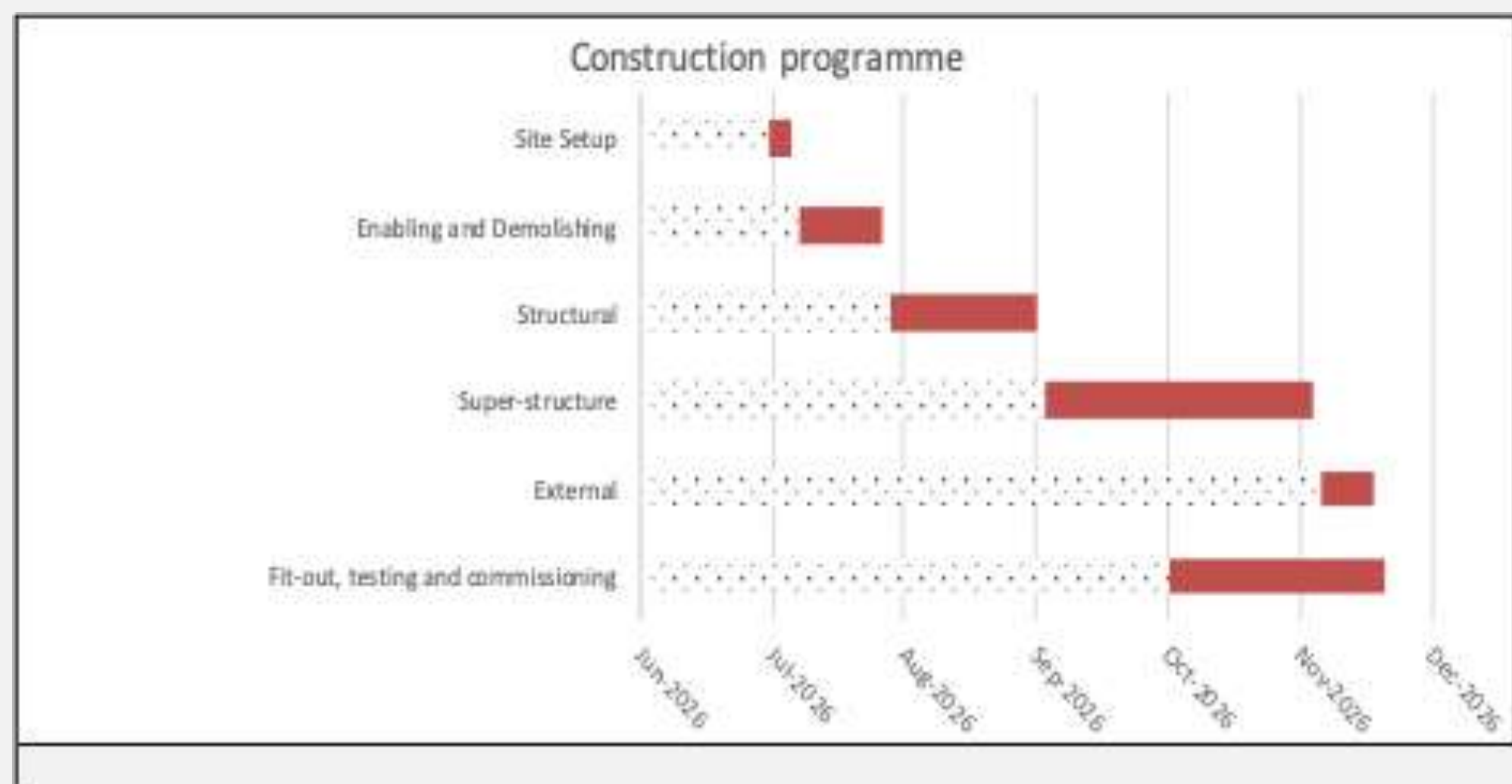


Figure 4– DRAFTED CONSTRUCTION PROGRAMME – TFL TOOL

## **6. Site Establishment and Access**

The Site Setup has been developed and arranged with the aim of minimising disruption to the local area and to reduce the impact of the project on the local environment. The Hoarding will be used to enclose the site within the site boundaries and to contain dusts. Loading & Unloading area and a skip will be placed at the front garden and within the boundaries. As the works progress lay down areas will be made available for material storage at the rear. Material storage will be strictly controlled and coordinated to ensure that it interfaces with the programme requirements and to reduce vehicular standing.

At early start of project, main building and existing facilities will be used to set up the site accommodation and welfare during work enabling phase. As the site progress, these will be located at the rear of the site. Existing ground and first floors remain unchanged. A temporary cycle racks will be provided at the far end of the garden to encourage more employees to cycle to work. Plant will be stored according to its size and in secure locked containers or compound or otherwise made secure and immobile. Deliveries will be unloaded either directly to a loading zone and transferred to the designated storage area.

During construction, the site set-up (Storage and Welfare units) will stay on the ground floor and rear garden area and within building. The sub-contractors will use the internal existing facilities. If necessary, wheel washers will be stationed at the entrance to prevent dust and mud being transferred onto the adjacent roads. A road sweeper will also visit on a daily basis to any mud that is transferred onto the road network. Once the structure formed and superstructure begins the skip, Loading Bay and welfare units can be rearranged within the boundaries to minimized disturbance. Concert pouring commence once the site is clear of muck ways. Skip will be replaced after this stage.

Rear garden accessible through the building and side access gate. 2 number of parking bay will be required during oversized loading and unloading period including takeaway and concert pouring. The parking bay may also be used to hold a skip for construction duration afterwards. Applicable licensing and application will be submitted by the contractor and for the duration.

No Boundary Hoarding behind visibly zone will be erected. As per site layout the hoarding only place as indicated and No additional traffic management is necessary as the hoarding will not affect any visibility zones from the public highway. Access to the site is directly from Gladesmore Road. No dedicated vehicle access into the site is available. There is pedestrian access to the property and kerbside loading/unloading on Gladesmore Road, managed by a qualified Traffic Marshal. Access from 162 Gladesmore Road via Gladesmore Road through Groveland Road as the Gladesmore Road is a one-way access lane.

*Figure 5* below shows Site Arrangements.

*Figure 6* shows Site Access Plans for pedestrians and vehicles.

*Appendix C* – Logistics Plans including Regional Access Plan and Routes.

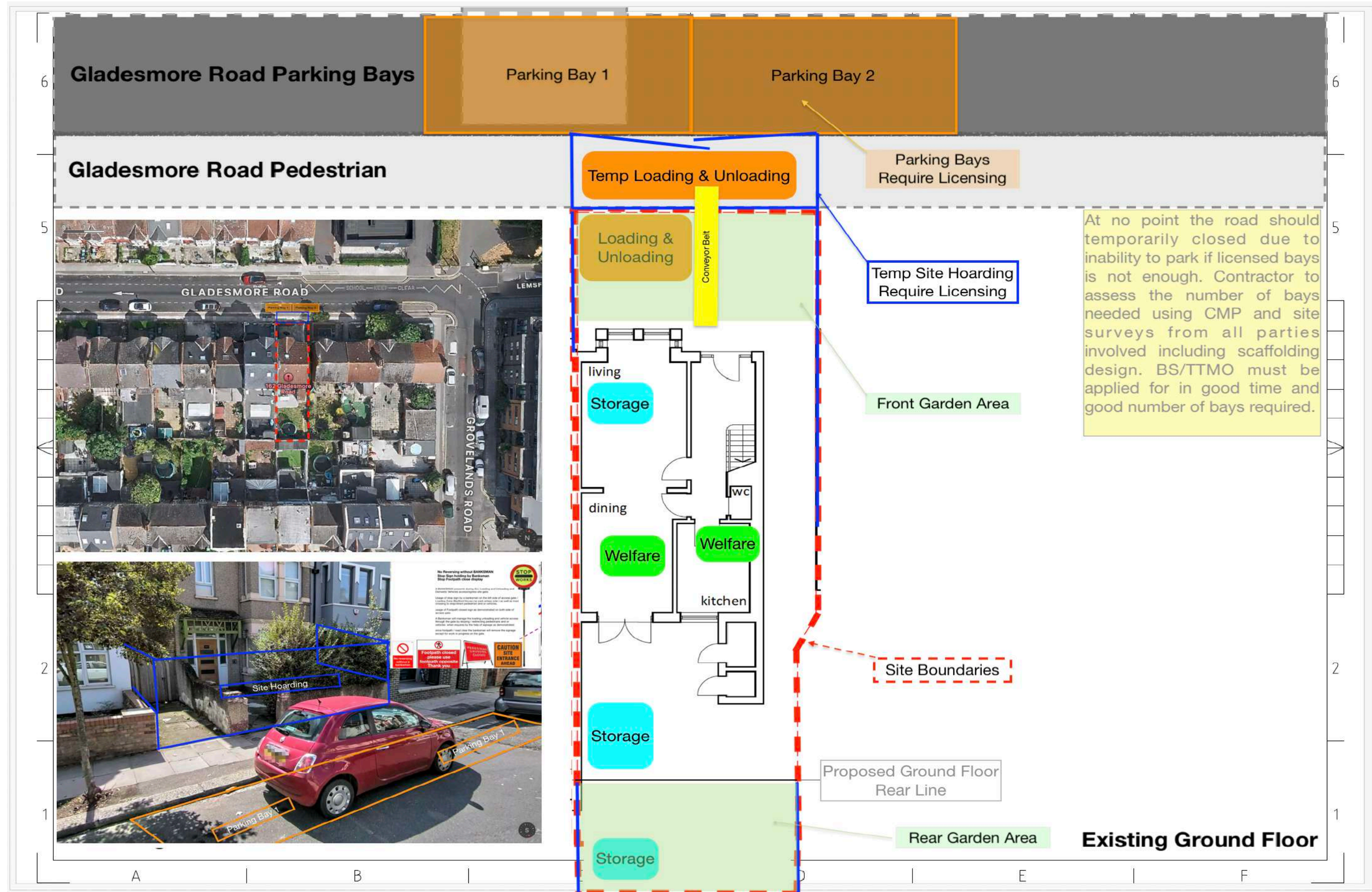


Figure 5- SITE ARRANGEMENTS



Figure 6a- SITE ACCESS ROUTE



## 7. TRAFFIC MANAGEMENT PLAN

The application site is located at 162 Gladesmore Road, Tottenham, London, N15 6TH. The site falls within the BOROUGH OF HARINGEY. Gladesmore Road is the only access to site during the Demolishing and Construction works. Access is a narrow road with One-Way traffic and parking on both sides. Access via Wargrave Avenue and Grovelands Road and Egress via Gladesmore Road only. Site Located in a School zone and the road must be kept clear at all times.

