



Intended for
Laing O'Rourke

Project no.
1620005164

Date
25 October 2021

ABRAHAM MOSS LIBRARY & LEISURE CENTRE, MANCHESTER

REMEDIAL STRATEGY

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Revision History

Revision	Date	Purpose / Status	Document Ref.	Comments
P01	April 2021	For information	LP44107-RAM-ZZZ-XX-RP-Y-00007 P01 RS	For Comment
P02	September 2021	For information	LP44107-RAM-ZZZ-XX-RP-Y-00007 P02 RS	Issued
P03	October 2021	FINAL	LP44107-RAM-ZZZ-XX-RP-Y-00007 P03 RS	Update following EHO comments.

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DRAWINGS

1620005164/E/01	- Site Location Plan
LP44107-EWA-XXX-XX-DR-A-91010 P02	- Site Layout Plan
1620005164/E/04	- Borehole Location Plan
LP44107-RAM-B01-FN-DR-S-14001/02/03	- Foundation Details (plan view)
LP44107-BDP-ZZZ-GF-DR-J-96001_Level 00	- Water Supply Pipe Routing (MEP External Services & Site Restrictions_Ver8)
LP44107-RAM-XXX-XX-SK-D-51015	- Stage 4 Drainage Design
LP44107-EWL-ZZZ-ZZ-DR-L-94000/02/05	- Landscape Drawing (soft landscaping and details)
Visqueen Ltd: 4538-01 to 4538-05	- Ground Gas Protection System Installation Drawings & Gas Resistant Membrane Datasheet

APPENDICES

APPENDIX A	- Drawings
APPENDIX B	- Manchester City Council Planning Application Condition – Temporary Sports Hall (125033/VO/2030)
APPENDIX C	- Chemical Criteria for Reuse and Imported Material

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1. INTRODUCTION

1.1. Introduction

- 1.1.1. Ramboll UK Limited (Ramboll) has been appointed by Laing O'Rourke (LOR - the client and project Principal Contractor - PC) on behalf of Manchester City Council (MCC) to prepare a remedial strategy to support the proposed development works at Abraham Moss Library and Leisure Centre (the site).
- 1.1.2. This document outlines the key ground contamination issues which are required to be considered during the proposed construction of the new development.
- 1.1.3. The proposed development comprises the demolition of the existing library and leisure centre and the formation of replacement library and leisure facilities within the same site area. This will include the construction of a two-storey structure housing a gym, sports hall and a library with a semi-basement structure to accommodate a replacement swimming pool and associated plant. Further details are provided within Chapter 4.
- 1.1.4. It should be noted that to accommodate the development of the replacement facilities a temporary sports hall and temporary library were constructed within the grounds of the adjacent Secondary School (both in completed in 2020). The temporary Library was constructed under MCC Planning Application Number 125033/VO/2019, approved 6 March 2019 and the temporary sports hall was constructed under Application Number 14955/VO/2019 approved 25 November 2019. Supporting ground investigation information, remediation strategy and validation reports have been provided to MCC.
- 1.1.5. The site location and the development site areas are shown on Drawings 1620005164/E/01 and LP44107-EWA-XXX-XX-DR-A-91010 P02 provided within Appendix A.
- 1.1.6. This document formalises the risk mitigation measures proposed to ensure the safe development of the site. Also it is intended to satisfy planning conditions for a Remediation Strategy and to support the PC in providing an Environmental Management Plan for the site works.
- 1.1.7. It should be noted that this third issue (P03) of the Abraham Moss Remedial Strategy document has been updated following the initial issue in April 2021 (Issue P01) which incorporates with the results of post demolition phase ground investigations and associated risk assessments.
- 1.1.8. This P03 issue has been updated following comments received from MCC Environmental Health Officer (EHO) provide within an MMC Internal Memorandum (Reference 720486) dated 15 October 2021. The comments briefly comprises MCC requiring provision of the following:
 - A. Provision of gas protection measures including the manufactures specification for the membrane;
 - B. Provision of imported soil validation information in line with MCC guidance¹;
 - C. Provision of completed Verification Report.
- 1.1.9. Details of the gas protection measures are provided within Section 5.10.
- 1.1.10. Details of validation requirements and reference to MCC guidance is provided within Section 5.6. Please note the results of the imported soil validation testing will be provided with the final Ramboll Validation Report.

¹ Manchester City Council Planning & Contaminated Land Technical Guidance document, February 2021

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- 1.1.11. The final Ramboll Validation Report will be completed and issued to MCC upon completion the site works and the remediation actions detailed herein. The validation requirements required to completed the report are detailed within Section 6: Verification Plan.

1.2. Planning Conditions

- 1.2.1. In March 2020, Manchester City Council (MCC) granted full planning permission for the development of the new library and leisure centre. The planning condition determination notice (125033/VO/2020) stipulates the following contaminated land related planning condition, namely Condition No.5:

5) Notwithstanding [the] contaminated land desk study prepared by Ramboll dated 14 June 2019 (ref 1620005164) stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019, (a) the following information shall be submitted for approval in writing by the City Council, as Local Planning Authority following demolition of the building, but prior to the commencement of the development hereby approved:

*- **Submission of an updated site investigation and risk assessment report** once the buildings have been demolished from the site and ground gas monitoring complete;*

*- **Submission of a remediation strategy.***

*In the event of the Preliminary Risk Assessment identifying risks which in the written opinion of the Local Planning Authority require further investigation, the development shall not commence until a scheme for the investigation of the site and the identification of remediation measures (the **Site Investigation Proposal**) has been submitted to and approved in writing by the City Council as local planning authority.*

*The measures for investigating the site identified in the Site Investigation Proposal shall be carried out, before the development commences and a **report prepared outlining what measures, if any, are required to remediate the land** (the Site Investigation Report and/or Remediation Strategy) which shall be submitted to and approved in writing by the City Council as local planning authority.*

*b) When the development commences, the development shall be carried out in accordance with the previously agreed Remediation Strategy and a **Completion/Verification Report shall be submitted for approval** in writing by the City Council as local planning authority prior to the first use of the development hereby approved.*

*In the event that ground **contamination**, groundwater contamination and/or ground gas, **not previously identified**, are found to be present on the site at any time before the development is occupied, then development shall cease and/or the development shall not be occupied until, a report outlining what measures, if any, are required to remediate the land (the **Revised Remediation Strategy**) is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the Revised Remediation Strategy, which shall take precedence over any Remediation Strategy or earlier Revised Remediation Strategy.*

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1.2.2. Condition 5a has in part been addressed by previous investigations (detailed in the reports listed in Section 1.3). This current phase of work documented herein provides the Remediation Strategy to address the second part of Condition 5a. This primarily addresses the provision of an updated Remediation Strategy following post demolition phase ground investigation and provides an updated strategy for verification to facilitate completion of Condition 5b.

1.3. Previous reports

1.3.1. The following reports have been prepared for the site which should be read in conjunction with this report:

- Ramboll (2019) Abraham Moss Library & Leisure Centre, Manchester – Contaminated Land and Geotechnical Desk Study Report. Issue 1, Ramboll UK Ltd, June 2019;
- Ramboll (2019) Abraham Moss Library & Leisure Centre, Manchester – Ground Investigation Factual Report, Issue 1, Ramboll UK Ltd, June 2019;
- Ramboll (2019) Abraham Moss Library & Leisure Centre, Manchester – Ground Investigation Contaminated Land Interpretive Report. Issue 2, Ramboll UK Ltd, October 2019;
- Ramboll (2021) Abraham Moss Library & Leisure Centre, Manchester – Land Quality Technical Note 1: Demolition Phase Ground Investigation. Issue 1, Ramboll UK Ltd, September 2021.

A number of additional reports have been prepared by Ramboll in relation to the formation of the temporary library and sports hall facilities on adjacent land. These reports are not considered relevant to this Remediation Strategy. These reports are available to MCC via the Planning Portal under Application No. 125033/VO/2019 and 14955/VO/2019.

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2. SITE DETAILS

2.1. Site Location

- 2.1.1. The site is located off Crescent Road in Crumpsall, approximately 4km north of Manchester city centre at National Grid reference SD 84577 01640. The closest postcode is M8 5UF. The site is approximately 7.67 hectares (Ha) in area and is roughly rectangular.
- 2.1.2. A Site Location Plan and Site Layout Plan are presented as Drawings 1620005164/E/01 and LP44107-EWA-XXX-XX-DR-A-91010 P02.
- 2.1.3. The site lies immediately south and west of the Abraham Moss Primary and Secondary Schools respectively. The Abraham Moss Secondary School lies partly within an area of historical landfilling. See the Ramboll 2019 Desk Study/Interpretive Report(s) for further details relating to the former ICI Chemical Landfill to the east of the development area.
- 2.1.4. As reported within the Ramboll 2019 Contaminated Land Interpretive Report and 2021 Demolition Phase Investigations Technical Note the proposed development area does not lie within any areas of landfilling relating to the former ICI landfill. Nor have the adjacent temporary sports hall or library developments encountered such landfill materials within their development areas.

2.2. Site Description

- 2.2.1. Full site descriptions are contained in Ramboll (2019) Abraham Moss Library and Leisure Centre – *Desk Study* and *Contaminated Land Interpretive Report* and the Ramboll 2021 *Technical Note*.
- 2.2.2. The site lies in an area characterised primarily by suburban residential development, although it also includes mixed use of residential, commercial, allotment gardens and open space areas.
- 2.2.3. The development area for the proposed leisure centre includes the existing leisure centre, swimming pool, gym, sports hall, library and limited external car parking. The existing swimming pool plant room is located within a partial basement at eastern extend of the building. The leisure centre is bound to the north and east by the Abraham Moss Primary, Secondary and Further Education facilities, to the south and west by car parking and the Manchester Metrolink tram line, with residential properties beyond.
- 2.2.4. At the time of writing, the site is an active demolition site. The main building superstructure has been removed and the removal of the foundation slabs nearing completion (albeit some sections of the basement area foundation slab area are still to be removed due to the final design works are still to be completed). All plant has been removed from the swimming pool basement and during the removal work there was no indication of any recent staining or discolouration from the plant being removed.
- 2.2.5. Construction has yet to commence.

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3. GROUND MODEL

3.1. General Geology

3.1.1. In brief the site geology comprises (in summary):

- Made Ground comprising mixed granular and cohesive units with limestone, brick and concrete;
- Superficial Deposits comprising variable units of clay, silt and sand Glacial Till and Glaciofluvial Deposits; and
- Sidmouth Formation Mudstone unit present at a depth in excess of 25mbgl (not encountered during the ground investigation) .

3.1.2. A summary of the ground conditions encountered during the 2019 site investigation described previously is presented in Table 3.1 below. An exploratory hole location plan is included as 1620005164/E/04:

Table 3.1: Summary of the inferred geological strata within the development area

Stratum	Typical description	Range of depth encountered [top surface] (mbgl)	Range thickness (m)
Made Ground	Dark brown slightly clayey SAND with frequent rootlets. [TOPSOIL] <i>Encountered in boreholes WS03-WS06 only.</i>	Ground level	0.1 – 0.6
	Hardstanding comprising predominantly tarmac or rarely of block paving.	Ground level	0.05 – 0.2
	Light grey sandy GRAVEL of limestone. [SUB-BASE]	0.09 – 0.7	0.15 – 0.6
	Grey brown slightly silty sandy GRAVEL and gravelly SAND of limestone, brick, concrete, slate, sandstone, coal and ash. Rare to occasional gravel and cobbles of clinker. <i>Encountered across the whole site, typical thickness up to 2m.</i>	0.2 – 0.6	0.5 – 4.2
	Greyish brown silty SAND with pockets of sandy CLAY . [SUSPECTED REWORKED GROUND] <i>Encountered in boreholes WS03, BH05 and BH06 only</i>	0.9 – 2.4	0.15 – 0.8
Glaciofluvial Sheet Deposits [East of site only]	Orange brown occasionally silty SAND and stiff greyish brown silty CLAY . <i>Typically encountered within the eastern boreholes only. including: BH01, 05, and 06 and WS01, 07 and 08.</i>	1.2-2.60	3.9 -11.7
Upper Glacial Till [West of site only]	Unit highly variable and includes ; grey and brown sand silty CLAY , silty SAND , soft to firm SILT/CLAY . <i>Typically encountered within the western boreholes including BH02-04 and WS02-04.</i>	1.1-1.9	11.0- 12.2
Lower Glacial Till	Stiff brownish grey sandy slightly silty CLAY . Rare to slight gravel of mudstone, shale and coal	12.2 – 14.3 [west]	12m+ [base not proven]
	At depth: discontinuous lens' of silty sand up to 3.0m in thickness. (in BH03 unit water bearing).	5.1 – 8.3m [east]	

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Stratum	Typical description	Range of depth encountered [top surface] (mbgl)	Range thickness (m)
	<i>Unit present across whole of site area albeit at shallower depths to the east of the site [approximately 52mAOD in the west versus 61m AOD in the east].</i>		
Bedrock	Not encountered during ground investigation phase.	>25.00	Unknown

- 3.1.3. As reported within the Ramboll 2019 Interpretive Report bedrock is expected to be encountered at depths greater than 30mbgl. Based on the ground conditions encountered within the ground investigation, the cohesive Lower Glacial Till deposits overlying solid geology are expected to be in the order of at least 5 to 10 m in thickness below the base on the deepest boreholes (i.e. >25mbgl).
- 3.1.4. As reported with in the Ramboll 2021 Land Technical Note between June and September 2021 an additional phase of ground investigation were undertaken by Ramboll during the demolition of the main building. The ground conditions identified within the building footprint broadly corresponds to the 2019 investigation with the exception of an area of hydrocarbon impacted soils being identified within an isolated areas below the former pool basement.
- 3.1.5. Further details regarding the extent of the hydrocarbon impact are provided within the Ramboll 2021 Technical Note including a drawing showing the location of the impact.
- 3.2. **Groundwater**
- 3.2.1. The underlying Glaciofluvial Sheet deposits are classified as a Secondary A Aquifer, and the Collyhurst and Chester Pebble Bed Formation is classified as a Principal Aquifer. The site is not located within a groundwater source protection zone and there are no active groundwater abreaction licences listed within 1km of the site.
- 3.2.2. As reported within the Ramboll 2019 Factual Report, during the drilling works no groundwater strikes or wet strata were recorded shallower than 5.00 mbgl.
- 3.2.3. During monitoring, shallow groundwater was only encountered within WS04 in the north of the permanent facilities site area, indicating the possible presence of a localised perched groundwater body. It should be noted that WS04 is located immediately adjacent to a flat roof drainage outlet which is likely to be artificially altering local groundwater conditions.
- 3.2.4. Due to the presence of a significant thicknesses of underlying Glacial Till (cohesive) it is considered unlikely that the observed site groundwater body is in hydrogeological continuity with the underlying Bedrock Aquifer.
- 3.2.5. Deeper groundwater unit was encountered within the superficial deposits during drilling between 17.20mbgl (47.8mAOD) and 5.00mbgl (59.31mAOD) with significant rise to an average level of 4 to 5mbgl (59-61mbgl).
- 3.2.6. Post investigation monitoring indicated the presence of a piezometric surface at approximately 1.3-1.8mbgl (62.9-63.6mbgl). The groundwater encountered within the mixed cohesive and granular superficial deposits are likely to be localised pockets of groundwater water held under hydrostatic pressure confined within more granular deposits.
- 3.2.7. It is considered unlikely that the observed deeper groundwater unit is in hydrogeological continuity with underlying bedrock Principal aquifer.