All roads local to the site are within the London Lorry Control Area. The wider regional route is proposed to be via the A406 or A10, accessing the local road network via the main classified routes and Gladesmore Road from east via Grovelands Road for site access.

Considering the route in further detail, the A10 Connecting to A406 and M25 provides an orbital route around London, including in this location to the north and south of London.

There is a school within the site proximity which was considered to arrange bulk deliveries and pickups outside school hours, to favour pedestrians and cyclists at school start and finish times.

### 7.1 Haul Routes – Loading and Unloading

Planning the route will restrict or lessen any disturbance to the neighbouring residents. As a general rule, all vehicles will enter and leave the site continuous direction from Gladesmore Road. Vehicles shall be managed by a Traffic Marshal for all site access and egress movements.

The site access road is a single vehicle access due to parking bays both side of the road therefore contractors will ensure, scheduled deliveries with time gaps only to avoid congestion and hold up on main road. We also encourage the use of small white vans up to 3.5T for day-to-day deliveries and pickups. All visitors must be informed and give way to the local traffic.

At no point the road should temporarily closed due to inability to park if licensed bays is not enough. Contractor to assess the number of bays needed using CMP and site surveys from all parties involved including scaffolding design. BS/TTMO must be applied for in good time and good number of bays required.

Bulk items will be scheduled for loading and unloading outside rush hours and school hours. There are no cycle routes that lie on the proposed construction route until the High Road.

We do not anticipate any Highway or Oversailing restriction and requirement except for the use of parking bay at the site's entry and existing building utilisation. Nevertheless, prior starting any type of works Main Contractor will seek permission from the Local Authorities for all required licensing and approval.

The signage will be clearly posted and maintained during the contract period. It will also have the main contractor's name and contact details to help identify it to the relevant site construction traffic and community liaison. This includes parking bay suspension and licensing.

All deliveries to site will be undertaken with full regard paid to:

- Reduction and control of plant movements.
- Reversing vehicles directed by a Competent Person.
- Pedestrian and vehicle directional signage – suitable barriers will be erected when deliveries arrive to prevent pedestrians accessing the unloading area.
- Mobile plant will only be operated by a Competent Person with a Banks Person in attendance to any movements.

## **7.2 Parking - Site Staff and Travel Plan**

All site staff and operatives will be encouraged to use public transport to travel to and from the site, located close to South Tottenham and Stamford Hill Train Stations, Seven Sister Underground Station and High Road Bus Stops.

There will be no onsite parking for site staff and operatives, and it will be made clear to all staff and operatives that the use of adjacent residential streets for parking will not be allowed.

Parking by contractors or visitors in any restricted parking, disabled bays, resident parking or blocking in any resident vehicles, will not be permitted at any time. This will be highlighted in site inductions and any person found breaking these rules will be sent home for the day. Repeat offenders will not be allowed to work on the site for the remainder of the project.

Parking for intermittent and short-term visitors must be accommodated on the local highway network and comply with all appropriate parking restrictions and conditions.

### **Monitoring**

This Traffic Management Plan will be regularly monitored by the contractor at fortnightly intervals [or less, as necessary]. It will take account of any specific street conditions or other deliveries or collections such as refuse collections or other planned deliveries that may affect traffic movement locally.

### **Fire and Emergency Procedures**

Contact names and telephone numbers will be made available in case of 'out of hours' emergencies relating to the site. This information will be displayed on the hoarding. Ref to CDM Package. [Appendix D Fire Safety & Appendix E Risk Assessments](#).

### **Security**

All site personnel will have to sign in on arrival and sign out before leaving the site. This will be incorporated into the Site Rules and included as part of the site induction. The Site hoarding will be regularly inspected to ensure that it remains secure. The access door to the site will be fitted with a combination security lock to only allow access for authorised personnel. The name and contact details of an appropriate member of staff will be provided in case of emergencies.

## 7.3 STRATEGIES TO REDUCE IMPACTS

This section of the CMP sets out the mitigation measures that will be employed during construction to minimise the impact of construction on the local residents, businesses and the local highway network.

The checklist listed in *Figure 7* outlines the various mitigation methods considered, proposed and committed as part of the construction phase of the development. TFL Guided.

|                                                                  | Committed | Proposed | Considered |
|------------------------------------------------------------------|-----------|----------|------------|
| <b>Measures influencing construction vehicles and deliveries</b> |           |          |            |
| Safety and environmental standards and programmes                | ✓         |          |            |
| Adherence to designated routes                                   | ✓         |          |            |
| Delivery scheduling                                              | ✓         |          |            |
| Re-timing for out of peak deliveries                             |           | ✓        |            |
| Re-timing for out of hours deliveries                            |           | ✓        |            |
| Use of holding areas and vehicle call off areas                  |           |          |            |
| Use of logistics and consolidation centres                       |           |          |            |
| <b>Measures to encourage sustainable freight</b>                 |           |          |            |
| Freight by Water                                                 |           |          |            |
| Freight by Rail                                                  |           |          |            |
| <b>Material procurement measures</b>                             |           |          |            |
| DfMA and off-site manufacture                                    |           | ✓        |            |
| Re-use of material on site                                       |           | ✓        |            |
| Smart procurement                                                | ✓         |          |            |
| <b>Other Measures</b>                                            |           |          |            |
| Collaboration amongst other sites in the are                     | ✓         |          |            |
| Implement a staff travel plan                                    | ✓         |          |            |
| Preventing HGV movements during School DO/PU                     | ✓         |          |            |

*Figure 8 - MITIGATION METHODS*

### 7.3.1 Measures Influencing Traffic

The CMP will be regularly monitored by the contractor at fortnightly intervals [or less as necessary]. It will take account of any specific street conditions or other deliveries or collections such as refuse collections or other planned deliveries that may affect traffic movement locally. The appointed Construction Manager will ensure that all vehicles accessing and egressing the site adhere to the agreed strategies highlighted within this CMP.

In order to minimise congestion on local roads and inconvenience to third parties the following principles are proposed:

#### ***Safety and environmental standards and programmes***

- Designated loading areas will be created at the site to enable the safe delivery of materials.

- Deliveries are not to be made outside the site perimeter onto public footpaths or at other locations on the highway, unless safe provision for pedestrians has been made and agreed in advance with the relevant Highways Department.
- Deliveries will only be permitted within the specified working hours set out in this document and within the designated areas mentioned in this document. Any vehicle attempting to deliver outside these hours will be moved on and will only be permitted to return to site within the delivery hours (9:30 – 14:30).
- Vehicles being off-loaded with goods at the site shall switch off their engines to avoid nuisance to the adjacent uses and to prevent dust generation.

#### ***Adherence to designated routes***

- All construction vehicles would adhere to the vehicle routing strategy details.
- The Main Contractor will explore the potential to provide designated lockers / storage areas on the site for tools and equipment in order to make sustainable travel on a daily basis more convenient for staff and operatives.

#### ***Delivery scheduling***

- All deliveries will be booked in advance and managed by the Construction Manager, in liaison with the relevant supplier/construction company, in order to ensure that only one delivery vehicle arrives and/or departs the site at any given time. All deliveries must be booked at least 48 hours in advance with the Construction Manager and made in accordance with the specified working hours outlined in this document. Any deliveries not booked in may be turned away at the Contractor's expense.
- All deliveries will be supported by Banksmen, as appropriate, whilst Traffic Marshals would also be situated at the front of the site to ensure the safe passage of materials to and from the site, without impacting on highway safety and other road users.

#### ***Re-timing for out of peak deliveries***

Contractors will ensure scheduled deliveries with time gaps to avoid congestion and hold up on main road. We also encourage the use of small white vans up to 3.5T for day-to-day L&U.

Bulk items will be scheduled for loading and unloading outside rush hours and school hours. Prior starting any type of works, Main Contractor will seek permission from the Local Authorities for any required licensing if needed.

#### ***Use of holding and vehicle call off areas***

Not necessary to a construction this size thus we have considered any private parking rental.

#### ***Use of logistics and consolidation centers***

Orders can be consolidated at supplier's depo or nearby large construction site.

#### ***Measures to encourage sustainable freight***

Where possible, delivery companies will be encouraged to sign up to TfL's Freight Operators Recognition Scheme (FORS). This is a voluntary industry-led membership scheme which aims to raise the standard of the fleet and freight industry by improving operators' performance with regards to safety, fuel efficiency, economical operation and vehicle emissions.

### **7.3.2 MATERIAL PROCUREMENT MEASURES**

Waste will be managed under the principle of hierarchical waste management priorities which, in order of importance, are as follows: Reduce, Reuse, Recycle and Dispose.

#### ***Re-use of material on site***

Where practical (and in agreement with recommendations from the ground investigation reports), waste resulting from site clearance and demolition will be salvaged. The use of reclaimed aggregate will be encouraged.

#### ***Smart procurement***

- Use of local labor/operatives/suppliers who are more likely to reside within the local area and therefore travel by sustainable modes, as far as reasonably possible.
- Use of local suppliers, as far as reasonably possible, to reduce distance travelled by staff.

### **7.3.3. ADDITIONAL MEASURES**

#### ***Collaboration amongst other sites in the area***

Coordination will take place with other construction sites / businesses if found to be necessary when larger vehicles are required to deliver to site.