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- 3.2.8. During the 2021 post demolition ground investigation phase no significant groundwater sources of contamination were identified albeit some areas of the basement area has yet to be fully investigated.

3.3. **Ground Gas**

- 3.3.1. As reported within the Ramboll 2019 Interpretive Report, six rounds of ground gas monitoring have been undertaken over a three month period under a range of atmospheric conditions..
- 3.3.2. A peak concentration of 6.6% carbon dioxide and 0.1% methane were recorded with a steady flow rate of 3.3 litres per hour (instantaneous peak flow rates linked to high water table were discounted – see 2019 Interpretive Report for further details), a gas screening value of 0.22 l/h indicated a Characteristic Situation 2 (CS2) is applicable to the development area. In accordance with industry standards a CS2 required the implementation of ground gas protection measures – see Section 5.10 for details.
- 3.3.3. During the 2021 ground investigation, no ground conditions were encountered which are considered sufficiently different to that previously identified or significant enough as to warrant a reassessment of the Characteristic Situation 2 assessment.
- 3.3.4. Ramboll consider that no additional gas monitoring rounds are required to support the existing ground gas risk assessment and the CS2 conclusion.

3.4. **Ground Contamination Identified**

- 3.4.1. Within the Ramboll 2019 Interpretive Report and the Ramboll 2021 Demolition Phase Technical Note, the following pollutant linkages (provided within Table 3.2 below) were identified which require further consideration within this Remediation Strategy.

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Table 3.2: Summary of significant pollutant linkages (modified from Ramboll 2019 Interpretive Report & 2021 Technical Note)

Pollutant linkage	Additional Actions Required
Concentrations of amosite asbestos fibres at or below the limit of quantification ($\leq 0.001\%$ w/w) within shallow Made Ground soils and one fragment of ACM (asbestos containing material) amosite insulation board/tile. Moderate to low potential risks to human health via inhalation of asbestos fibres to construction workers, future and adjacent site users.	Appropriate asbestos management measures will be required during construction works to mitigate risks to construction workers, future site users and adjacent site users, in particular the adjacent Abraham Moss schools (See Section 5.2) Due to the presence of asbestos the shallow reuse of soils is to be restricted to low sensitivity areas.
Potential site wide impact of benzo(a)pyrene PAHs within coal and ash rich gravel Made Ground soils. Low to moderate potential risks to human health via direct contact future site users.	If PAH containing soils are required to be reused onsite at shallow depth additional risk management measures are required (See Section 5.6).
Based on six rounds of monitoring a ground gas regime of Characteristic Situation 2 has been identified.	Ground gas protection measures consummate with Characteristic Situation 2 are required (in accordance with BS 8485). Further details of protection measures required are provided in in this Remedial Strategy in Section 5.9. This strategy will be submitted to the local authority
As yet unquantified risks to water supply pipes.	Water supply pipe risk assessment to be completed within the Remediation Strategy (see Section 5.8).
Hydrocarbon impacted soil impacts within former basement area. <i>[Soil concentrations below commercial industrial end-use assessment criteria but presenting with hydrocarbon odour.]</i> Low to low/moderate risk to shallow groundwater receptors from areas of hydrocarbon impacted yet to be full identified [basement area only].	The hydrocarbon impact recorded within the Ramboll 2021 Technical Note has been risk assessed and confirm that the soils do not present a significant risk to human health or the local water environment. In line with industry best practice and to improve the general water environmental quality in the local area, a programme of localised source removal is recommended. Details of the source removal works are to be provided within the Remediation Strategy (see Section 5.1).
Potential areas of unexpected contamination which may be identified during construction works present risks to all receptors. Low to moderate potential risks to all receptors via all pathway in the absence of additional information.	Protocol to be developed for managing any unexpected contamination encountered during construction works (see Section 5.7). Following the 2021 Investigation, the likelihood of encountering any areas of unexpected contamination (outside of the basement area) is considered low. The basement area hydrocarbon impact will be addressed specially within Section 5.1.

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4. PROJECT DESCRIPTION

4.1. Proposed Development

- 4.1.1. The proposed development consists of the formation of a single structure comprising both the leisure centre with a swimming pool and a library.
- 4.1.2. Following demolition of the superstructure, the existing foundation slabs are to be excavated and removed from site. Due to the requirement for structural ground improvement, all material from the original building floor level to 1.0m below this point is to be removed from site with imported natural aggregate materials (as per the designers material specification) placed and compacted in layers to provide a suitable development platform of at least 500mm in thickness. This is the same for both the basement area and the remainder of the building footprint. The excavated soils are not proposed to be reused.
- 4.1.3. Following placement of the engineering fill material a 500mm cast in situ ground bearing reinforced raft foundation will be constructed.
- 4.1.4. Drawings LP44107-RAM-B01-FN-DR-S-14002/03 show the above foundation features in further details.
- 4.1.5. As detailed in Table 3.2 the new development is to be include ground gas protection measures to satisfy the requirements of Characteristic Situation 2, this requirement is further stated on the above referenced foundation drawings.
- 4.1.6. The ground gas protection membrane installation drawings are provided by the system designer Visqueen Ltd (consulting department) within Drawings: 4538-01 to 05 which are provided within the appendices. These drawings show details regarding membrane sealing around service penetrations, steel columns and lift pits.
- 4.1.7. The gas protection designer has specified the use of the Visqueen Gas Barrier Membrane which is stated to comply with the requirements of BS 8485:2015+A12019. Gas resistant tapes and tanking membrane are also specified. Visqueen Technical Datasheets are provided within the appendices. See Section 5.10 for further details.
- 4.1.8. A new potable water connection is proposed and showing in Drawing LP44107-BDP-ZZZ-GF-DR-J-96001_Level 00 (MEP External Services & Site Restrictions_Ver8). The drawing shows the new water pipe connect to the existing Abraham Moss service east of the new pool, whereupon it routes north and then west along the edge of the building. The new connection enters the building at the northwest corner of the new layout.
- 4.1.9. The new water supply pipe is to be laid at a depth of 1.0mbgl. A water supply pipe risk assessment is provided within Section 5.9 which indicates a requirement for barrier type supply pipes.
- 4.1.10. The drainage system at the site is to comprise the formation of a below ground storm water Tubosider attenuation tank with a 1.6m internal diameter and a maximum length of 38.5m. The system, following passing through an oil interceptor and Hydro-Brake, will drain with the existing Abraham Moss / United Utilities drainage network.
- 4.1.11. A separate swimming pool backwash holding tank is also proposed adjacent to the pool (1.8m internal diameter, 10m long with a capacity of 25,000 litres). The discharge of the swimming pool backwash is to be managed via a trade effluent licence. Further consideration of the licence application/term is outside of the scope of this Remediation Strategy.
- 4.1.12. Drawing LP44107-RAM-XXX-XX-SK-D-51015 – Stage 4 Drainage Strategy shows the above drainage features.

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- 4.1.13. Due to the limited available space within the development area, soft landscaping works are limited in nature. At the time of writing three new areas of landscaping are proposed;
- Along the eastern site boundary - a narrow strip of turf and seven trees (700mm deep pits);
 - Along southeastern boundary – a narrow strip of permeable paving with five trees (1130mm deep pits); and
 - West of the main building – an entrance plaza with permeable paving and four trees (1130mm deep pits) and five shrubberies (raised containers).
- 4.1.14. Supplied documentation indicate all tree pits/containers etc, are to be formed with an imported topsoil rather than with reused on-site materials. See landscaping drawings for further details.
- 4.1.15. West of the present main building currently lies an area of soft landscaping (turf and benched seating – this area is proposed to be retained (albeit with the addition of a central path).
- 4.1.16. Drawings LP44107-EWL-ZZZ-ZZ-DR-L-94000 02/05 show the above landscaping features.
- 4.2. **Ground Contamination Risks Associated with the Proposed Development**
- 4.2.1. There are a number of design elements that will affect the current ground conditions and thus may have a potentially significant effect on ground contamination risks at the site. These are summarised in Table 4.1.

Table 4.1: Design details of the proposed development

Design feature	Development details	Implication for ground contamination risks
Earthworks (topsoil/ hardstanding strip, demolition and service trenching)	Excavations required to support the installation of new service connections as well as to clear the site for construction. During the removal of the hydrocarbon impacted soils from the basement area a full time environmental watching brief is required (Section 5.2). During the reduced level excavations and formation of service trenches across the remainder of the site area, a part time environmental watching brief will be undertaken. No material reuse is proposed at this time.	No additional phase of investigation are proposed. A strategy for the removal of the hydrocarbon impacts is presented within Section 5.2. A strategy will be required to address any unexpected or asbestos contamination encountered during earthworks (Section 5.8). It is recommended that any materials designate for reuse should be managed in accordance with the principles described in the CL:AIRE Definition of Waste Code of Practice (DoWCoP). A Material Management Plan (MMP) may also be required (Section 5.4) should material be required for reuse.
Drainage	Soakaways systems are not proposed. One main attenuation tank is proposed to be installed within	No additional associated risks to the water environment. Soil arisings recommended to be managed in accordance with industry best practice (Section 5.4).

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Design feature	Development details	Implication for ground contamination risks
	external car parking area south of the new pool area. One additional pool backwash tank is also provided in this area. These attenuation tanks are to discharge into United Utilities infrastructure.	
Potable water supply pipes	Potable water supply routings are provided within site development drawings. The use of barrier type potable water supply pipes is proposed.	Certain contaminants e.g. hydrocarbons may pose a risk to water supply pipes (Section 5.9). A water supply pipe risk assessment is provided in this Remedial Strategy. Consultation with Water Authority and verification plan will be required. Soil arisings from service trench excavations recommended to be managed in accordance with industry best practice (Section 5.5)
Foundations	Following 1,000mm of reduced level excavations across the full site area. Imported natural aggregate material will be placed in layers forming a 500mm thick development platform. Once completed the new foundations will be formed with the construction of a 500mm thick cast in situ reinforced ground bearing foundation raft.	Piled foundations are not proposed. Following demolition if soils are found to be geotechnical or environmentally unsuitable, they shall be locally removed and replaced with engineered fill. The export of site won soils (e.g. Made Ground / topsoil) and import of aggregate is recommended to be managed in accordance with industry best practice (Section 5.4/5/6).
Ground Gas	The leisure centre will be designed with gas protection systems to mitigated against a gas regime corresponding to Characteristic Situation 2.	Following the installation of ground gas protection measure consummate with the requirement for CS2, the risk to future site user will be suitably mitigated (Section 5.10).
Landscaping	Minimal new soft landscaping areas are proposed. One area of newly installed turf is proposed along the eastern boundary. The reuse of site-won soils for the formation of these areas is not proposed within the top 0.6m.	Within turfed areas of soft landscaping, existing Made Ground soils are not suitable for use within the top 0.6m. Where landscaped areas are formed the imported topsoil should conform to British Standard for Topsoil (BS3882:2015), be free from man-made ameliorants and to the contaminant thresholds detailed in Appendix C.

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Design feature	Development details	Implication for ground contamination risks
		All chemical testing shall be undertaken at an appropriately accredited laboratory (UKAS and MCERTs). Imported soils will require post placement validation to demonstrate they are chemically suitable for use (Section 5.6/7). Testing frequencies set out in Section 5.6 and in accordance with MCC guidance.

4.2.2. **Note:** during the previous phases of ground investigation, multiple borehole monitoring standpipes have been installed to a range of depths across the whole of the Abraham Moss site area. These boreholes will require decommissioning at such time as they are no longer required. Full details of the decommissioning requirements are provided in Environmental Agency Guidance document "Good practice for decommissioning redundant boreholes and wells, LIT 6478/657_12, October 2012". EA approval of the scope and methodology for the decommissioning work should be sought.

4.3. Groundwater

- 4.3.1. Shallow, albeit discontinuous groundwater was encountered on site during the Ramboll Ground Investigation and is considered likely to be perched on the upper surface of the Glacial Till and likely sensitive to local weather conditions.
- 4.3.2. If groundwater is encountered at depth during excavation, a licence from the Environment Agency may be required for dewatering activities depending on the quantity of water removed. Any groundwater visibly impacted with hydrocarbons will also require removal and disposing of from site. Consultation with the Environment Agency should be carried out prior to the commencement of construction works.
- 4.3.3. It is essential that any water removed from excavations be stored in a controlled way before disposal. The Local Water Authority will need to be contacted prior to disposal if it is to be to the public sewer and the outcome of such consultations will need to be retained on site for inclusion within the verification report. Some form of water treatment may be required.

4.4. Remedial Design Statement

- 4.4.1. The following issues have been identified which require risk mitigation measures to be incorporated into the design and development plans to allow for the safe development of the site.
- Procedure of managing the excavation of the hydrocarbon impacted soils within the former pool basement area including Watching Brief and validation sampling;
 - Procedures for dealing with previously unidentified contamination or the presence of asbestos if encountered;
 - Confirmation of suitable pipe specification for the potable water supply pipes;
 - Confirmation of the requirements for the ground gas protection measures;
 - Where required a protocol for the re-use of site won material under the CL:AIRE Waste Code of Practice Protocol. Site won Made Ground soils are not considered suitable for use in landscaped areas at depths <0.6m bgl;
 - Procedures for confirming suitability for use of imported materials;
 - Procedures for export of materials surplus to requirements; and

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- Validation Works: Validation during works and a final Verification Report will be required on completion of ground works to confirm that all actions required in this report have been completed appropriately for safe development.
- 4.4.2. A remedial strategy is presented in the following chapter to include the above considerations.
- 4.4.3. A verification plan is also presented which will inform the Principal Contractor as to the data requirements for preparation of a Verification report on completion of ground works.

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5. SPECIFIC REQUIREMENTS

- 5.1.1. A number of design elements have been identified which require mitigation measures in order to allow safe development of the site in relation to ground contamination risks. The mitigation measures required are detailed below.
- 5.2. **Localised Removal of Hydrocarbon Impacted Soils within Basement Area**
 - 5.2.1. While the recorded concentration of hydrocarbons within the former basement area have been risk assessed as not presenting a significant risk to human health or local water receptors Ramboll have recommended the removals of the impacted soils.
 - 5.2.2. The removal works are proposed to align with industry best practice regarding removing potential contaminated sources and to improve the general water environmental quality in the local area.
 - 5.2.3. A strategy for managing the removal works is present below:
 - Submit relevant documents and report to the Local Planning Authority;
 - Where direct transfer of impacted arisings (such as a tipper lorry etc) is not possible, a segregated and bunded storage area shall be set up for the storage of contaminated arisings prior to off-site disposal such as located on an impermeable membrane. Run off from the arisings shall not be allowed to drain to ground, instead the run off shall be collected within a suitable container/existing interceptor for off-site disposal or disposal in line with the trade effluent consent requirements. Cover sheeting shall be provided should rain be anticipated;
 - Suitable storage containers and pumps are to be set up, tested and implemented to pump out contaminated groundwater encountered during the source removal works;
 - Visibly and/or olfactory impacted soils above the water table are to be excavated, (stockpiled if required), and removed from site for off-site disposal under an appropriate Duty of Care (e.g., to a waste treatment facility or directly to landfill);
 - From initial observations the impact is anticipated to be approximately 500mm in thickness, lying immediately below the 400mm thick foundation slab (i.e. a total depth of 900mm below original basement floor level);
 - Should the impact extend locally below this and where permissible and safe to do so the excavation will be locally extended;
 - Where visible and/or olfactory impacted soils are noted below the water table, these soils are to be removed where it is permissible and safe to do so;
 - The lateral extent of the excavation shall be determined by the Environmental Watching Brief using a combination of a notable decrease in the significance of visual and/or olfactory observations and the use of a photoionization detection (albeit peak readings during the recent investigation were only 370ppm therefore visual observations are likely to be more effective);
 - Confirmatory validation samples are to be taken from residual soils on each excavation face and the base (where possible) and submitted for speciated hydrocarbon analysis to demonstrate that the impacted soil removal work has been carried out appropriately;
 - During the source removal works, visibly impacted groundwaters are to be pumped out from the excavation into a suitable storage container prior to off-site disposal under appropriate Duty of Care or disposal in line with the trade effluent consent requirements;

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- The excavation is to be backfilled with chemically and geotechnical suitable materials. The chemical suitability requirements are set out in the below sections. Geotechnical requirements will be provided by others;
 - Full time supervision by the project environmental consultant is recommended within the impacted area until the extent of the impact is identified then part time attendance for the remainder of the reduced level excavation is recommended;
 - The results of the source removal works and the validation sampling results as well as site works shall be provided within the final project Validation Report (Closure report).
- 5.2.4. Should the hydrocarbon source be identified to be more significant than initially assessed, the Environmental Watching Brief shall cease the source removal works until a further assessment can be undertaken. This would not preclude the general reduced level excavation works from being undertaken outside of the impacted soils area.
- 5.2.5. If any additional contaminative source(s) were to be identified this would be managed under the unexpected contamination protocol provided in the below sections.
- 5.3. General Excavation Works**
- 5.3.1. Should excavations (either general service trenching or the wider reduced level excavation) reveal soils which are identified as potentially contaminated through visual indicators such as black staining or olfactory indicators such as strong hydrocarbon odours, visible asbestos containing materials or visibly fibrous materials, the unexpected contamination protocol shall be implemented (Section 5.8) and in adherence to the MCC Planning Conditions, work must cease in the affected area, the project environmental consultant (PEC) must be informed and an updated remediation strategy be submitted to MCC for approval. The contaminated materials are to be stockpiled separately from other excavated materials free of visual or olfactory contamination.
- 5.3.2. Stockpiled soils are to be sampled for chemical testing and assessment for suitability for re-use (if required), or if material is surplus to requirements, sampling and analysis may be required for waste classification. Sampling strategies for different purposes are discussed further below.
- 5.3.3. The PC shall take all practicable measures to ensure water does not enter excavations. In the event of water entering excavations the PC shall take suitable measures to ensure it does not become contaminated. Any water entering excavations shall be disposed of in a suitable manner.
- 5.3.4. Due to the potential presence of asbestos fibres with the Made Ground soil, albeit at low concentrations (typically <0.001% w/w), all Made Ground should be suitably wetted during excavation work/material handling to minimise dust generation. Where visible fragments of asbestos e.g. low risk asbestos cement materials are identified, they should be removed by suitably trained and experienced site personnel. Where high risk asbestos containing material are identified (e.g. insulation material) the unexpected contamination protocol should be followed.
- 5.3.5. The PC is to provide details of site mitigation measures (e.g. dampening down, wheel washing etc) and comment on their effectiveness. If visible asbestos is identified (or recorded within any additional soil laboratory analysis) the contractor is to provide plans detailing their location and any necessary remediation actions.
- 5.4. Soil Reuse**
- 5.4.1. At the time of writing there is no planned requirement for the reuse of soils as part of the formation of the new leisure facilities. It is anticipated that any material excavated will be

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disposed of off-site, for example, material generated during the reduced level excavation to form the foundation rafts or service trenches etc.

- 5.4.2. Any material reuse on-site should be undertaken in accordance with industry standards, for example using the procedures outlined in the CL:AIRE Waste Code of Practice.
- 5.4.3. The Ramboll 2019 Contaminated Land Interpretative Reports established that the natural material tested were chemically suitable to be reused on-site without restriction (if required and in accordance with under industry re-use codes of practice).
- 5.4.4. The report also identified that due to the presence of contaminants including asbestos, and polyaromatic hydrocarbon the reuse of soils in landscaped areas without an appropriately approved installed and verified cover layer system (see Section 5.7) are not permitted. No soils containing hydrocarbon odours are permitted to be reused on-site.
- 5.4.5. If the concentrations of asbestos or hydrocarbons within Made Ground soils identified during any additional investigations/sampling results varies from those identified to date, additional control measures may be required to be put in place by the contractor.
- 5.4.6. If required, any materials to be reused in filling activities shall meet the contaminant generic assessment criteria for a commercial / industrial land use scenario presented in Appendix C.
- 5.5. **Waste Management**
 - 5.5.1. For any material which is to be taken off-site, the Contractor shall comply with all applicable Waste Management and Duty of Care Regulations.
 - 5.5.2. Any materials destined for landfill disposal must comply with all requirements of the Landfill Directive including appropriate waste classification and Waste Acceptance Criteria (WAC) testing where necessary. Confirmation of disposal shall be obtained from the receiving facility.
 - 5.5.3. Where arisings from natural strata require disposal, these should be stockpiled separately and sampled for classification prior to disposal. If materials appear not to have any visual / olfactory evidence of contamination and it is thought there is a potential for disposal as inert, inert WAC analysis should also be completed.
 - 5.5.4. All stockpiled materials to be disposed off-site should be sampled and analysed for waste classification. Materials which are classified as hazardous will require WAC analysis to determine the class of landfill to which they may be disposed and determine requirements for pre-treatment prior to disposal.
 - 5.5.5. Pre-treatment of hazardous waste prior to disposal is a legal requirement. The requirements for pre-treatment should also be discussed with landfill operators as it is possible that sorting can in some cases fulfil this requirement. The requirements for pre-treatment shall also be discussed with the PEC prior to commencing and should be fully documented.
 - 5.5.6. There should be no mixing of hazardous, non-hazardous or inert soils.
 - 5.5.7. The following documentation must be completed and held on-site in a designated file for the removal of waste:
 - Waste Transfer Notes (Controlled Waste) including EWC classification; and
 - Consignment Notes (Hazardous Waste).
 - 5.5.8. The Transfer Note must include a description and the quantity of the waste and details of the licensed waste collection contractor. Copies of the waste carrier registration shall be

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held on-site. Sufficient information shall be provided to ensure that the waste disposal operator is aware of the potential hazards of the substance.

- 5.5.9. The Contractor must ensure that the waste is taken to an appropriately licensed facility under a Duty of Care.

5.6. Imported Materials

- 5.6.1. From the development plans provided, there will be a net removal of soils from site. However due to the reduced level excavations to form the development platform as well as for more general service trench backfill and haul roads etc, there is a requirement for the importation of engineering materials for specific purposes such as service trench backfilling, crane bases/haul roads etc.
- 5.6.2. It is anticipated that limited quantities of topsoil material will be required for the formation of the new turfed soft landscaping area.
- 5.6.3. The requirements for sampling of imported materials is detailed within Manchester City Council Planning & Contaminated Land Technical Guidance document, dated February 2021.
- 5.6.4. For materials intended to be imported onto site and used as part of the development, consideration should be given to the following:
- Any material imported to the site shall be analysed geotechnically to ensure it is suitable for its intended use. Chemical suitability for use shall be considered for soils intended for use at shallow depth (i.e. landscaping area). This assessment should be undertaken prior to bringing any such material onto the site;
 - Care must be taken to confirm the source of all aggregates being imported onto the site. Inert material or soils may be classed as waste, depending on their source. The producer of aggregate must show the material has been fully recovered and is no longer a waste. To do this the producer must follow the quality protocol for the production of aggregate from inert waste, as outlined by WRAP (Waste & Resources Action Programme);
 - All materials imported for use in soft landscaped open space shall be free from man-made ameliorants and also conform to the specific requirements for the Landscape Architect. Topsoil certificates shall be provided to demonstrate the material is suitable for use with reference to the British Standard for Topsoil (BS3882:2015).
 - It will be necessary to ensure imported materials do not exceed the relevant assessment criteria provided in Appendix C; All chemical testing shall be undertaken at an appropriately accredited laboratory (UKAS and MCERTs);
 - If the imported material is to be from a brownfield, remediated soil or unknown source, the material shall be tested at a minimum frequency of 1 per 150m³ or at least three samples for each source whichever is the greatest where the soils are to be used in soft landscaping areas. For greenfield sources a minimum testing frequency of 1 per 200m³ (/minimum of 3 samples) shall be implemented;
 - Virgin quarried material will need to be tested at a frequency of three samples per source when intended for use at shallow depth, however no additional testing is required should this material be placed under hardstanding, rather a visual check for evidence of contamination;
 - Testing frequency of imported soils shall be undertaken in accordance with current MCC guidance (as referenced above);

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- The use of chemical testing results provided solely by the supplier to determine suitability would not be considered acceptable. If chemical test results exceed the assessment criteria, then the frequency of testing shall be increased as required to determine the reasons for the exceedances and confirm that the materials are suitable for use or an alternative source used;
- Documentation on the source, quantity and testing results shall be retained onsite for inspection and subsequent inclusion in the verification report;
- The Contractor shall retain records on the location, depth of excavations and how/where any imported material is placed. The Contractor shall supply compliance reports for validation reporting; and
- Should the requirements for materials such as the volume of topsoil required change during the project, the project environmental consultant is to be informed immediately to further detail the testing requirements.

5.7. Cover Layer System – Soft Landscaping Areas

- 5.7.1. In soft landscaped areas which are accessible (i.e., not areas below permeable paving or within tree pits/planters) such as new areas of turf a 600mm thickness of clean imported material is required to provide a planting medium and reduce potential for exposure to potentially impacted subsoil.
- 5.7.2. The testing requirements for imported topsoil materials used with the turfed areas is provided above.
- 5.7.3. On-site verification of the thickness of clean cap emplaced is required and further detailed in Chapter 6.

5.8. Areas of Unexpected Contamination Protocol

- 5.8.1. Any material encountered during enabling works/earthworks/additional investigations showing visual and/or olfactory evidence of potentially significant contamination should be assessed by the PEC to determine suitability for use, re-use or off-site disposal route.
- 5.8.2. Examples of materials that would warrant unforeseen contamination assessment include: pooling hydrocarbons, buried storage barrels/drums, suspected asbestos containing materials or pockets of fibrous materials *i.e.*, potentially containing asbestos.
- 5.8.3. Should areas of significant unexpected contamination be identified, work is to stop immediately in the affected area. The PC or their representative are to inform the PEC to discuss any further assessment or remediation actions. The PC with the PEC are to inform the MCC EHO immediately and seek approval for any proposed actions.
- 5.8.4. Where suspected contamination is identified, soil samples should be taken at a frequency of 1 every 100m³ with a minimum of 3 samples for each source and analysed for the suspected contaminants of concern in consultation with the PEC. Additional samples should be taken from the walls and base of the excavation to demonstrate that the material remaining in-situ is chemically suitable for use. Sufficient samples should be taken under the guidance of the PEC to ensure a representative spread of data is available for the material types present remaining within the excavation.
- 5.8.5. Should the potentially contaminated soils be intended for reuse on-site it will need to be demonstrated that the soil adheres to the contaminant generic assessment criteria commercial / industrial scenario presented in Appendix C. Should material fail this chemical specification, then the PEC should be consulted immediately to assess the material further and recommend appropriate risk management measures, as considered appropriate.