#### ***Implement a staff travel plan***

An induction programme for all staff will be provided making them aware of the NO parking space available and the convenient access via sustainable modes. Public transport timetable information will be provided. Car sharing / nearby Site will also be encouraged as a suitable alternative.

There will be a designated secure storage area within the site for contractor's tools to avoid them having to be brought to and from site each day as well as changing areas and lockers.

## 7.4 ESTIMATED VEHICLE MOVEMENTS

Our construction expertise has been applied to develop the estimation of vehicle movements summarised in [Figure 8](#) and [Figure 9](#), whilst the full TfL CLP Tool is attached at [Appendix C](#). There will be an average of 1 delivery per day to the Site. The timing of these will be staggered due to the vehicle booking system in place.

Referencing the vehicle movements associated with previous development on the same scale, it is estimated that, on average, there would be one bulk delivery a week.

- Demolishing Removal would take place on demand for a short period of time, using a scheduling method. Due to small scale basement, we do not anticipate excessive earth works. Upward extension over the existing footprint will not require earthworks.
- Fit out would be managed, with a bulk order from a manufacturer for a weekly delivery within smallest possible vehicle size.
- Again, referencing to our experience, the busiest time during the construction process was 2-days' worth of steelworks and 2-days' worth of concrete pouring on this scale being delivered, which amounted to 2 transport over 2 days. However, with the smaller scale of development proposed for this application, the number of deliveries can be expected to be reduced to one and half day.
- Whilst this is considered to provide the most reliable estimate of vehicle movements, the TfL-CLP-Tool has also been used to estimate vehicle movements associated with each phase, whilst acknowledging that demolition would not form part of the construction programme. All vehicle movements must occur within agreed times, considering the primary function of sensitive receptors in the vicinity (avoiding school drop-off/pick-up).
- Plan deliveries and vehicle movements so that vehicles are not waiting or queuing.
- Sites were reversing is permitted ensure that reversing alarms are broadband reversing sirens and where it is safe to disengage all sirens and use a banks person.
- Care should be taken when loading or unloading vehicles or moving materials to reduce impact noise.
- Larger Items' vehicle will fit within the designated off- site loading area and trips are not anticipated to exceed more than 6-8 times and only for period of Structural works.
- Other vehicles expected on site will consist of small skip wait and load.
- There will be a rota system requiring all deliveries to be pre-booked at least 48 hours in advance to avoid on-site and offsite congestion by spreading the resulting traffic.

**NO. OF VEHICLES IN PEAK PHASE (EX. OTHER PHASES)**

| Construction phase                 | Period of stage   | No. of trips (monthly) | Peak no. of trips (daily) |
|------------------------------------|-------------------|------------------------|---------------------------|
| Site Setup                         | Q3 2026 - Q3 2026 | 3                      | 0                         |
| Enabling and Demolishing           | Q3 2026 - Q3 2026 | 12                     | 1                         |
| Structural                         | Q3 2026 - Q3 2026 | 18                     | 1                         |
| Super-structure                    | Q3 2026 - Q4 2026 | 25                     | 1                         |
| External                           | Q4 2026 - Q4 2026 | 45                     | 2                         |
| Fit-out, testing and commissioning | Q4 2026 - Q4 2026 | 20                     | 1                         |
| Peak period of construction        | Q4 2026 - Q4 2026 | 69                     | 3                         |

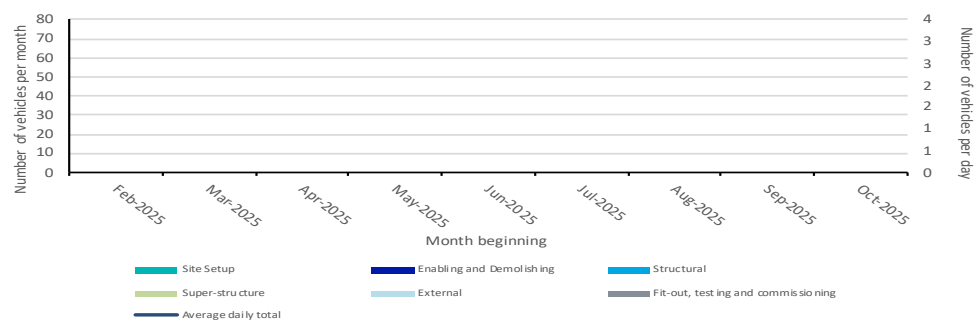
Figure 9- ESTIMATED VEHICLE MOVEMENTS



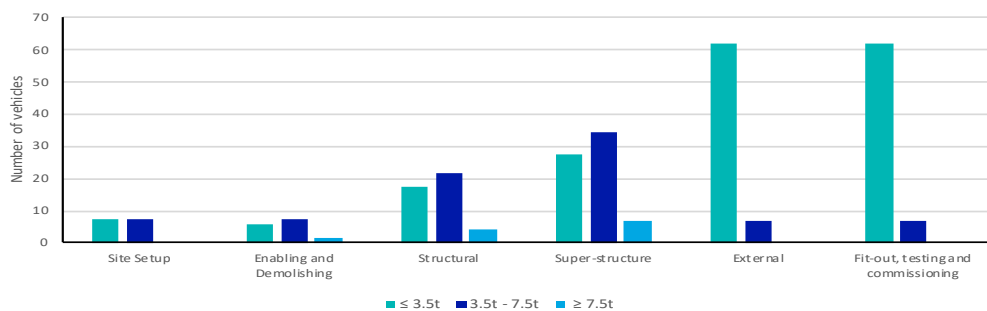
**CONSTRUCTION LOGISTICS PLANNING TOOL (OUTPUTS)**

Sheet 2 of 2

**Total number of vehicles through construction programme**



**Number of vehicles by types during peak of phase**



**Number of vehicles in peak month (Nov-2026)**

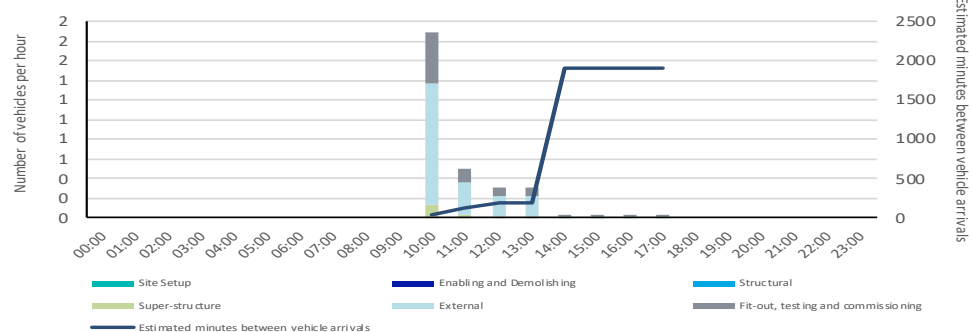


Figure 10- NUMBER OF VEHICLES THROUGH CONSTRUCTION

## **7.5. IMPLEMENTING, MONITORING AND UPDATING**

The Construction Manager will own and manage the implementation of this document, including data on:

- Number of vehicle movements on site -collected through the delivery booking system.
- Types of vehicles on site -compliance with required sizes in this document.
- Vehicles and operations not meeting safety requirements.
- Time spent on site.
- Delivery accuracy compared to schedule.
- Vehicle routing, unacceptable queueing or parking.
- Non-Road Mobile Machinery compliance (NRMM) of plant on site.
- Staff travel modes to sites.
- Driver inductions and briefings including accreditation/qualification checks where required.
- Distributing Contractor and Driver Handbooks, as appropriate, to ensure all staff are aware of their obligations and the procedures which are set out in detail throughout this report. These would be provided to staff by the Main Contractor in advance.

### **Breaches and complaints.**

- Vehicle routing
- Unacceptable queuing
- Unacceptable parking
- Supplier FORS accreditation
- Low Emissions Zone (LEZ) compliance

### **Safety**

- Logistics-related accidents.
- Record of associated fatalities and serious injuries.

The Construction Manager will review this document regularly and keep records.

A member of the contractor's team will be given the role of community liaison. The communication liaison will handle any queries, concerns and complaints from neighbors and maintain a logbook detailing such enquiries and any follow-up actions.

The community liaison will discuss the works program with those neighbors directly adjoining the site to ensure they are aware of the works involved and to address any concerns beforehand.

Contact details will be displayed on the hoarding and distributed to adjoining neighbors.

All site personnel will be required to read the emergency procedures when signing in for the first time, and sign to the effect that they have read the procedures.

## **8. HEALTH AND SAFETY**

A Construction Health and Safety Plan will be prepared for the works in accordance with the CDM Regulations. Risk Assessments will be developed and agreed. Sub-contractors' detailed method statements will also be produced and safe methods of work established for each element of the works.

Site inductions will be held for all new site personnel to establish the site rules and to enforce safety procedures. All site personnel will be required to read the emergency procedures when signing in for the first time. These procedures will include any relevant neighbourly issues.

### **8.1 Good Housekeeping**

The site will be kept in a clean and safe condition. The areas adjacent to the site will be regularly inspected and any rubbish or litter removed:

- Adjacent roads and pavements will be kept clean. Daily sweeping. Perimeter hoardings will be inspected and will be kept in good and safe conditions. Any graffiti will be quickly removed from the hoardings.
- Off-loading will generally be direct from vehicles onto the site. Materials will not be stored on public footpaths or roads. Waste and rubbish will be regularly removed from site and not allowed to accumulate so as to cause a safety or fire hazard.
- Activities that have the potential to cause dust will be carefully monitored and dust reduction methods employed. This will include water spray, dust extraction and localised screening where appropriate.
- Welfare facilities will be provided within the site to discourage operatives from frequenting the interface between the site and public areas. Site operatives will not be allowed to congregate or loiter on the footpath or road adjacent to the site.

## **9. ENVIRONMENTAL MANAGEMENT**

Development will operate an environmental policy in which the site pursues the following objectives to:

- Conduct our activities with proper regard to the protection of the environment.
- Comply with all relevant regulatory and legislative requirements and codes of practice.
- Communicate with local communities to ensure the work causes the minimum disruption.
- Ensure that staffs have a good understanding of the environmental impacts of construction and what is expected of them to minimise these impacts. Ensure that suppliers and sub-contractors are aware of this policy and ensure they apply similar standards to their work.

Generally, site management is responsible to ensure deliveries and removals are managed so that they are made when they are needed, at times when they will contribute less to congestion and at locations where loading and unloading can take place safely. These measures will reduce congestion in the local area and inconvenience to road users:

- Deliveries will be consolidated so fewer journeys are needed.
- Plant loading and unloading will be on hard-standing areas away from the site entrance or popular pedestrian areas as soon as the provision of that hard-standing is possible.
- Suppliers and contractors will be instructed to make significant deliveries outside of busy rush-hour periods and on small vehicle, where possible.
- All deliveries and collections will be coordinated using time slots to ensure that only the expected number of deliveries arrives at any time and that the site is suitably prepared. If any suppliers fail to adhere to this policy, they will be refused access.

### **9.1 Dust and Air Pollution**

Works will be planned carefully so that all reasonable and practicable steps are taken to eliminate harmful dust or, if not possible, minimise dust during soft strip, demolishing and construction works, so that it is not breathed in by anyone.

The Principal/Main Contractor will ensure that controls are integrated into the planning of any activities likely to give rise to dust and these control measures are identified within CPHSP and RAMS submitted by the Trade Contractors.

The following primary considerations will be given to control dust on site:

- The Principal/Main Contractor will incorporate dust management procedures into site set-up and logistics planning (site speed limits, wheel washing, location of canteen bins, skips and toilets, covering of vehicles, skips etc).
- Regular servicing on all fans and filters will be undertaken to ensure they are properly maintained.
- Where possible, tools and plant will be fitted with dust extraction, collection devices and water suppressant – if these are available.
- It may be necessary for site operatives to wear RPE to protect them from effects of dust. This will be identified by task specific RAMS.
- Hard standing areas will be provided for vehicles and waste storage. These will be regularly inspected and cleaned to ensure that dust and debris is not spread into public domain.
- Where possible, cutting/grinding/sawing will be avoided by using prefabricated materials.
- Plant and equipment will comply with relevant emissions limits and will be regularly maintained and switched off when not in use.
- Vehicles, plant and equipment will be fitted with exhaust filtration to prevent fumes.

### **Dust Mitigation Plan**

A temporary water supply network will be installed on site. This will consist of 25mm OD PE water pipework connected to the existing incoming metered mains supply.

The pipework will be routed round and fixed to the perimeter access / protection scaffold to supply a series of 25mm fire hose outlets serving the Suppression of dust using water will be carried out at all key stages of demolition activity:

- Damp down the floor area in advance of demolition activity starting.
- Direct hose water jet dust suppression at the demolition work face during demolition.
- Damp down the transit routes for plant involved in moving debris around the site along with any stockpiles of waste materials.
- Damp down hard-core debris resulting from demolition activity before it is handled, moved or loaded into Lorries.

In addition to the above, the following dust and dirt suppression measures will be pursued:

- All site personnel to enter and leave the site wearing clean clothes and shoe wear.
- The use of fine sprays during the loading or unloading of materials as well as on buildings and structures (during demolition works), cutting and drilling plant, unpaved areas, sand, spoil and aggregate stockpiles.
- Preference of hydraulic construction over percussive techniques.
- Where practical, the use of building materials that are pre-fabricated or cut offsite including structural elements, cladding and woodwork.
- Burning of waste or unwanted materials on site to be strictly forbidden.
- Covering of all skips.
- Correct use of all plant and machinery and regular maintenance of their exhaust systems, which are to be positioned as far away from adjoining buildings as possible.

Where practical, further measures will be devised in accordance with the BRE's Pollution Control Guides (2003) publications and the GLA's Best Practice Guidance on The Control of Dust and Emissions from Construction and Demolition (2006).

Dirt, dust and noise emissions will be continuously monitored by a designated person. Any deviation from the above methods will only be permitted in exceptional circumstances and with prior consent from the main contractor and all other relevant parties.

## **9.2 Noise and vibration**

### **Monitoring**

Contractor will be instructed to proactively make boundary assessments of noise and vibration and visual assessments of noise. Where excess noise vibration and dust is noticed by site operatives this should be noted within the site log and action taken to reduce noise, vibration and dust levels.

Expected noise levels are to be controlled. The duration of the works close to the site boundary will be controlled and limited.

### **Control Measures**

To ensure these impacts are kept to a minimum, the following control measures will be implemented for the duration of this project:

- Prior to the demolition commencing, where required debris pads can be constructed around the work areas to enable rubble to drop onto the pad.
- Where achievable all operating demolition plant e.g. excavators will operate standing on constructed debris pads.
- No demolition materials will be allowed to fall from height which result in the generation of vibration.
- All waste lorries will be loaded by excavators operated by competent plant operators with the debris placed into the vehicle and not dropped in.

### **Mitigation Measures**

- Where it is necessary to carry out noisy activities, identify them in advance and give notice.
- Electrically operated plant will be used where practical.
- Try to ensure all plant used on the site is effectively silenced.
- No externally audible radios or other audio equipment will be allowed on site.
- High noise emitting machinery use will be limited, nor necessary on most occasions due to the nature of the works. Hence, mostly hand tools will be used.
- All pneumatic tools would be fitted with silencers or mufflers.
- On site noise levels would be monitored regularly, particularly when changes in process are required or in response to complaints.
- Deliveries would be programmed to arrive during daytime hours only and out of peak times.
- Care would be taken when unloading vehicles to minimise noise.
- Delivery vehicles would be routed so as to minimise disturbance to local residents.
- Delivery vehicles would be prohibited from waiting within the site with their engines running.
- Avoid the transfer of noise and vibration from demolition activities to adjoining buildings through cutting any vibration transmission path or by structural separation or isolation.
- Rather than breaking in-situ, consider the removal of larger sections by lifting them out and breaking them down either in an area away from sensitive receptors or off-site.

Toolbox talks will take place for all contractors to ensure they are aware of noise and vibration issues onsite.

### **9.3 Machinery Washing Facilities and Road Cleanliness**

We don't anticipate any road dirt as the access is on main road with good drive condition. Nevertheless, wheel and chassis washing facilities will be provided on site. These facilities will ensure to keep the road and vehicles clean before leaving. Lorries, especially those carrying excavation mud or soil, are expected to be fully sheeted before entering and leaving the site in order to minimize the risk of any over-spilling onto the highway. Effluent resulting from these facilities will not be directed into the public sewerage or any street gullies but will be disposed off on site with the necessary consents from Thames Water or the Environmental Agency.

The contractor will monitor the surrounding highways and footpaths on a daily basis and ensure that the construction works do not have a negative impact on road cleanliness.

Daily sweep of the area and cleaning loading zone of debris and muds to avoid mud tracks.



## **APPENDIX A – INDICATIVE SEQUENCES OF WORKS and UNDERPINNING**

### SEQUENCE OF WORKS

Install monitoring points on site and the surrounding area

Contractor to review proposed underpinning and excavation sequence and supply full method statements to Project Engineer for approval

The proposed sequence for each underpin to existing partywalls is the same for both boundary walls and also similar for the RC wall excavation front and back.

All works are to be undertaken from within the existing building envelope with excavation undertaken from within the area of the proposed new basement

### INSTALLATION OF BAY TYPE ONE UNDERPINNING/RETAINING WALL

#### STAGES 1 to 4

Excavate 1.2m wide Bay Type ONE below existing masonry wall to underpinning formation level.

Install temporary mechanized shoring system for 1.2m wide trench as excavation proceeds.

Smooth off face of excavation to receive water proof membrane.

Install vertical dowels to underside of wall footing.

Install 75mm concrete blinding to base of underpinning.

Install waterproofing membrane and Hydrophilic strips to side faces.

Install vertical Kwicksstrip Rebar starters strips to side faces to receive adjoining underpinning rebar.

Install all rebar/shuttering and cast RC underpinning to within 100mm of underside of masonry wall.

Allow 48 hours and install 100mm concrete dry packing well rammed in place.

Allow 48 hours and remove all shuttering and back fill excavation.

Repeat the above for Bay Types TWO, Type THREE, Type FOUR, Type FIVE and Type SIX

### PHASED INSTALLATION OF RC BASEMENT FLOOR SLAB

#### STAGES 5 to 7

Once all underpinning and RC retaining walls have been installed and backfilled Excavate to 750mm below existing ground and Carefully saw cut off existing masonry wall toe back to face of boundary walls.

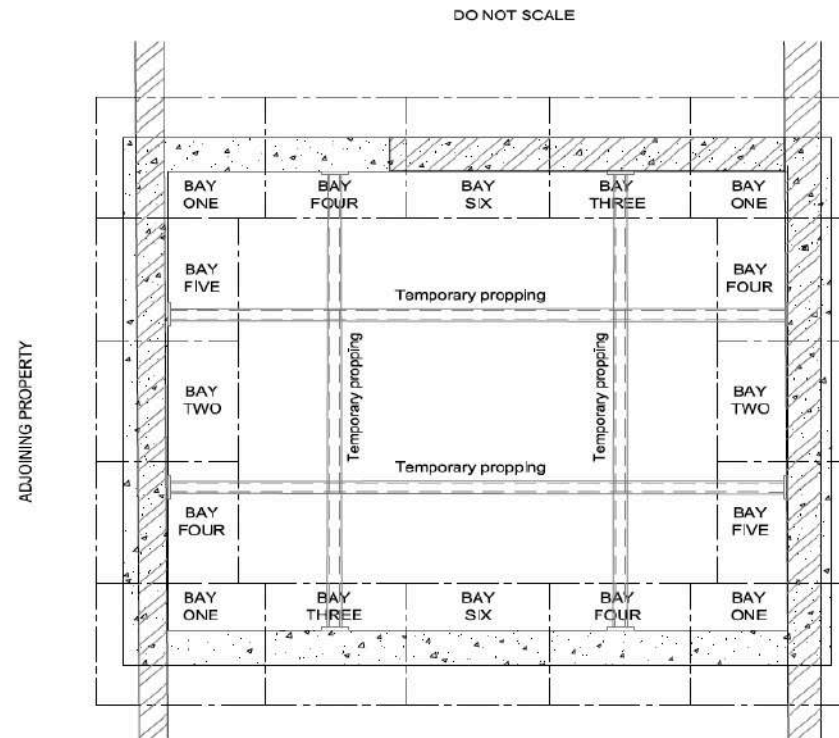
Excavate to 1400mm below existing ground and install temporary horizontal props.