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- 5.8.6. It will be necessary to retain all records relating to testing, quantity, depth and location of the material identified. Where such material is used/re-used, it will be necessary to retain records on where this material was placed and depth it was placed.
- 5.8.7. If this material is removed off-site, then in addition to records on the source area outlined above, it will also be necessary to retain records relating to waste transfer notes, quantities and the receiving site (see waste management section).
- 5.8.8. The PC shall be required to provide a method statement describing how any areas of unexpected contamination encountered will be addressed during the earthworks. This is likely to include:
- The PC stopping work in that area and immediately informing the PEC to discuss the proposed action;
 - Sample the unexpected contamination to assess the nature of the material;
 - No works to commence in the area of unexpected contamination until the extent of contamination has been identified and required actions determined which may include, for example, a method of excavating, placing elsewhere onsite during the works, or possible disposal offsite to a suitably licensed facility;
 - It may be necessary to place the impacted material in a bunded area of the site whilst the information on the material is gathered; and
 - Inform the Local Authority and agree proposals for dealing with the impacted material.

5.9. Buried Potable Water Supply Pipes

- 5.9.1. A potable water supply pipe assessment has been completed utilising current site information and is presented below.
- 5.9.2. In order to determine the appropriate materials for water supply pipes, this assessment has been undertaken in accordance with the UK Guidance for the Specification of Water Supply Pipes to be used in Brownfield Sites (UK Water Industry Research Ltd. UKWIR, 2014).
- 5.9.3. The pipeline materials considered by the guidance are PE, PVC, wrapped steel, wrapped ductile iron or copper pipe and barrier pipe. PE and PVC are assessed using threshold concentrations for various chemical groups including volatile organic compounds (VOC) with tentatively identified compounds (TICs), semi-volatile organic compounds (SVOC) with TICs, and mineral oils. Wrapped steel, wrapped ductile iron and copper pipe are assessed using corrosive properties.
- 5.9.4. Table 5.1 summarises the relevant analytical results compared to pipeline threshold concentrations.

Table 5.1: Soil data compared to pipework threshold concentrations

Test Group	Testing Required?	PE Threshold mg/kg	Maximum Concentration [No. > PE threshold]	Metal Pipes/ Barrier Pipe
Total VOCs	Where Preliminary Risk	0.5	<0.022	Pass
Total BTEX & MTBE		0.1	<0.001	Pass

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Test Group	Testing Required?	PE Threshold mg/kg	Maximum Concentration [No. > PE threshold]	Metal Pipes/ Barrier Pipe
Total SVOCs (excluding PAHs and those substances marked with an *)	Assessment (PRA) has identified land potentially affected by contamination	2	2.0 [1 of 7 samples]	Barrier Pipe Required
EC5-EC10 aliphatic and aromatic hydrocarbons		2	<1	Pass
EC10-EC16 aliphatic and aromatic hydrocarbons		10	106 [9 of 16 samples]	Barrier Pipe Required
EC16-EC40 aliphatic and aromatic hydrocarbons		500	995 [4 of 16 samples]	Barrier Pipe Required
Phenols* (from SVOC analysis) ^[2]		2	<1	Pass
Cresols and chlorinated phenols* (from SVOC analysis) ^[3]		2	<1	Pass
Ethers*	Only where identified	0.5	-	Pass
Nitrobenzene*		0.5	-	Pass
Ketones*		0.5	-	Pass
Aldehydes*		0.5	-	Pass
Amines		Presence = Fail	-	Pass
Corrosive	Conductivity, Redox and pH	Pass	Pass	See Note ^[1]

Notes:

'Total' concentrations calculated as the sum of all concentrations above laboratory detection limit.

^[1] Threshold: For wrapped steel, corrosive if pH<7 and conductivity >400uS/cm. For wrapped ductile iron corrosive if pH<5, Eh not neutral and conductivity >400uS/cm. For copper, corrosive if pH<5 or >8 and Eh positive.

^[2] Phenols: Group 2e as specified in UK WIR, 2010: sum of butyl phenol, dichlorophenols, dimethyl phenol, ethyl phenol, pentachlorophenol, phenols, trichlorophenols.

^[3] Cresols: 2-, 3-, and 4-methylphenols.

Highlighted - concentrations exceed the threshold for PE.

Assessment undertaken on 2019 data only.

- 5.9.5. The available data indicates that PE pipes are likely to be unsuitable for the developments and an upgraded barrier pipe will be required should the pipe be laid in or under existing Made Ground soils.
- 5.9.6. The proposed potable water is shown in Drawing LP44107-BDP-ZZZ-GF-DR-J-96001_Level 00 (MEP External Services & Site Restrictions_Ver8). The drawing shows the water routing connect to the existing Abraham Moss service east of the new pool base, whereupon it routes north and then west along the edge of the building. The new connects enters the building at the northwest corner of the new layout.
- 5.9.7. Should visible hydrocarbons found to be present during excavation works, the use of barrier type water pipe is not permitted, and suitable arrangements should be made for

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the removal of such contamination. See Section 5.1 for more details regarding the removals of the basement area hydrocarbon source removal.

- 5.9.8. Consultations with the local water authority should be undertaken by the PC to determine their requirements for new water supply pipe connections. Details of these discussion are to be passed to the PEC for inclusion within the Verification Report.
- 5.9.9. Photographic evidence will be required of the excavation depths, materials, used (pipe selection and material backfill) and product data sheets etc. for inclusion within the verification report.

5.10. Ground Gas Mitigation

- 5.10.1. The ground gas monitoring available indicates the site to be a worst case of Characteristic Situation 2. Further discussion of this and the available data is provided in the Ramboll 2019 Interpretative Report.
- 5.10.2. For the avoidance of doubt, Ramboll consider the six rounds of ground gas monitoring undertaken and reported in the 2019 Interpretive Report, to be sufficient to assess the potential future risks from ground gases. The ground conditions reported within the Ramboll 2021 Technical Note are considered similar to those of the 2019 investigation and no additional assessment are require in light of the CS2 classification .
- 5.10.3. Guidance provided in BS8485:2015 has been used to determine the level of ground gas protection required. The site development is a commercial leisure centre building with an expected high level of internal ventilation and is classed as a 'Type C' building within the guidance and the corresponding minimum gas protection score required for Characteristic Situation 2 is 2.5 points. The selection of measures to add up to the 2.5 points required must include at least two different elements e.g., a barrier with membrane or dilution element.
- 5.10.4. The ground gas protection system has been designed by Visqueen Ltd and comprises the installation of gas resistant membrane and a structural barrier of a ground bearing monolithic reinforced foundation slab (500mm in thickness):

1. Gas Resistant Membrane: 2 points

Membrane must meet all of the following criteria (as specified by BS8485:2015+A1 2019):

- sufficiently impervious to the gases with a methane gas transmission rate <40.0 ml/day/m²/atm (average) for sheet and joints (tested in accordance with BS ISO 15105-1 manometric method);
- sufficiently durable to remain serviceable for the anticipated life of the building and duration of gas emissions;
- sufficiently strong to withstand the installation process and following trades until covered (e.g., penetration from steel fibres in fibre reinforced concrete, penetration of reinforcement ties, tearing due to working above it, dropping tools, etc.) to withstand in-service stresses (e.g., settlement if placed below a floor slab);
- capable, after installation, of providing a complete barrier to the entry of the relevant gas; and
- verified in accordance with CIRIA C735

2. Structural Barrier e.g. foundation slab: 0.5 points to 1.5 points

- Cast in situ monolithic reinforced ground bearing raft or reinforced cast in-situ suspended flooring slab with minimal penetrations 1 or 1.5 points.

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- 5.10.5. Based on the information provided by Visqueen Ltd, the installation of an appropriately installed and verifcative gas membrane combined with the structural barrier (500mm thick reinforced foundation slab) would confer in excess of the 2.5 points required for a CS2 classification.
- 5.10.6. The ground gas protection membrane installation drawings are provided by the system designer Visqueen Ltd within Drawings: 4538-01 to 05 which are included within the appendices. These drawings show details regarding membrane sealing around service penetrations, steel columns and lift pits.
- 5.10.7. The gas protection designer has specified the use of the Visqueen Gas Barrier Membrane which is stated to comply with the requirements of BS 8485:2015+A12019. Gas resistant tapes and tanking membrane are also specified. Visqueen Technical Datasheets are provided within the appendices. See Section 5.10 for further details.
- 5.10.8. The chosen gas protection system to be installed by an appropriately experience and qualified person appointed by the PC.
- 5.10.9. All ground gas protection measures incorporated into the design of the building will need to be documented onsite by the Contractor. Photographic evidence of the general installation, taping and sealing of the membrane will be required to provide sufficient information for Ramboll to complete the Verification Report upon completion of the construction works. The installation and integrity testing report for the membrane will be required from the Contractor to form part of the validation report.
- 5.10.10. MCC EHO require details of the protection system installed and details of the verification of installation prior to first occupation.

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6. VERIFICATION PLAN

6.1. General

- 6.1.1. The remedial works required to ensure a safe development must be documented and a verification report prepared following the completion of all ground works to demonstrate compliance with this remedial strategy.
- 6.1.2. Table 6.1 provides a detailed verification plan to be followed during works.
- 6.1.3. The Contractor will be responsible for keeping and providing the appropriate records. A part time watching brief by the Project Environmental Consultant comprising site visits during key aspects of the remedial works and to complete the additional investigation works beneath the existing building following demolition should be completed. An independent verification report would then be prepared following completion of the ground works to provide details of works as witnessed and verification of required documentation provided by the Contractor.

Table 6.1: Verification Plan

Item	Potential Risk	Risk Mitigation	Method of Validation
V1	Risk from hydrocarbon impacted soils located within former basement area.	Localised source removal works under Environmental Watching Brief	PEC to undertake environmental watching brief, field screening of soils with PID and boundary laboratory analysis of represented soil samples. Analysis of results and site works to be collated and reported within Verification Report.
V2	Asbestos fibres in Made Ground – risk to construction workers and neighbouring residents/site user during construction. Risk from asbestos to future site user within soft landscaping area.	Minimise risk of any asbestos fibres being released during construction and ensure H&S precautions are in place. Use of cover layer system (V4)	Contractor to provide copy of site mitigation measures (e.g. dampening down, wheel washing etc) and comment on their effectiveness. If visible asbestos is identified or asbestos identified within any additional laboratory analysis, the contractor is to provide plans detailing their location. Where undertaken the contractor to provide details of any hand picking of asbestos or other measures to segregate asbestos impacted waste streams. PEC to supplement the above with information recorded during environmental watching brief. For cover layer system see V4.
V3	Reuse of soils (if required)	Strategy for reuse of soils on site.	Details of where the material was excavated from onsite, including volumes. Where material was placed, thickness of material placed, temporarily and permanently. Details of capping of the material in soft landscaping areas. Adherence to the capping guidance for minimum 600mm of chemical suitable material landscaped areas. Details of site working methods, including how stockpiles have been managed.
V4	Exposure to shallow soils considered unsuitable for use in soft landscaping area	Use of cover layer system.	Made Ground soils within the site boundary are not permitted to be utilised in soft landscaped area at depths less than 600mm below the surface. Contractor to provide photographic evidence of the installation and material used.

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Item	Potential Risk	Risk Mitigation	Method of Validation
			PEC to undertake further verification post placement. Chemical suitability of cover layer system addressed below.
V5	Introduction of contamination from soils imported to the site	Checks made to ensure soils brought to site are suitable for use based on the acceptance criteria in Appendix C. Imported soils must be accompanied by chemical testing data. Imported soils should not contravene waste legislation.	Where materials imported to the site could be considered a 'waste', details to demonstrate that the material is not a 'waste' or that waste legislation has been complied with. Details of source of imported material and, where necessary, chemical testing certificates to demonstrate suitability for use against criteria in Appendix C. Volumes of imported material. Plans of where it was temporarily stored, and where it was finally placed, including thickness. For imported topsoil, certificates required to demonstrate it complied with BS3882:2015 and does not exceed the re-use criteria in Appendix C. Testing frequency to be in accordance with MCC guidance.
V5	Contamination being identified which was not anticipated	Dealing with unexpected contamination appropriately, i.e., the unexpected contamination protocol, and under liaison with the PEC.	Records relating to any unexpected contamination identified and actions taken to address this, together with regulator liaison where necessary.
V6	Contamination of water supply through supply pipes	Installation of barrier type water supply pipe. PC led liaison with water supplier to seek approval.	PC to ensure photographic records are provided during installation of barrier type pipe. PC to ensure pipework is not laid within any area where visible hydrocarbon are present and provide supporting photographic records.
V7	Ingress of gas to proposed development buildings	Gas protection measures, as specified in Chapter 5.	Records of the credentials of the approved installer for the gas remediation measures. Records of the gas protection measures installation process, including photographs. Independent inspection / validation of the installed gas protection measures.