Excavate to 2950mm below existing ground to slab formation level and install 75mm concrete blinding and waterproof membrane.

Install dowel bars to underpinning and RC retaining walls to tie into RC slab.

Install RC slab reinforcement and cast slab.

Allow 96 hours and carefully remove horizontal propping.



PROPOSED BAY NUMBERING INSTALLATION SEQUENCE  
(SCALE 1:25)

NOTE:  
INSTALLATION SEQUENCE FOR RC RETAINING WALLS AT FRONT AND REAR OF BASEMENT  
SIMILAR EXCEPT NO WALL ABOVE

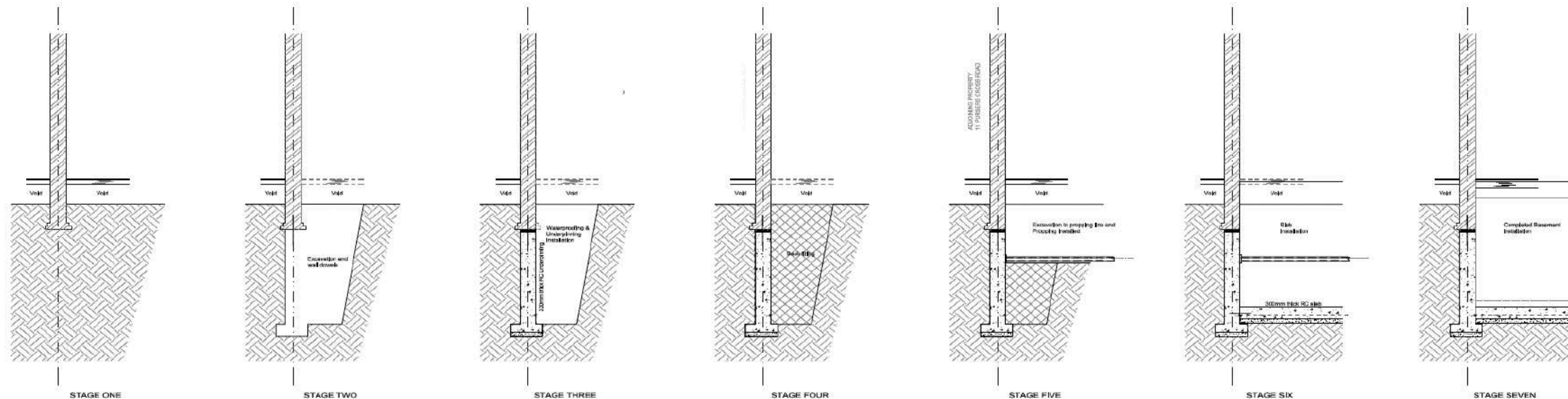
## INDICATIVE ONLY

### TYPICAL SEQUENCE OF UNDERPINNING

- EXCAVATE BAYS MARKED ①
- CONCRETE BAYS MARKED ①
- 3 DAY'S TO ALLOW CONCRETE UNDERPINNING TO SET & SHRINK
- DRY PACK BETWEEN UNDERPINNING & ORIGINAL FOUNDATION
- 24Hrs. TO ALLOW DRY PACK MORTAR TO GAIN STRENGTH
- EXCAVATE BAYS MARKED ②
- PROCEED AS FOR B. – E. ABOVE FOR BAYS MARKED ②
- REPEAT PROCESS F. – G. FOR REMAINING BAYS IN SEQUENCE MARKED ON PLAN

### NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, ENGINEERS & SUB-CONTRACTORS DRAWINGS AND DETAILS AND THE PROJECT SPECIFICATION, WHERE ANY DISCREPANCY MAY EXIST BETWEEN THESE NOTES & THE SPECIFICATION, THE SPECIFICATION SHALL PREVAIL.
- ALL SETTING-OUT TO BE CHECKED AGAINST ARCHITECT'S LATEST SETTING-OUT DRAWING.
- NO DIMENSIONS ARE TO BE SCALED FROM THIS DRAWING.
- NO DEVIATION MAY BE MADE FROM THE DETAILS SHOWN ON THIS DRAWING WITHOUT PRIOR APPROVAL OF THE ENGINEER.
- ANY DISCREPANCY BETWEEN THIS DRAWING AND ANY OTHER DOCUMENT SHOULD BE REFERRED IMMEDIATELY TO THE ENGINEER.
- ALL WORKMANSHIP MATERIALS AND LOADINGS TO BE IN STRICT ACCORDANCE WITH THE LATEST EDITIONS OF:
  - EC2 - BASIC STRUCTURAL DESIGN
  - EC1 - ACTIONS ON STRUCTURES
  - EC5 - DESIGN OF CONCRETE STRUCTURES
  - EC3 - DESIGN OF STEEL STRUCTURES
  - EC7 - GEOTECHNICAL DESIGN
  - THE BUILDING REGULATIONS, MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS.



STAGED SEQUENCES ONE TO SEVEN FOR INSTALLATION OF PHASED BAY RC UNDERPINNING WORKS



## **APPENDIX B -1 –MEMBRANES TANKING SYSTEM by DELTA**

## **APPENDIX B -2 – Basement Impact Assessment by JMS**

Supporting Pdf files attached to this report.

## **APPENDIX C – LOGISTIC PLANS**

All vehicle manoeuvres and loading/unloading will consistently be assisted by traffic marshals. Qualified Traffic Marshals will also be positioned at the front of the site when construction vehicles are expected to make deliveries, to direct vehicles, pedestrians, and cyclists in the area. Service and refuse collection schedules will be monitored to adjust timing as necessary.

### **Mucking materials away:**

During excavation/demolishing phase, the soil and debris will be transferred to skip using 3.5T Mini Digger. When transferring soil jumbo bags to skip/parking bay for pick up, the traffic marshal erect safety signs and redirect pedestrian as shown on following figures. Skip / takeaway pick up time will be managed accordingly to avoid hold ups and outside rush hours. During pick-ups, traffic marshal, manage passing traffics as shown in following figures in the interest of public safety and efficient road use.

### **Concrete into the site:**

Once all skips and takeaway cleared, frameworks /shuttering and reinforce bars placed, site will then arrange for concrete pouring. Concrete will transfer via small lorry up to 6m<sup>3</sup> and long hose. Lorry will be parked at parking bay; pedestrian will be closed using signs and at present of traffic marshal. Concrete will then be pumped to designated area using long hose through access and safely. The hose and machinery will be underlined and secured to avoid spoilage to the highway. Concrete lorry will be cleaned and sealed before leaving site. any waste, leakage will be clean and cleared after delivery and highway/pedestrian will be inspected the site manager.

### **The management arrangements to ensure a safe highway environment:**

All vehicle manoeuvres and loading/unloading would be assisted by traffic marshals at all times. Qualified Traffic Marshals would also be situated at the front of the site at all times when construction vehicles are expected to undertake deliveries to direct vehicles, pedestrians and cyclists in the locality. As per following figures, during takeaways, Loading and Unloading on site a designated traffic marshal will manage the safety of the highway and road users.

All deliveries will be supported by Banksman, as appropriate, whilst Traffic Marshals would also be situated at the front of the site to ensure the safe passage of materials to and from the site, without impacting on highway safety and other road users.

During Loading /Unloading there are no pedestrian crossing including speed signs and traffic calming setups within the site's access. Traffic marshal will constantly survey the area and update traffic management plans reflecting any potential events, sports and social planning that may affect the traffic, cyclist and school's group crossing. Traffic Manager will also include a clear routing and signage to all drivers and highlight the route risks and limits.