6.2. General

- 6.2.1. The PC shall prepare detailed method statements covering environmental matters associated with the Works.
- 6.2.2. The PC shall ensure that the Works detailed in the method statements comply with applicable EA and Local Authority requirements.
- 6.2.3. Excavation work should not commence until all the aforementioned approvals have been obtained, including all necessary permissions.
- 6.2.4. The PC will be expected to hold documentation relating to environmental issues on-site in designated files for inspection at any time. This shall include, as a minimum:
 - Transfer notes (for controlled waste) and consignment notes (for hazardous waste) including European Waste Code classifications;
 - Copies of waste carrier's registrations;

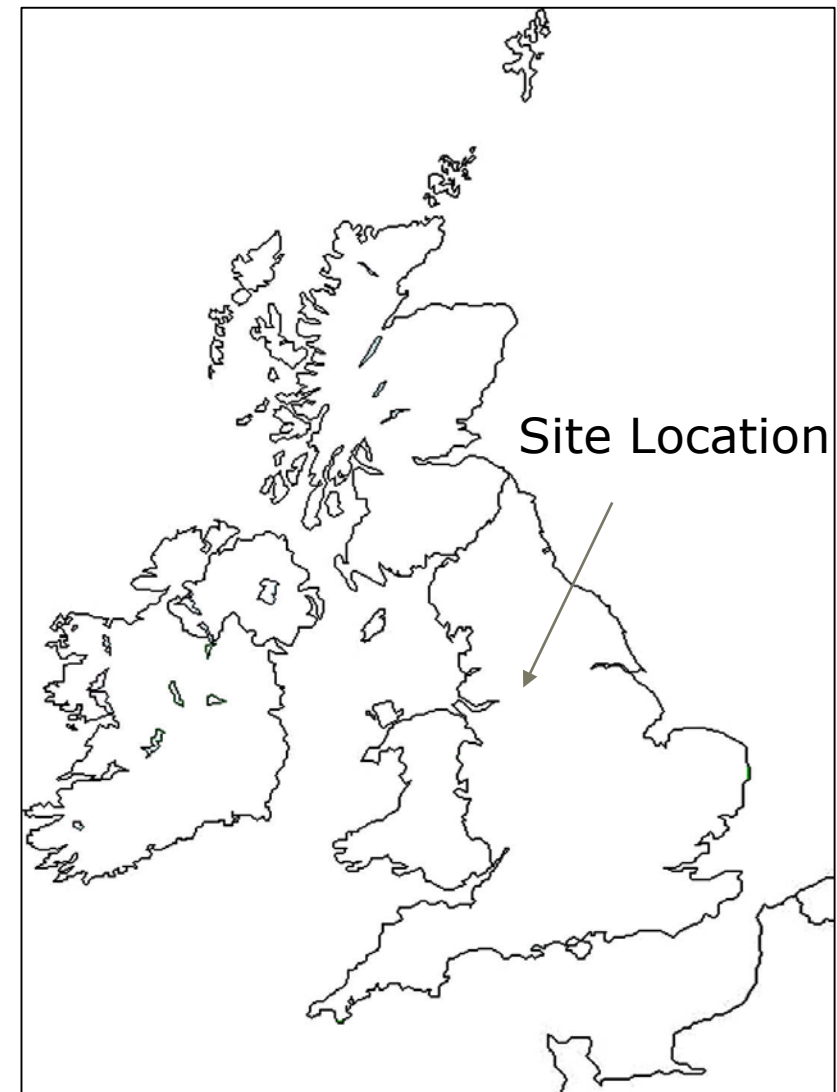
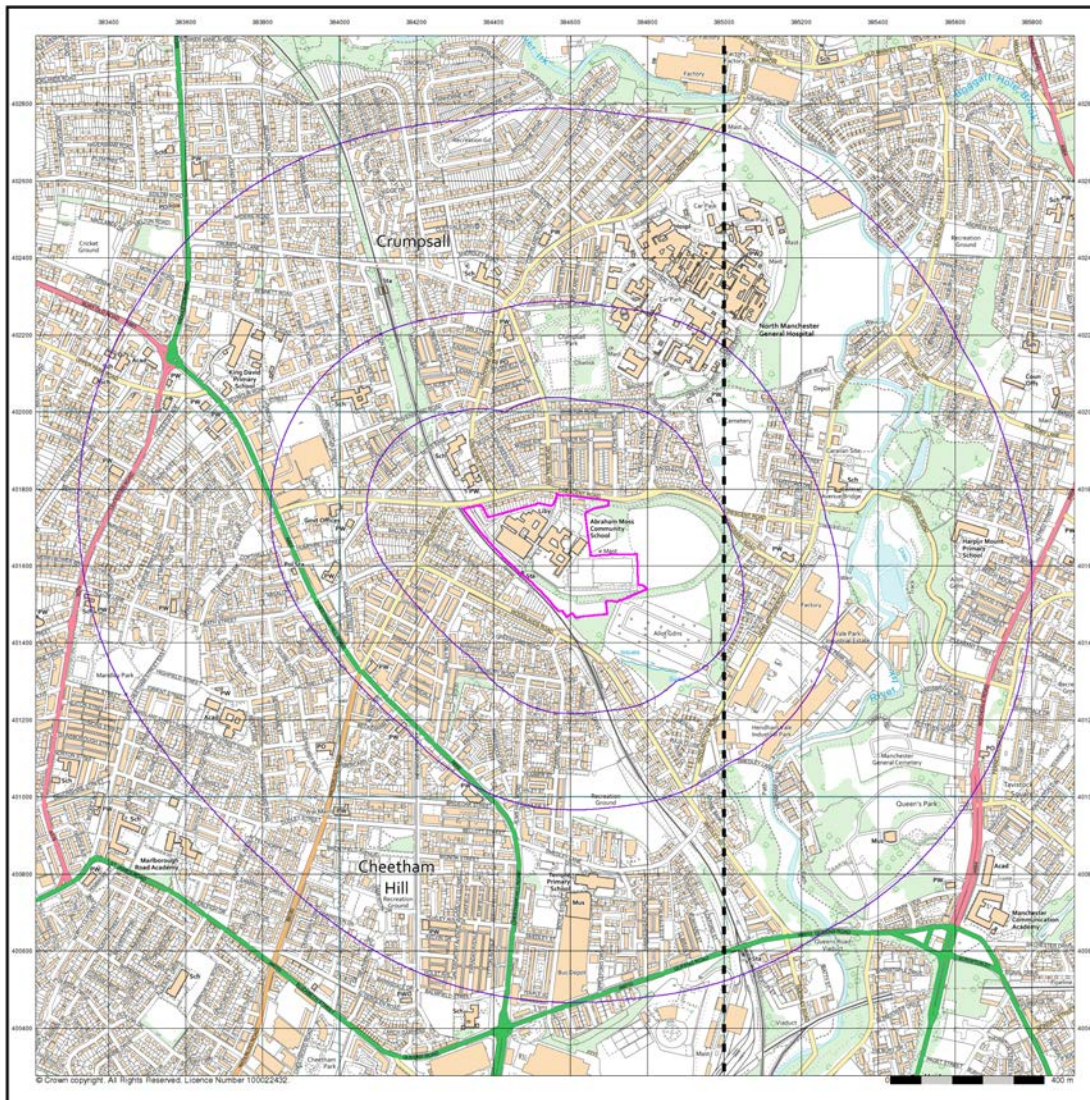
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- A logbook of complaints from site neighbours/members of the public together with the action taken to address the problem;
 - A logbook of visits from statutory bodies and authorities, indicating their findings;
 - Certification for any soils or waters chemical or geotechnical testing undertaken on-site won soils *e.g.*, testing for waste classification purposes; and
 - Photographic records of the works, including excavations and installation of key features for example potable water supply pipes.
- 6.2.5. The PC shall present all the records to enable a post-contract validation to be produced demonstrating compliance with this Remediation Strategy.
- 6.3. **Compliance with Legislation and Codes of Practice**
- 6.3.1. The PC shall carry out the works in accordance with all relevant legislation at all times during the Works.
- 6.3.2. A Construction Environmental Management Plan (CEMP) or similar shall be prepared by the PC using information and requirements detailed herein.

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APPENDIX A: DRAWINGS



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1 Broad Gate, Leeds, LS1 8EQ
leeds@ramboll.co.uk
T: 0113 245 7552

Project: Abraham Moss

Title: Site Location Plan

Status:

Description: Site Location Plan

Date: Jan 19

Scale: NTS

Date: Jan 19

Drawn: CD

Checked: HC

Figure 1620005164/E/01

Rev: -

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P02	20.02.20	PLANNING UPDATE		NA	MPK
P01	01.10.19	PLANNING ISSUE		NA	MPK
(REV)	DATE	REVISION NOTE		BY	CHECKED

Project Id: 1620005164-001
Project Title: Abraham Moss Leisure Centre
Location: Manchester, M8 5UF
Client: LOR

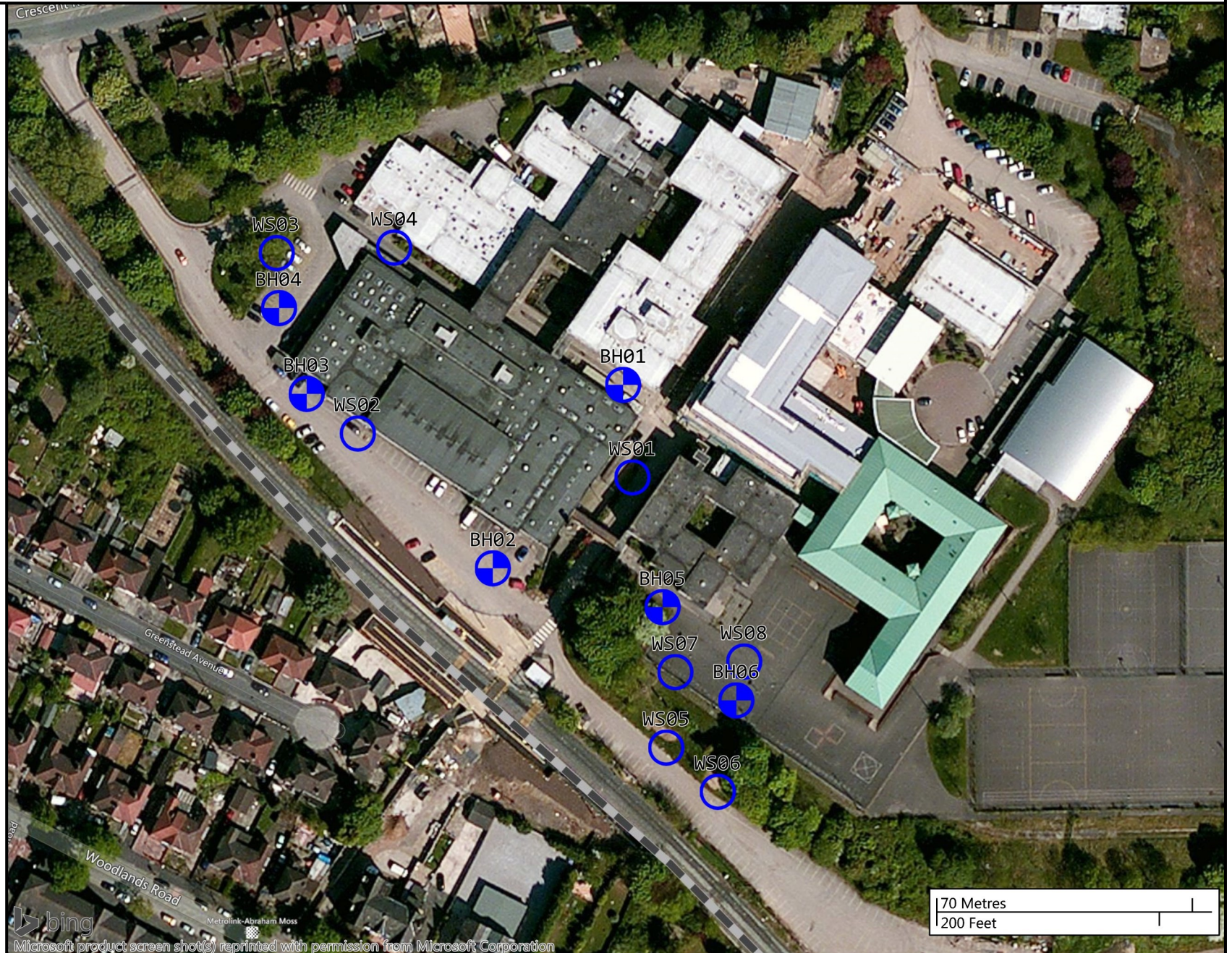
Title: Site Plan
Scale: 1:1500
Engineer: Ramboll
Contractor: RUK / Central Alliance

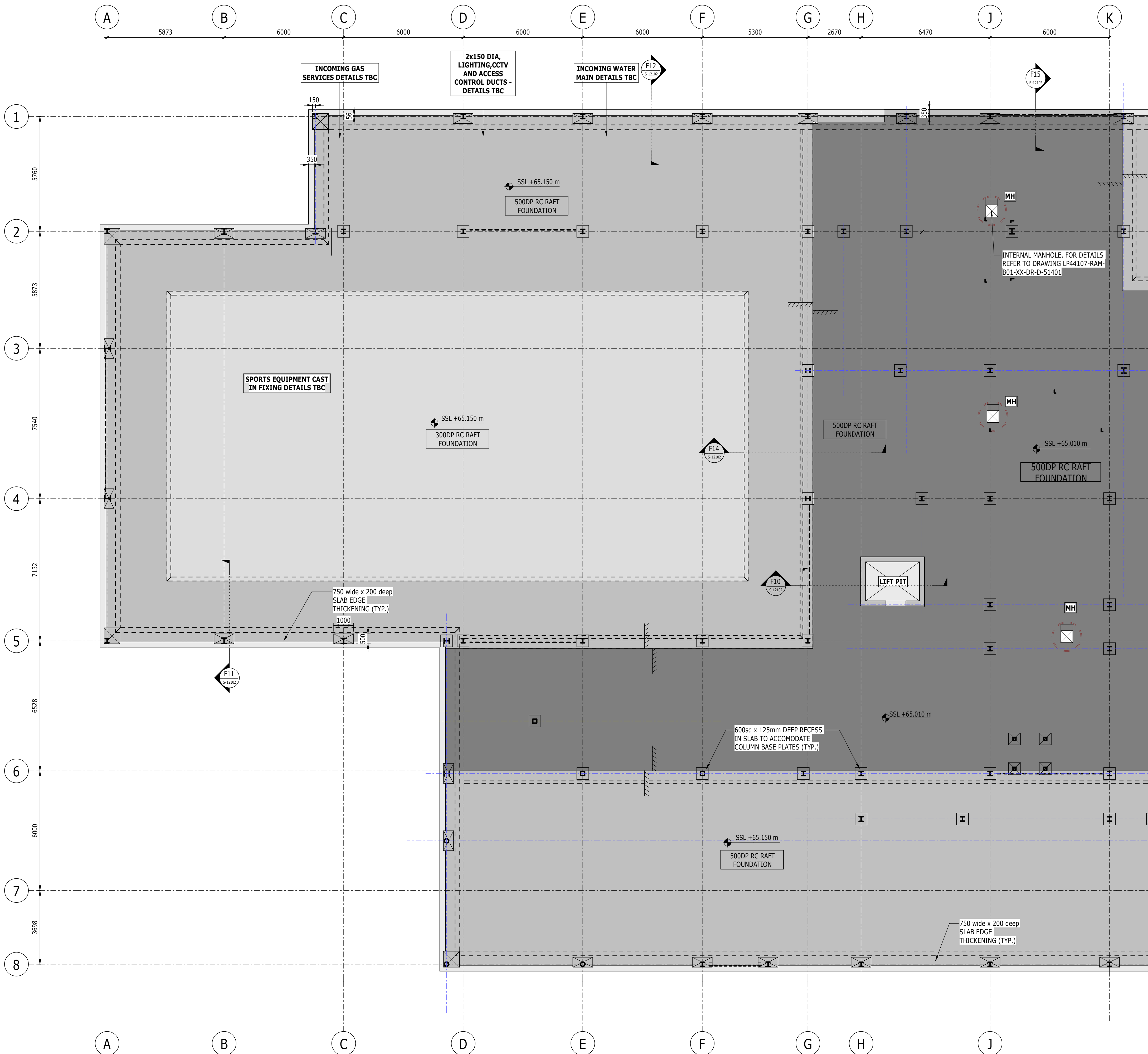
Drawing No: 1620001564E04 Abraham Moss Borehole Location Plan

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Legend Key

-  Locations By Type - Cable Percussive
-  Locations By Type - Windowless Samper





FOR CONTINUATION REFER TO DRAWING LP44107-RAM-B01-FN-DR-S-14003

- A1** APPROPRIATE WORK CONTROLS TO BE IMPLEMENTED TO MINIMIZE RISK OF STRIKING EXISTING SERVICES
- A2** NO DEEP EXCAVATIONS ADJACENT TO SITE BOUNDARY
- B1** APPROPRIATE WORK CONTROLS TO BE IMPLEMENTED DURING SITE CLEARANCE EXCAVATIONS
- B7** POOR CONDITION OF EXISTING DRAINAGE TAKEN INTO ACCOUNT
- C1** RISK OF EXPOSURE TO UNEXPECTED HAZARDOUS MATERIALS DURING SITE CLEARANCE
- C2** REFER TO RAMBOLL REMEDIAL STATEMENT & ENVIRONMENTAL SPECIFICATION FOR SPECIFIC PRECAUTIONS TO BE TAKEN
- C3** REFER TO RAMBOLL REMEDIAL STATEMENT & ENVIRONMENTAL SPECIFICATION FOR SPECIFIC PRECAUTIONS TO BE TAKEN

THESE NOTES ARE BASED ON THE USE OF EXPERIENCED AND COMPETENT CONTRACTORS CARRYING OUT THE WORK USING AN APPROVED SAFE METHOD OF WORKING

- KEY TO HEALTH AND SAFETY SYMBOLS
- INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION
 - INDICATES A RESIDUAL RISK FOR INFORMATION
 - INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION
 - INDICATES A RESIDUAL RISK AS A WARNING

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- FOR GENERAL NOTES REF TO DRAWING LP44107-RAM-ZZZ-ZZ-DR-S-00010.
- AN ALLOWABLE BEARING PRESSURE OF 60kN/m² HAS BEEN ASSUMED FOR THE DESIGN OF THE RAFT FOUNDATION.

NOTE:
RECESSS IN SLAB FOR COLUMN BASEPLATES ARE SHOWN INDICATIVELY.
SIZE OF RECESS REQUIRED WILL DEPEND ON DESIGN OF BASEPLATES BY STEEL CONTRACTOR, AND SPACE REQUIRED FOR ERECTION

P04	STAGE 4 UPDATE	30.11.2020	JC	NM
P03	STAGE 4 ISSUE	15.11.2019	JC	NM
P02	STAGE 4 DRAFT	18.10.2019	JC	NM
P01	STAGE 3 ISSUE	12.07.2019	JC	NM
Rev	Description	Date	By Chk	App

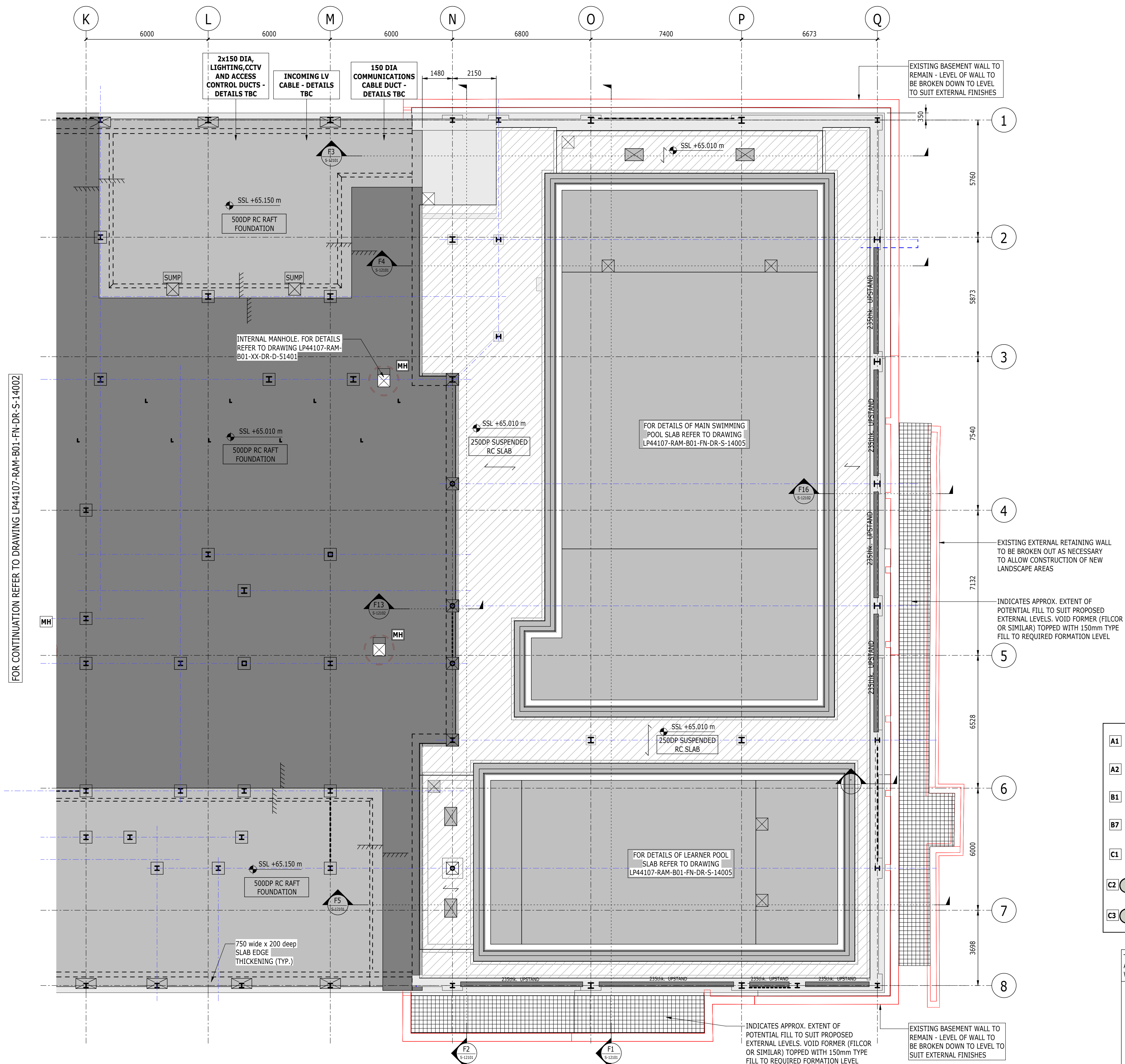
STAGE 4 ISSUE - D2

ABRAHAM MOSS
LIBRARY & LEISURE CENTRE



FOUNDATION SLAB LAYOUT
SHEET 2

Project No:	Scale (@ A1):	Date:	Drawn:
1620005164	As indicated	JULY ' 19	JC
Drawing No:		Rev:	
LP44107-RAM-B01-FN-DR-S-14002		P04	



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SIZE OF RECESS REQUIRED WILL DEPEND ON DESIGN OF BASEPLATES BY STEEL CONTRACTOR, AND SPACE REQUIRED FOR ERECTION

P05	STAGE 4 UPDATE	30.11 2020	NB AW	NM
P04	STAGE 4 ISSUE	22.11 2019	JC AW	NM
P03	STAGE 4 ISSUE	15.11 2019	JC AW	NM
P02	STAGE 4 DRAFT	18.10 2019	JC AW	NM
P01	STAGE 3 ISSUE	12.07 2019	JC AW	NM
Rev	Description	Date	By Chk	App

STAGE 4 ISSUE - D2

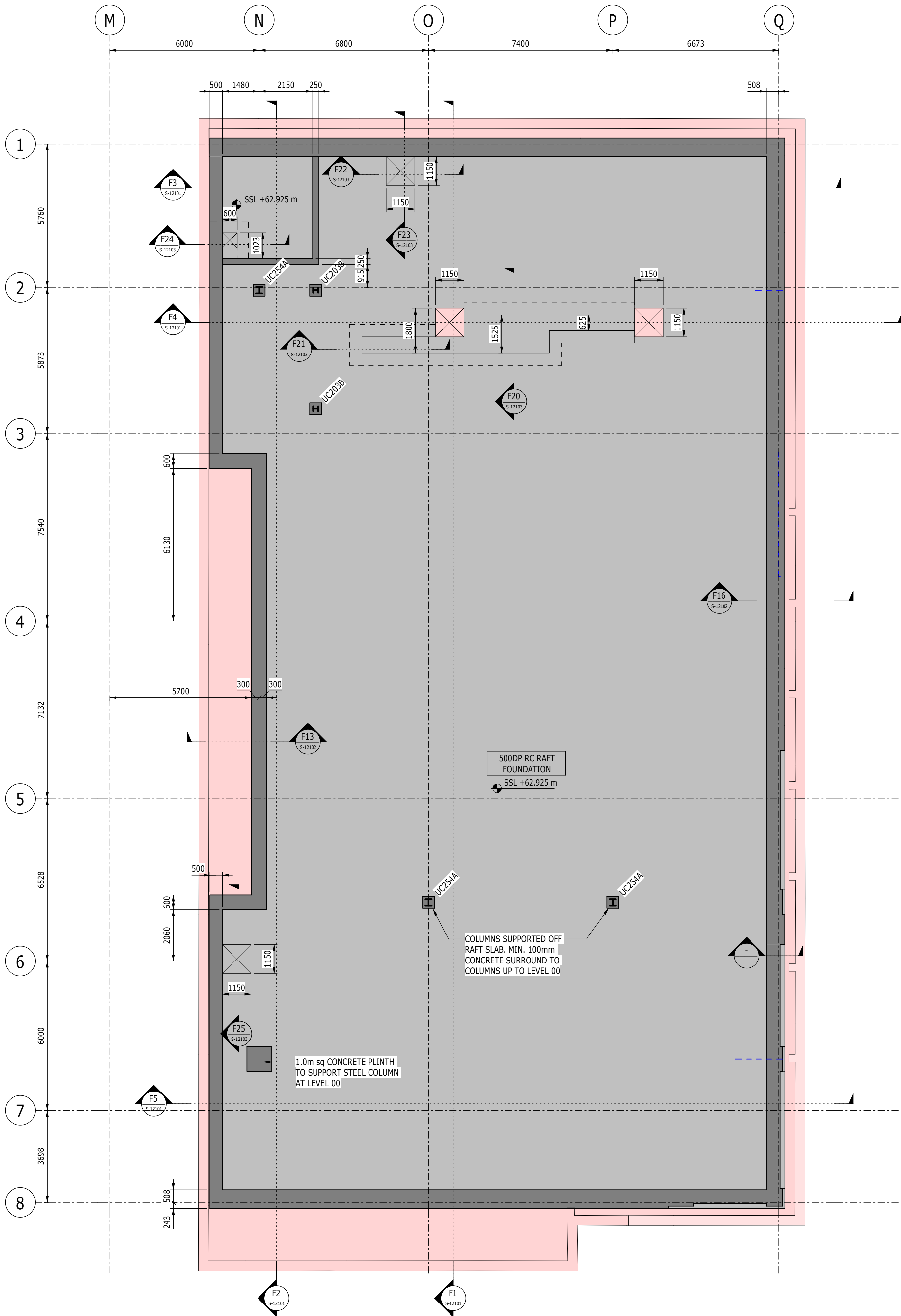
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FOUNDATION SLAB LAYOUT
SHEET 3

Project No: 1620005164	Scale (@ A1): As indicated	Date: JULY ' 19	Drawn: JC
Drawing No: LP44107-RAM-B01-FN-DR-S-14003			Rev: P05



POOL TANK NOTES
WATERPROOFING TO THE POOL TANKS RELIES ON REINFORCEMENT DETAILING TO LIMIT CRACK WIDTHS IN THE CONCRETE. ON SITE WORKMANSHIP MUST BE OF A HIGH STANDARD OF INSTALLATION AND MONITORING.

WATERSTOP DETAILS WILL BE REQUIRED AT ALL CONSTRUCTION JOINTS - SIKKA OR SIMILAR APPROVED.

BACKFILLING BEHIND THE POOL WALLS MUST BE CARRIED OUT CAREFULLY IN LAYERS OF 150mm OR IN LINE WITH THE RECOMMENDATIONS OF THE SPECIALIST SUPPLIER OF LIGHTWEIGHT FILL (LYTAG LYTAFILL OR SIMILAR), WITH MAXIMUM DVY DENSITY OF 800kg/m³.

GROUNDWATER ENTERING THE POOL EXCAVATIONS SHOULD BE PUMPED OUT AND MONITORED DURING THE BUILD TO CONTRACTOR'S DETAILS.

*FOLLOWING DEMOLITION ANY SOFT SPOTS (1m THICKNESS) ARE TO BE REMOVED AND THE SITE FORMATION LEVEL (VARIES) TO BE BUILT UP IN LAYERS OF 150mm WELL COMPACTED TYPE 1 MATERIAL.