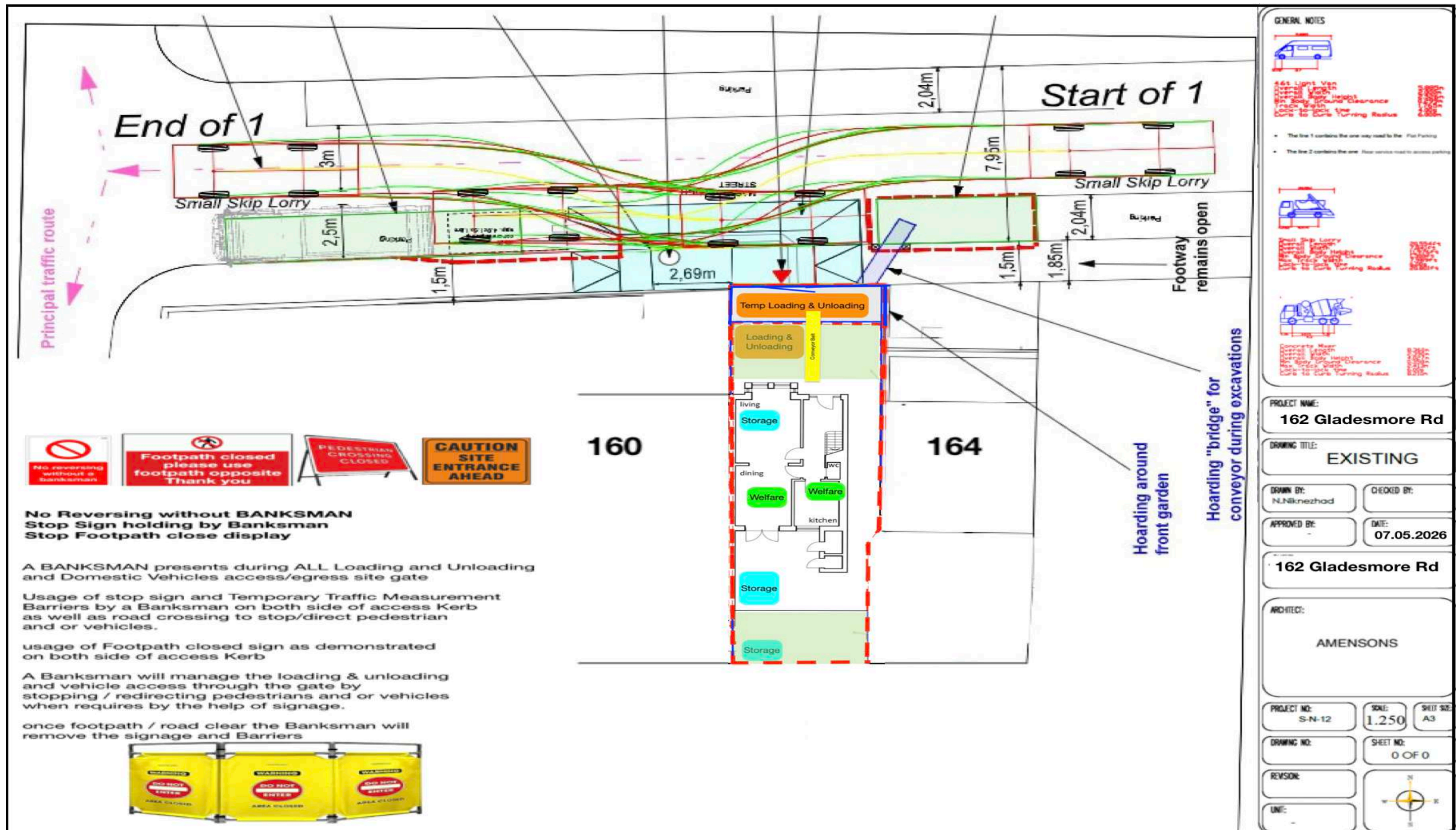


## **APPENDIX C – 1 VEHICLE ACCESS WHEN PARKING SPACE IS USED TSRGD 7031**

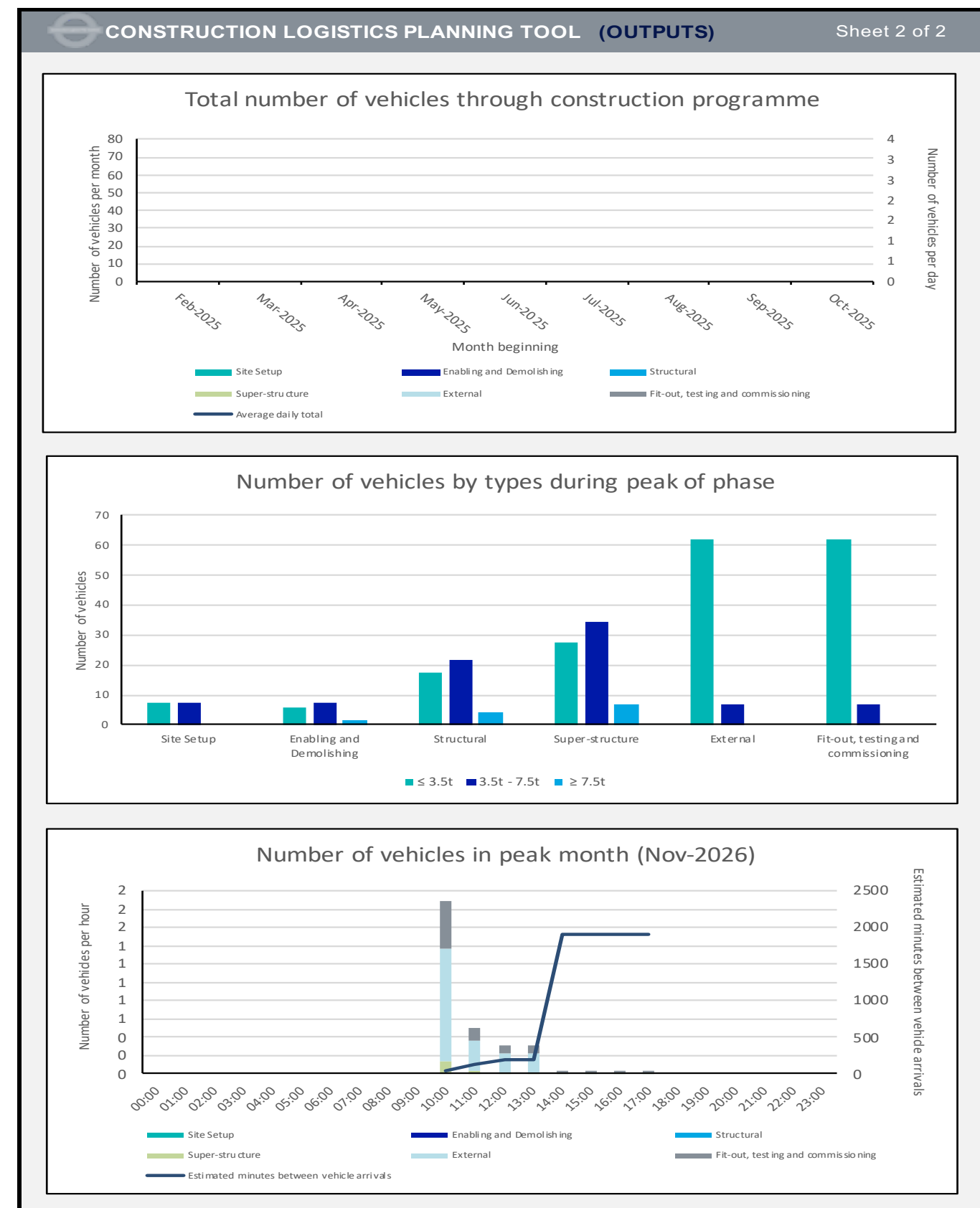
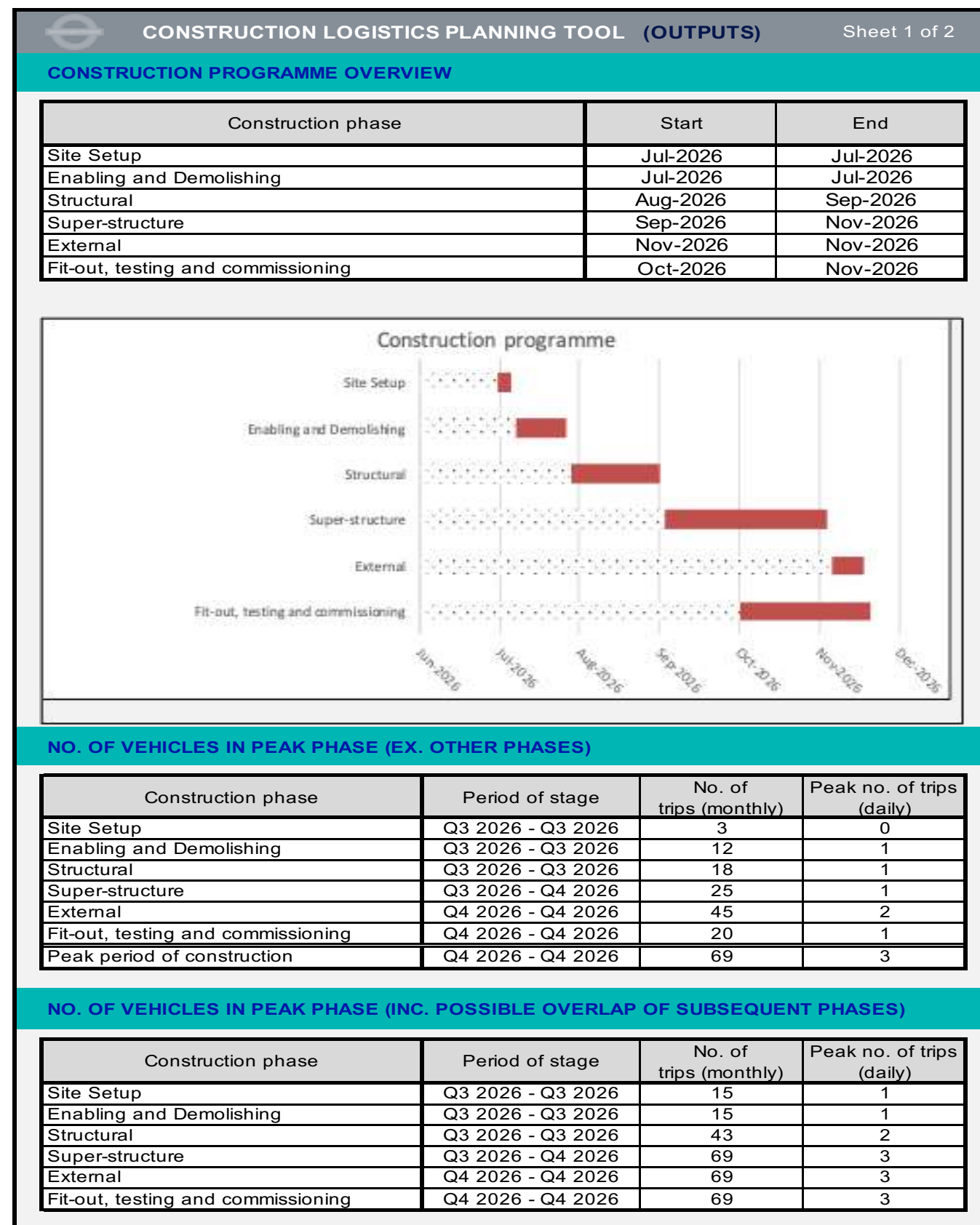
To manage traffic on Gladesmore Road during demolition and construction, Traffic Marshals will use stop/go signs. A 'stop works sign' pole (TSRGD 7031) will be required when vehicles need to stop for site access and egress. This sign is limited to 2 minutes of use for delivery and construction vehicles only. It must be double-sided, reflective, and compliant with RA1 standards as per TSRGD 7031.