*DEMOLITION OF EXISTING FACILITY TO INCLUDE GRUBBING OUT OF ALL GROUND OBSTRUCTIONS. IF THE EXISTING FACILITY IS ON PILED FOUNDATIONS (NOT ANTICIPATED) THESE WOULD NEED TO BE BROKEN DOWN TO AVOID HARD SPOTS UNDER THE NEW RAFT FOUNDATION.

*APPLIES TO MAIN BUILDING FOOTPRINT - OUTSIDE OF THE AREA WHERE THE EXISTING BASEMENT IS TO BE LEFT IN PLACE AS FORMWORK FOR THE NEW RAFT.

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P03	STAGE 4 UPDATE	30.11.2020	NB	NM
P02	STAGE 4 ISSUE	22.11.2019	JC	NM
P01	STAGE 3 ISSUE	12.07.2019	JC	NM
Rev	Description	Date	By	App

STAGE 4 ISSUE - D2

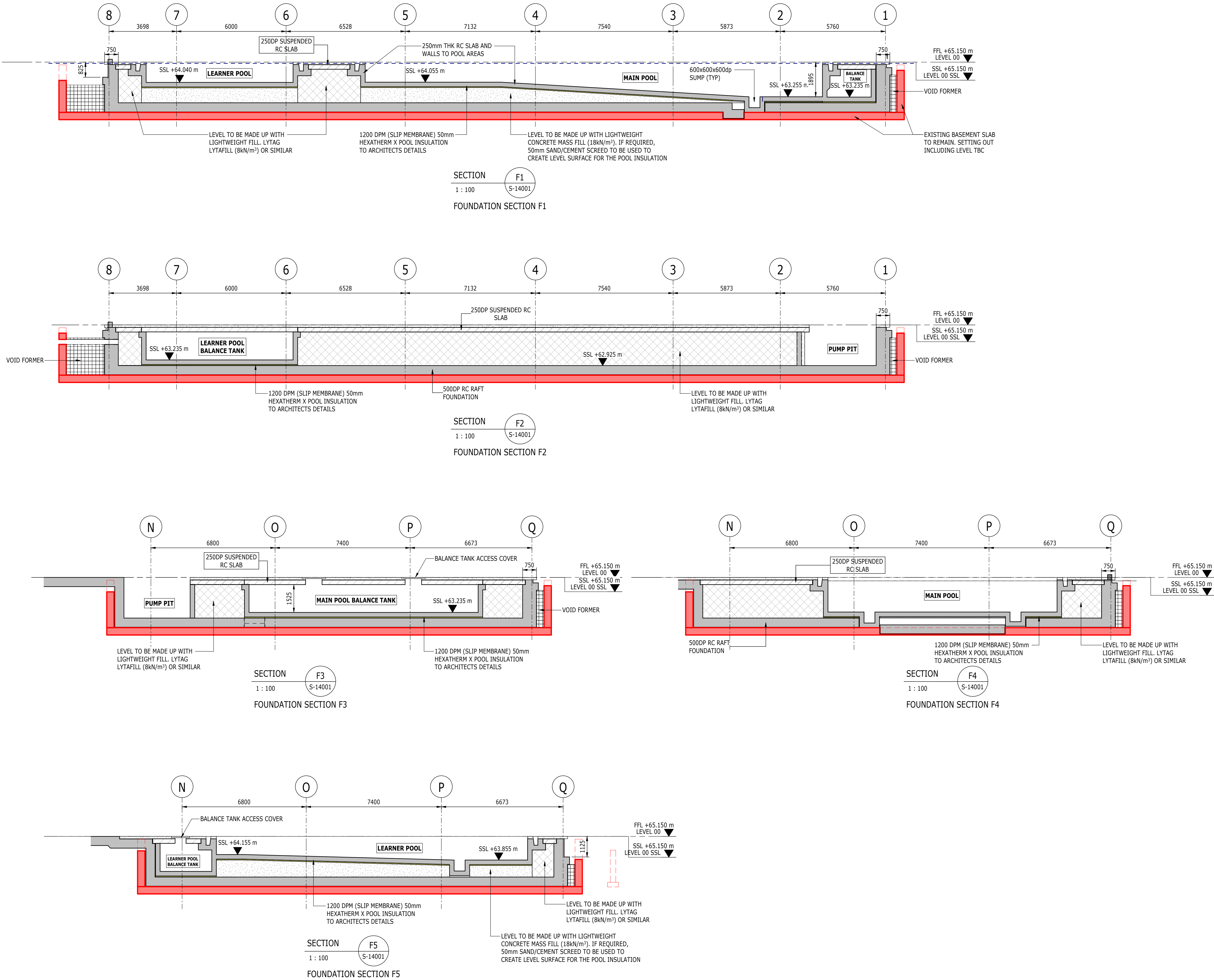
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FOUNDATION SLAB LAYOUT
SHEET 1

Project No:	Scale (@ A1):	Date:	Drawn:
1620005164	As indicated	JUL'19	JC
Drawing No:	Rev:		
LP44107-RAM-B01-FN-DR-S-14001	P03		



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P04	STAGE 4 UPDATE	30.11.2020	NB	NM
P03	UPDATED TO SUIT ASITE PROTOCOL	02.04.2020	JC	NM
P02	STAGE 4 ISSUE	15.11.2019	JC	NM
P01	STAGE 3 ISSUE	12.07.2019	JC	NM
Rev	Description	Date	By	App
			Chk	

STAGE 4 ISSUE - D2

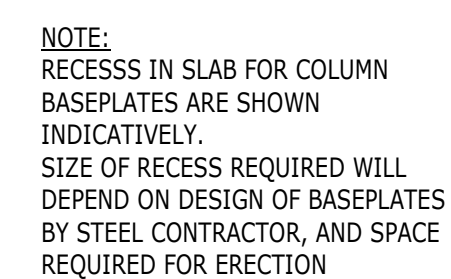
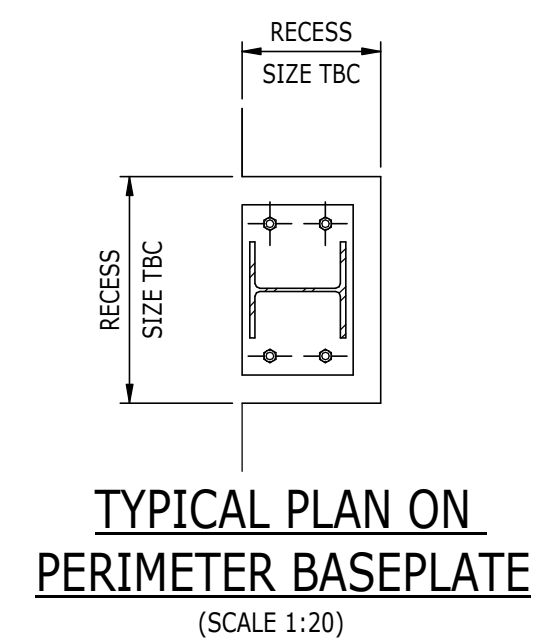
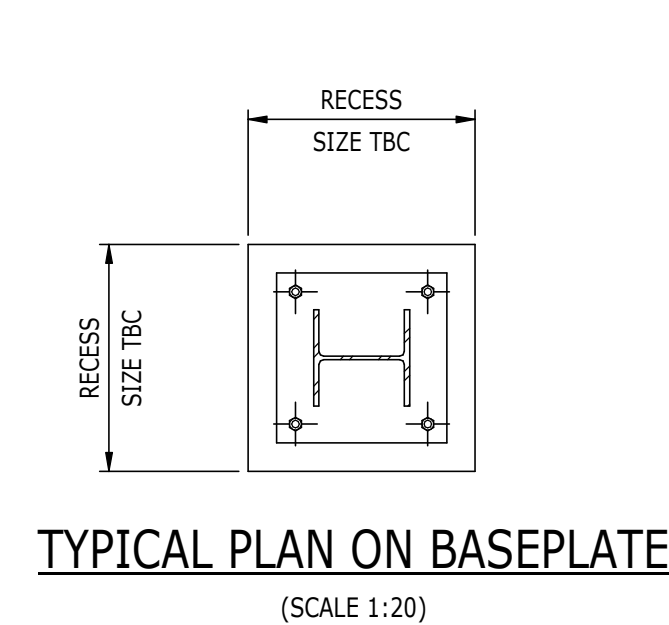
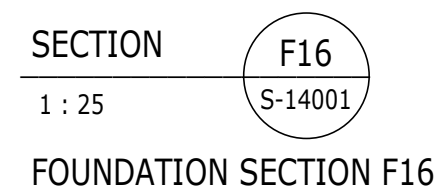
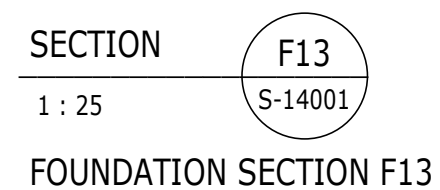
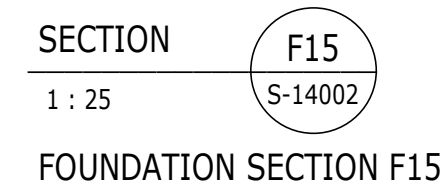
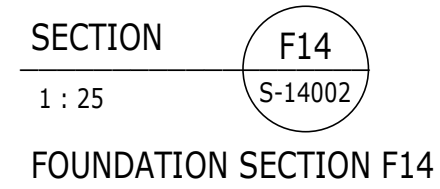
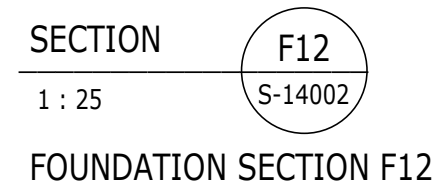
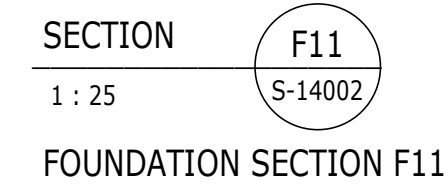
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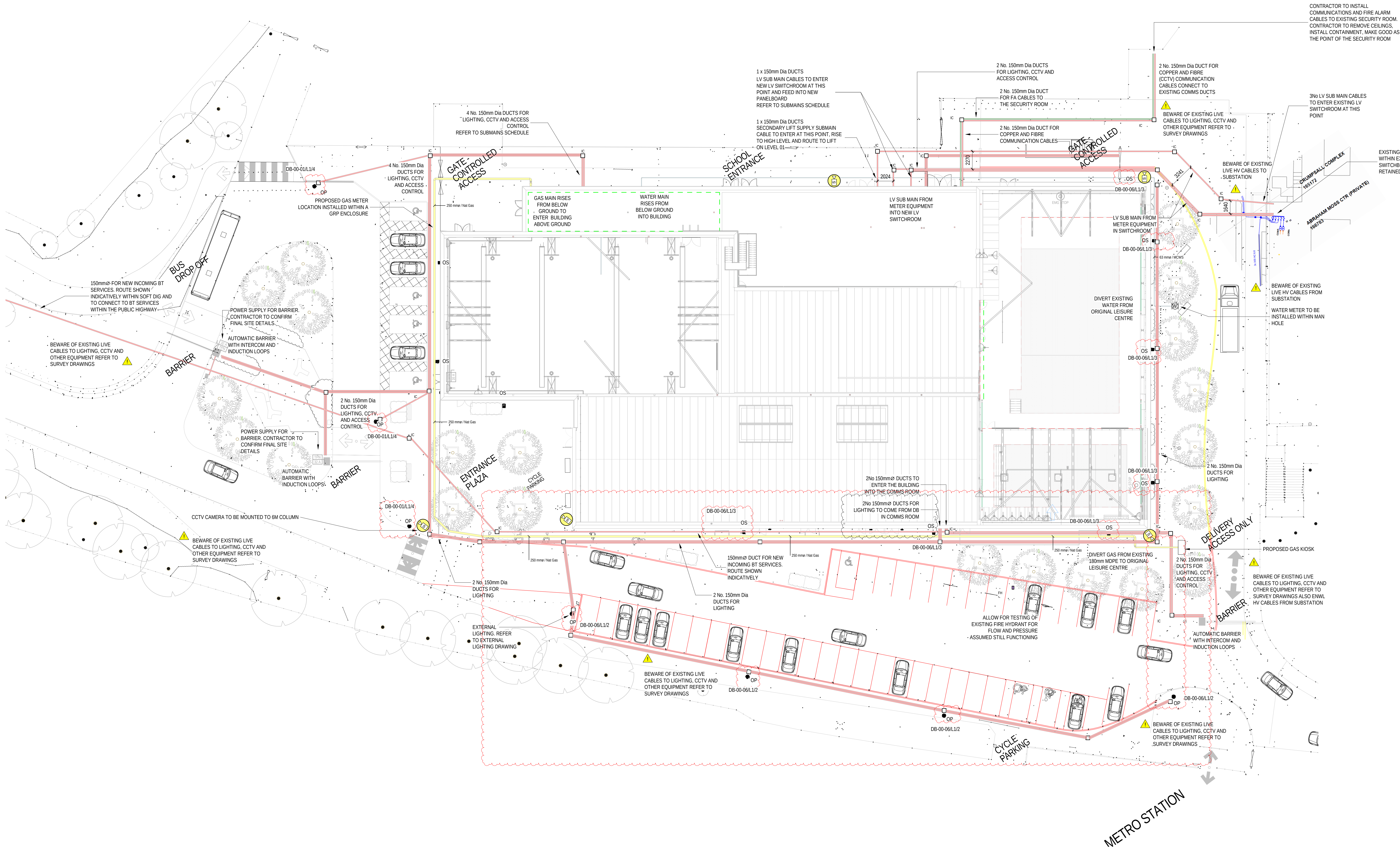
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FOUNDATION SLAB
SECTIONS SHEET 1

Project No:	Scale (@ A1):	Date:	Drawn:
1620005164	1 : 100	JUL'19	JC
Drawing No:	Rev:		
LP44107-RAM-B01-FN-DR-S-12101	P04		



Project No: 1620005164	Scale (@ 1): As indicated	Date: JUL ' 19	Drawn: JC
Drawing No: LP44107-RAM-B01-FN-DR-S-12102			Rev: P05