Traffic marshals will do their best to plan access and allows egress when no vehicle passing. Nevertheless, traffic marshal will guide the entry and exit from the site with care and signage to notify the drivers and public of the vehicle's movements and directions. Always give way to the moving vehicles and public crossing. Pedestrians will also be guided to use the opposite side pathway when necessary, using no crossing signs and traffic marshal.

## APPENDIX C – 2 SWEEP PATH ANALYSIS



### APPENDIX C – 3 Vehicle Movements derived from TFL CLP Tool





## **APPENDIX D – FIRE PLAN**

## **FIRE SAFETY GUIDE PLAN**

### **1. INTRODUCTION**

A definite fire safety plan will be developed for all site works being undertaken by the main contractor.

In developing this drafted plan we encourage the main contractor to fully consider the HSE Guidance booklet “Fire Safety in Construction Work” and, where appropriate, contact the local HSE officer to ensure that all procedures and precautions are adequate and acceptable.

### **2. FIRE PREVENTION ON SITE**

#### **2.1 Reducing the amount of combustible materials on site**

Materials will be delivered when they are to be used and transported to the area of the site where they are needed at that time.

No combustible materials will be stored in the entrance of the site or in any stairways, which form part of any escape route.

#### **2.2 Storage of flammable substances on site**

All flammable materials will be stored in the company vehicle when not being used.

#### **2.3 Rubbish disposal**

A tidy site policy will be maintained on site during all works and daily waste removed by the company vehicle.

#### **2.4 Protective coverings**

During some of site works, some protective coverings may be used. However, in general, these would be of fire retardant material. The use of flammable protective covers to doors, handles, panels and floor coverings will always be strictly prohibited on the main escape routes including corridors and stairways.

#### **2.5 LPG cylinders**

All cylinders on the site will be stored, when not in use, in a storage facility established in the site compound. LPG will not be used in an established welfare or office facility on this project.

#### **2.6 Demolition & Groundworks**

All services must be isolated and works carried out in accordance with task specific RAMS.

### **3. REDUCING IGNITION SOURCES**

#### **3.1. Smoking on site**

Smoking on- site is strictly prohibited.

#### **3.2. Plant and equipment**

All plant and equipment will be inspected and recorded in the plant and tools register before being used on the site. Any petrol-powered tools must only be refueled in the established site compound away from all flammable materials.

All electrical equipment properly mounted and protected to avoid heat being conducted to other materials and surfaces nearby.

#### **3.3. Use of oxy-fuel equipment**

Only competent and suitably experienced operatives will be allowed to set up and use such equipment. The precautions for safe use will be as follows:

All hoses will be of a recognised standard for example BS EN 559: 2009

To avoid any confusion all hoses will be colour coded: BLUE = OXYGEN, RED = ACETYLENE, and ORANGE = PROPANE

Safety devices to an appropriate standard, such as BS EN 730: 2002, will be used as required, including non-return valves on the inlet on the torch (both gas lines), flame arresters at the outlets and also flashback arresters incorporating both cut-off valve and flame arresters.

Properly fitted 'crimped' hose connectors will be used and not 'jubilee clips which may be over-tightened resulting in damage to the hose.

All equipment will be stored and transported on suitable bottle trolleys. The cylinders being stored vertically and not left lying down in vulnerable places.

#### **3.4. Permit to work scheme**

All hot work generating heat and sparks will be undertaken with the operative and contractor obtaining a hot-works permit from the principal contractor's appointed fire warden before any work starts. The fire warden will inspect all areas of the site, which have had hot-works ongoing during that day for ignition sources and confirm the area as safe.

#### **3.5 Electrical installations**

All electrical installations including temporary site supply will be installed and regularly inspected (weekly) by competent electricians.

### **3.6 Arson and site security**

Measures will be taken to ensure that the construction site and individual properties are secure at all times.

### **3.6 Temporary site accommodation**

No flammable materials will be stored in the site office. Fire action information will be clearly displayed.

### **3.7 Welfare facilities**

The designated welfare facilities (mess room) again will not contain any flammable substances, liquids, and/or materials etc. Users of these facilities are expected to keep them clean and tidy.

## **4. FIRE SAFETY PRECAUTIONS**

### **4.1 Means of escape**

Our priority in the unfortunate event of a fire is the safe conduct of all site operatives to a safe area away from the site.

All escape routes will be maintained throughout the project by daily visual inspections. The established inspection procedures will ensure that escape routes are not blocked.

#### **4.1. Travel distances**

The designated construction site will be an open area initially with enclosed structures formed as the dwelling are constructed.

Any work in a corridor, or other area, involving the use of flammable substances, will only be allowed to progress if the potentially blocked rooms/areas are vacant.

#### **4.2. Assembly points (muster point)**

A designated muster point will be established adjacent to the site entrance.

#### **4.3. Emergency signs**

All escape routes will be clearly indicated with proper signs in accordance with The Health & Safety (Safety Signs & Signals) Regulations 1996. The signs are white pictograms on green backgrounds.

#### **4.4. Fire alarms**

An alarm system (Klaxon/air horn) will be established on the site by the fire warden, and as the

project progresses reviewed and extended to accommodate the progress. As indicated, the alarms will be visually inspected on a daily basis and then formally inspected and tested by the fire warden.

#### **4.5. Firefighting equipment**

During the safety induction talk, each operative will be instructed that the fire-fighting equipment is open for free use in the event of a fire but only to aid escape! Equipment will include CO2, Water and Powder extinguishers. Furthermore, fighting fires is the fire brigades job and not the job of untrained operatives on a building site. DO NOT RISK LIVES FOR PROPERTY.

#### **4.6. Emergency lighting**

Where appropriate contractor will establish a battery powered (110 volt supply) emergency lighting system. This system is solely to aid escape during the event of a fire and mains power failure. The system will be inspected formally each week by the fire warden.

#### **4.7. Fire safety points**

All extinguishers will be positioned on clearly marked red boxes inside of the property on escape routes.

### **5. PLAN MAINTENANCE**

This fire safety plan will be reviewed as required during the work progression and referred to during all site safety meetings.

Signed by Project Manager: \_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Signed by appointed fire warden(s): \_\_

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_



## **APPENDIX E - RISK ASSESSMENT**

# RISK ASSESSMENT TEMPLATE

|                          |  |                         |               |
|--------------------------|--|-------------------------|---------------|
| Contract Name:           |  | Contract Number:        | 0208 123 3131 |
| Task/Operation/Activity: |  | Risk Assessment Number: | 001           |

Always consider the hierarchy of control measures when implementing control measures.

Additional specific risk assessments may be required e.g. fire, lone worker, manual handling, COSHH, noise, HAVs.

Consider all those at risk including members of the public, and tenants.

Consider all scenario outcomes e.g. death, impact injuries, chemical burns etc. Refer back to site hazard document in CHSEQ plan.

|                    |   |                          |   |              |          |
|--------------------|---|--------------------------|---|--------------|----------|
| Likelihood:        | X | Severity:                | = | Risk Factor: | Outcome: |
| Improbable = 1     |   | Trivial / Negligible = 1 |   | 1-4 Low      | Low      |
| Unlikely = 2       |   | Minor / Slight = 2       |   | 5-12 Medium  | Medium   |
| Even Chance = 3    |   | Moderate = 3             |   | 15-25 High   | High     |
| Likely = 4         |   | Major / High = 4         |   |              |          |
| Almost Certain = 5 |   | Fatality / Very High = 5 |   |              |          |

| Significant Hazard | Those at Risk and How they might be Harmed | Risk Factor - No Control Measures<br>(Likelihood x Severity) |   |    | Control Measures                                                                                                                          | Risk Factor - With Control Measures<br>(Likelihood x Severity) |   |    |
|--------------------|--------------------------------------------|--------------------------------------------------------------|---|----|-------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---|----|
|                    |                                            | L                                                            | S | RF |                                                                                                                                           | L                                                              | S | RF |
| Trespass           | Third Party                                | 3                                                            | 4 | M  | Initial security arrangement for Harass - hoarding will be implemented.<br><br>Building integrity will be maintained as build progresses. | 1                                                              | 4 | L  |

## RISK ASSESSMENT TEMPLATE

| Significant Hazard | Those at Risk and How they might be Harmed                                                                                                                                                                  | Risk Factor - No Control Measures<br>(Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                                                                                                                                                         | Risk Factor - With Control Measures<br>(Likelihood x Severity) |   |   |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|---|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---|---|
|                    |                                                                                                                                                                                                             |                                                              |   |   | <p>Communication to others on fencing.</p> <p>Local CCTV coverage over areas highlighted.</p> <p>Storage area to be instructed and marked out.</p> <p>Materials and equipment are to be stored in these areas and must not be stored in public access areas.</p> <p>Access control system installed with bio-metric reader linked to induction.</p>      |                                                                |   |   |
| Collision          | <p>Vehicle collision through site activity striking structures</p> <p>Vehicle collision through site activity striking another vehicle</p> <p>Vehicle collision through site activity striking a person</p> | 4                                                            | 3 | M | <p>Detailed conversations at Tender/contract.</p> <p>All vehicles to book in 48hrs in advance</p> <p>..... &amp; ..... to be installed to allow access.</p> <p>Survey local movements to identify times of high use by public on Road.</p> <p>Install barrier walkway chapter 8 requirement.</p> <p>Footpath adjacent to maintained to allow access.</p> | 1                                                              | 4 | L |

# RISK ASSESSMENT TEMPLATE

| Significant Hazard | Those at Risk and How they might be Harmed                                  | Risk Factor - No Control Measures (Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                                                                                                                                                                       | Risk Factor - With Control Measures (Likelihood x Severity) |   |   |
|--------------------|-----------------------------------------------------------------------------|-----------------------------------------------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---|---|
|                    |                                                                             |                                                           |   |   | Trained Traffic Marshal to ensure vehicle Access on site is manoeuvred correctly. Vehicles must only reverse whilst under the supervision of a marshal. Lorry trailer site vehicle will be parked behind locked harass fencing not on adjacent roads. On site demarcation of vehicle and pedestrian routes. Review through monthly checks. Develop site logistic plan. |                                                             |   |   |
| PIT Lane           | RTA – MOP Interface Vehicle strike & Collision and material unloading crush | 4                                                         | 3 | M | Work to street works code of practice. Specification Stop Go boards. Emergency lane to remain open and checked on irregular basis. Application for parking suspensions Y N. Highways approval of Temporary Regulation order. Traffic Marshals work to briefing and monitored. Registered vehicles and audit.                                                           |                                                             |   |   |
| Welfare            | Provisions not correct                                                      | 2                                                         | 2 | L | Initial numbers limited to ..... in initial build ..... at peak                                                                                                                                                                                                                                                                                                        | 1                                                           | 2 | L |

# RISK ASSESSMENT TEMPLATE

| Significant Hazard     | Those at Risk and How they might be Harmed | Risk Factor - No Control Measures<br>(Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                                                                                                                                                                                                                    | Risk Factor - With Control Measures<br>(Likelihood x Severity) |   |   |
|------------------------|--------------------------------------------|--------------------------------------------------------------|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---|---|
|                        |                                            |                                                              |   |   | Living standard set.<br>Temporary accommodation set up internal.<br>Welfare person detailed with cleaning programme.<br>Fire action displayed with EN54 rated alarm.                                                                                                                                                                                                                                                |                                                                |   |   |
| Physical Health Hazard | Noise<br>Dust – Silica                     | 4                                                            | 4 | M | Procedure Title (.....)<br>All operations to be supported by RAMs/COSHH assessment to include:<br>Suppression of dust by Water.<br>Extraction on devices, breakers and cutting reducing main dust release and noise.<br>Noise monitoring locations to be identified and implemented by Contractor.<br>Clean-up operations involving labourers will be controlled with separation and RPE under subcontractors RAMs. | 2                                                              | 2 | L |
| Lifting operations     | Falling material.                          |                                                              |   |   | Lifting Operations & Folder.                                                                                                                                                                                                                                                                                                                                                                                        |                                                                |   |   |

## RISK ASSESSMENT TEMPLATE

| Significant Hazard | Those at Risk and How they might be Harmed | Risk Factor - No Control Measures<br>(Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                                                                                                                                                                        | Risk Factor - With Control Measures<br>(Likelihood x Severity) |   |   |
|--------------------|--------------------------------------------|--------------------------------------------------------------|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---|---|
|                    | Crane security                             | 5                                                            | 5 | M | Lifting plan to be completed by AP.<br>Competent lifting team supported by CPCS/CSCS cards.<br>Separate RAM.<br>Schedules by sub-contractors checked by PM.<br>Weekly and annual checks.<br>Daily talks.                                                                                                                                                                | 3                                                              | 5 | M |
| Structure Build    | Demolition - Design                        | 5                                                            | 5 | M | Demolition will be contracted to ..... contractor. RAMs will be approved and sent to PM.<br><br>All activities as per RAMs.<br><br>Works to progress daily under Temporary work Permit with relevant start rights.<br><br>Access to buildings controlled by logging in system.<br><br>Access to areas controlled at end of day. By physical barriers combi safe checks. | 2                                                              | 3 | L |

# RISK ASSESSMENT TEMPLATE

| Significant Hazard | Those at Risk and How they might be Harmed | Risk Factor - No Control Measures (Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                                                                                                                                                      | Risk Factor - With Control Measures (Likelihood x Severity) |   |   |
|--------------------|--------------------------------------------|-----------------------------------------------------------|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---|---|
|                    |                                            |                                                           |   |   | <p>Exclusion Fail safe zones to be implemented physically by subcontractors.</p> <p>Area of delivery and material handling to have separate section in RAMs.</p> <p>Compartmentation to be developed in line with final fire strategy.</p> <p>Areas of voids to be held on temporary works register.</p> <p>Request made for final fire strategy.</p> |                                                             |   |   |
| Fire/Environment   | Inhalation/burns/entrapment                | 4                                                         | 5 | M | <p>Fire and emergency plan.</p> <p>FRA Separate initial phases limited through demolition – pilling.</p> <p>Warless Alarm system.</p> <p>Weekly checks recorded.</p> <p>Drill every 3 month.</p> <p>Trained Hot works under permit to work.</p> <p>Basement to be treated as restricted.</p>                                                          | 2                                                           | 5 | M |
| MOP                | Access                                     |                                                           |   |   | Logistic plan to be implemented:                                                                                                                                                                                                                                                                                                                      |                                                             |   |   |

## RISK ASSESSMENT TEMPLATE

| Significant Hazard | Those at Risk and How they might be Harmed | Risk Factor - No Control Measures (Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                             | Risk Factor - With Control Measures (Likelihood x Severity) |   |   |
|--------------------|--------------------------------------------|-----------------------------------------------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|---|---|
|                    | Logistic impact Collision                  | 4                                                         | 5 | M | 48hr booking in system.<br>Holding areas to be off site.<br>Trained banks man to oversee access and egress.<br>Residential meetings.<br>Hoarding still being moved main concern.                                             | 2                                                           | 5 | M |
| COSHH              | Impact on Environment Fire                 | 4                                                         | 5 | M | Initial set up minor fuels low burn risk.<br>Bund and stored correctly with fire points localized.<br>Checked weekly minimum.<br>Trained Spill kit use for emergency.<br>Risk assessment and separate CHIP data held.        | 2                                                           | 5 | M |
| First Aid          | Injury                                     | 4                                                         | 5 | M | Emergency Procedures.<br>First aid box held in site office and signed<br>Trained first aid persons on site.<br>Policy for AI reporting in place.<br>A&E ..... travelling distance.<br>Access to emergency vehicles suitable. | 2                                                           | 5 | M |
| Lone working       | Assault/fall                               | 4                                                         | 5 | M | Lone working restricted to site manager.<br>opening up.<br>Working hours set and managed through phone calls booking in.                                                                                                     | 2                                                           | 5 | M |

## RISK ASSESSMENT TEMPLATE

| Significant Hazard | Those at Risk and How they might be Harmed | Risk Factor - No Control Measures<br>(Likelihood x Severity) |   |   | Control Measures                                                                                                                                                                                                                                                                                                                                                                          | Risk Factor - With Control Measures<br>(Likelihood x Severity) |   |   |
|--------------------|--------------------------------------------|--------------------------------------------------------------|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|---|---|
|                    |                                            |                                                              |   |   | Parking close for Site manager.                                                                                                                                                                                                                                                                                                                                                           |                                                                |   |   |
| Environment        | Noise – Vibration Dust                     | 4                                                            | 4 | M | Environmental & Sustainability Management Plan.<br>Air Quality management plan completed and monitored.<br>Noise will be monitored and RAMs for contractors will have Noise impact for residence as well as workforce.<br>Vibration seen mainly during demolition and pilling phase this will be monitored.<br>Quite times will be looked at with residence and this will be implemented. | 3                                                              | 4 | M |

| Equipment to be used (Insert ✓)   |     |    |                                  |     |    |
|-----------------------------------|-----|----|----------------------------------|-----|----|
|                                   | Yes | No |                                  | Yes | No |
| Lifting                           | X   |    | Mobile scaffold                  | X   |    |
| Mechanical hoist                  | X   |    | Cradle                           |     |    |
| Mobile elevating working platform | X   |    | Excavation shoring               | X   |    |
| Ladder                            | X   |    | Mechanical tools                 | X   |    |
| Hoist                             | x   |    | CAT and Genny                    |     |    |
| Test equipment                    | X   |    | Ventilation/Extraction equipment | X   |    |
| Task lighting                     | X   |    | Lifting slings/chains            | X   |    |
| Scaffolding                       | X   |    | Mechanical Plant                 | X   |    |
| Other - specify:                  |     |    |                                  |     |    |

## RISK ASSESSMENT TEMPLATE

| Personal Protective Equipment to be used (Insert ✓) |     |    |                                 |     |    |
|-----------------------------------------------------|-----|----|---------------------------------|-----|----|
|                                                     | Yes | No |                                 | Yes | No |
| Safety Helmet                                       | x   |    | Gloves                          | X   |    |
| Protective Footwear                                 | X   |    | Hearing Protection              | X   |    |
| High Visibility Clothing                            | X   |    | Overalls                        |     |    |
| Eye protection                                      | X   |    | Body Harness/Fall Arrest Device | X   |    |
| Face Respirator/Dust Mask                           | X   |    | Other - specify:                |     |    |

|                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Hearing Protection to EN 352.1 (defenders).<br/> Hearing protection to EN 352.2 (plugs).<br/> EN 388 (grade 4343) compatible gloves when handling floorboards and sharp edges.<br/> High Visibility clothing to EN 471 class 2 or 3.<br/> Eye protection to EN166 grade 'F' for general use and grade 'A/B' for using machinery must be worn.<br/> Respiratory protection of FFP3 rating.</p> | <p>Hard hats to EN 397 must be worn at all times where overhead works are being carried out (bump caps to EN 812 are not considered as suitable for construction sites) hard hats may require chin straps in windy conditions.<br/> Steel toe-capped and mid sole protected footwear shall be worn at all times, (conforming to EN 345).<br/> Suitable knee protection should be worn where appropriate.<br/> Fall Arrest equipment must conform to the guidance SG4:05.<br/> Gloves to EN 420 (general), EN 374 (low chemical use), EN 388 (mechanical risks).</p> |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Notes to Amend, Add and Improve;

|                                |  |                                                                                                                                                           |  |            |  |       |  |
|--------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--|------------|--|-------|--|
| Prepared By<br>(Name):         |  | Position:                                                                                                                                                 |  | Signature: |  | Date: |  |
| Approved for<br>Use By (Name): |  | Position:                                                                                                                                                 |  | Signature: |  | Date: |  |
| R/A Review Date                |  | This risk assessment is valid until the review date. It will also be reviewed following any changes which may affect the identified safe systems of work. |  |            |  |       |  |