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DRAWINGS SHALL BE READ IN CONJUNCTION WITH THE FOLLOWING BEFORE WORK COMMENCES:
• THE CON DESIGN ISSUES REGISTER
• THE DESIGN SERIES OF DRAWINGS
• THE PROJECT CON RISK REGISTER

- NOTES**
- THIS DRAWING MUST BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DOCUMENTS AND DRAWINGS. THE EXISTING UTILITY SERVICES ARE ALL TO BE ISOLATED, DISCONNECTED AND MADE SAFE AT A SUITABLE POINT INCLUDING:-
A. 100mm MDPE GAS MAIN
B. 63mm MDPE WATER MAIN
C. 3 No. LV SUPPLIES TO SEPARATE PANELS FROM THE LV SWITCHROOM BELOW THE PLAYGROUND
D. SECURITY AND INTRUDER ALARM INTERFACE
E. FIRE ALARM INTERFACE
F. FIBRE AND COPPER COMMS LINKS
ITEMS D-F POTENTIALLY COME THROUGH THE BRIDGE LINKS
 - EXTERNAL LIGHTING AND CCTV THAT ARE NOT FED OFF THE BUILDING ARE TO BE RETAINED LIVE. HV SUPPLIES FEED INTO AND OUT OF THE ENVL SUBSTATION ON SITE. CARE MUST BE TAKEN WHEN EXCAVATING HERE ESPECIALLY FOR THE NEW LV LINKS.
 - THE EXISTING FIRE HYDRANT SHALL BE TESTED FOR FLOW AND PRESSURE. REFER TO EXTERNAL LIGHTING AND SECURITY DRAWINGS FOR NEW REQUIREMENTS

- LEGEND**
- IC INSPECTION CHAMBER
 - PH FIRE HYDRANT
 - CCV CAMERA
 - W WATER METER
 - LV RIGID DUCT
 - COMMUNICATIONS DUCT
 - WATER
 - GAS
 - RAINWATER

T06	05/02/20	Stage 4a Update	BS	AR
T05	04/02/20	Stage 4a Tender Update	BS	AR
T04	03/02/20	Stage 4a Update	BS	AR
T03	27/01/20	Stage 4a Issue	BS	AR
T02	18/11/19	Stage 4a - Tender Issue	BS	AM
T01	05/11/19	Stage 4a - Tender Issue	BS	AM
P01	05/11/19	Stage 4a - Preliminary Issue	BS	AR
P01	26/01/19	S3 - For review and comment	AL	AM
REVISION	DATE	DESCRIPTION	BY	CHK

This design is based upon this drawing has been coordinated with the following discipline models:
04/02/2020 10:00:00 10:00:00

KEY PLAN

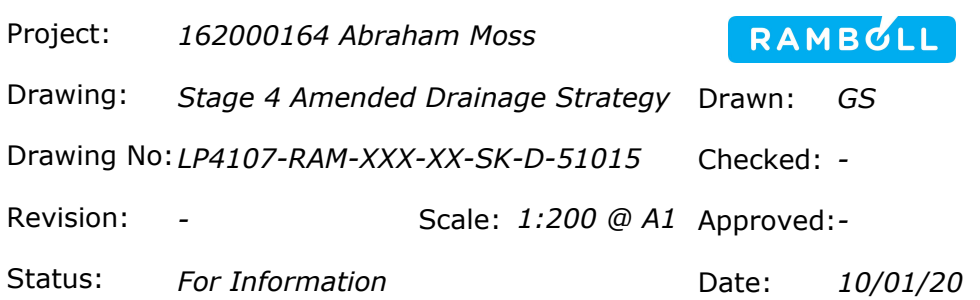
CLIENT

11 Ducie Street
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Manchester
M60 3JA
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For Tender

P2008531
Abraham Moss Leisure Centre
Level 00
MEP External Services & Site Restrictions

ISSUE DATE	PROJECT STAGE	DISCIPLINE	SCALE @ A0
05/02/20	4	MEP	As indicated
DRAWING NUMBER	REVISION		
LP44107-BDP-ZZZ-GF-DR-J-96001	T06		



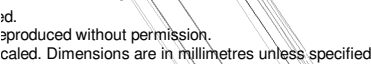


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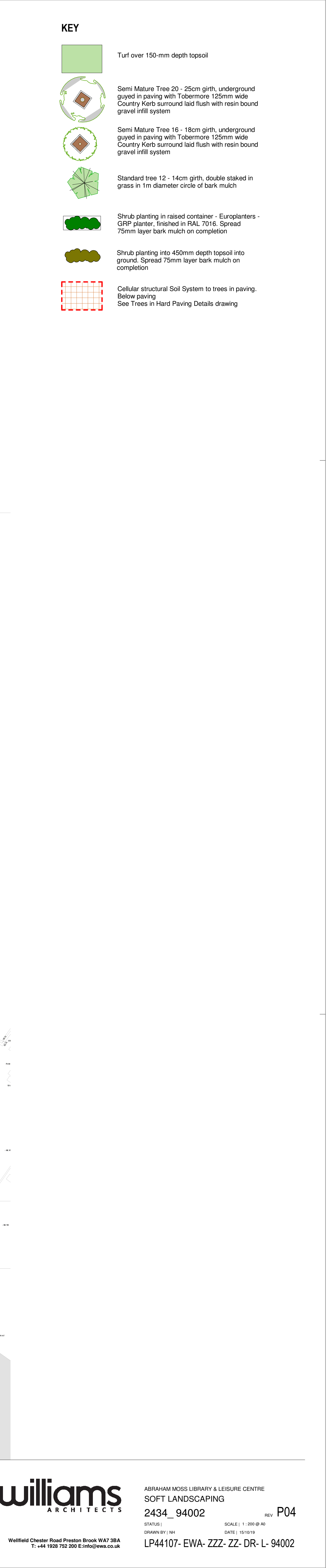


- KEY**
- Paving Type 1
Tobermore 'Fusion' concrete paving blocks, 300 x 200 x 80mm, colour - Rose. 'Stripes' in Sienna Graphite 208 x 173 x 60mm - 2 rows
 - Paving Type 2
Tobermore 'Sienna' concrete paving blocks, 208 x 173 x 80mm, colour - Silver. 'Stripes' in Sienna Graphite 208 x 173 x 80mm - 2 rows
 - Paving Type 3
Tobermore 'Sienna' concrete paving blocks, 240 x 160 x 80mm, colour - Silver. Laid on a rigid bed
 - Vehicular grade macadam to Engineers specification
 - Pedestrian/MEWP access grade macadam to Engineers specification
 - Pcc blister paving 400 x 400 x 65mm
 - Turf over 150-mm depth topsoil
 - Semi Mature Tree 20 - 25cm girth, underground guyed in paving with Tobermore 125mm wide Country Kerb surround laid flush with resin bound gravel infill system
 - Semi Mature Tree 16 - 18cm girth, underground guyed in paving with Tobermore 125mm wide Country Kerb surround laid flush with resin bound gravel infill system
 - Standard tree 12 - 14cm girth, double staked in grass in 1m diameter circle of bark mulch
 - Shrub planting in raised container - Europlanters GRP planter, finished in RAL 7016. Spread 75mm layer bark mulch on completion
 - Shrub planting into 450mm depth topsoil into ground. Spread 75mm layer bark mulch on completion
 - Stainless Steel bollards
 - Broxap 'Blyth' seat, finished in RAL 7016 with arm rests
 - Marshalls Metrolina Modular concrete seat. Each seat comprises: 2m2 radiused end blocks, 1m2 radius corner block, 1m2 intermediate block, 2m2, 1.2m seat blocks with timber seat, no backs or armrests
 - 4 stainless steel sheffield parking hoops
 - Existing levels
 - Extent of cellular structural soil system to trees in paving

REV	DATE	REVISION NOTE	BY	CHECKED
01	10/12/20	Stage 1/10/20	AW	AW
02	10/12/20	Updated in the path planning comments	AW	AW
03	10/12/20	Revised plan	AW	AW
04	11/11/20	Stage 4	AW	AW
05	10/12/20	Planning stage	AW	AW
06	10/12/20	Updated library of external	AW	AW
07	10/12/20	Updated library of external	AW	AW
08	10/12/20	Updated library of external	AW	AW
09	10/12/20	Updated library of external	AW	AW
10	10/12/20	Final issue	AW	AW



Cellular structural Soil System to trees in paving.
Below paving
See Trees in Hard Paving Details drawing



LP44107- EWA- ZZZ- ZZ- DR- L- 94002



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Package includes the following GreenBlue Urban products per tree:

GBURAC600A RootSpace uprights - 500mm x 70mm x 600mm per tree

GBURAC500A RootSpace Airflow deck - 500mm x 500mm x 70mm

Rootsoil 20 to fill RootSpace and RootDirector spaces (including root ball volume) - allow 9 cu. m per tree.
Additional allowance needs to be made for settlement

RootStart Mycorrhiza - apply to tree pit at time of planting in accordance with manufacturer's recommendations - allow 200g per tree

RRARBV150A Arborvent 150 single inlet aeration system with cast inlets including 0.75m 100mm diameter pipe

RD1000-RSA RootSpace RootDirector - medium

GLTWGNA twinwall geonet -
GRN20 plastic open reinforcing mesh, 20mm aperture

SASAPA Arborguy strapped anchor system - large

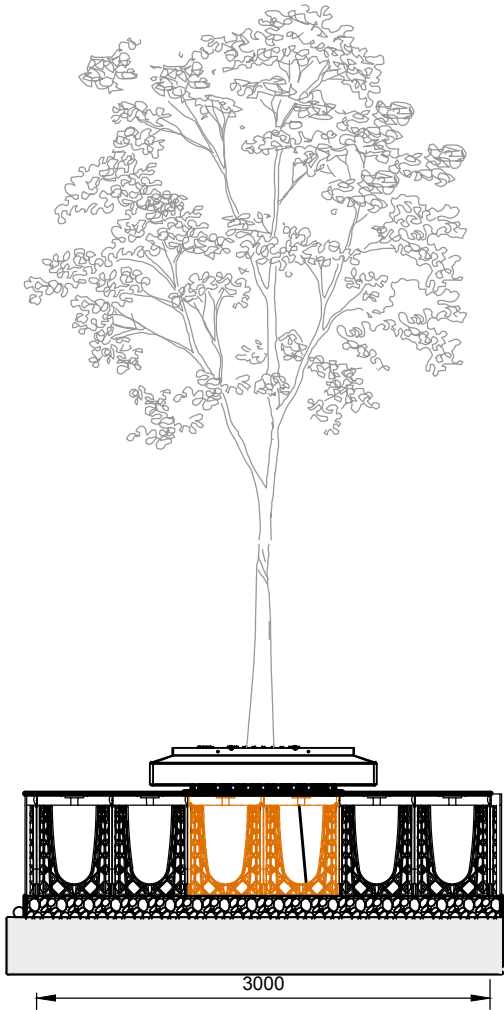
ADUR12B Adur 1200mm x 1200mm tree grille, finished in black, with galvanised steel support frame

GBUMOT3A - Drainage layer as per installation instructions

Note:
20% additional for with the Geotextile and Reinforcing Mesh to allow for overlap and cutting requirements

For heavy load applications, install RootSpace side panels to installation as directed by engineer

Structural engineer's note:
For increased strength and stability in soft ground conditions, specify RootSpace modules to incorporate side panel inserts to tree pit perimeter
Additional geonet is required where sub-base is less than 3% CBR



1200 x 1200mm ArboResin pre cast Recessed Tree Grille and frame supplied filled with Resin bound gravel - colour Dorset Gold - 50mm deep, fill centre ring with loose gravel to match. c/w RootRain Hydrogrille irrigation inletset on concrete haunch

Tobermore Country Kerb, 125 x 255 x 915mm, colour Granite Aggregate

RD1000-RSA RootSpace RootDirector, medium, modular root barrier system

RRARBV150A Arborvent 150 single inlet aeration system with cast inlets fitted to RootSpace Airflow inlet

SASAPA Arborguy strapped anchor system c/w deadman plates

GBUMOT3A - 200mm minimum depth of drainage layer

RootRain single inlet irrigation system with cast inlet

Tobermore Country Kerb, 125 x 255 x 915mm, colour Granite Aggregate

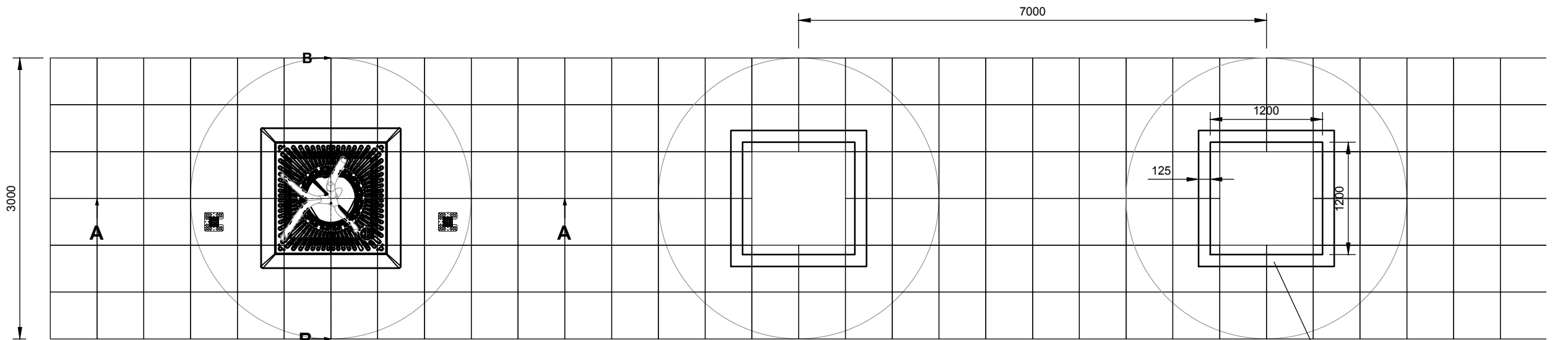
Footpath construction

GLTWGNA twinwall geonet laid over RootSpace structure

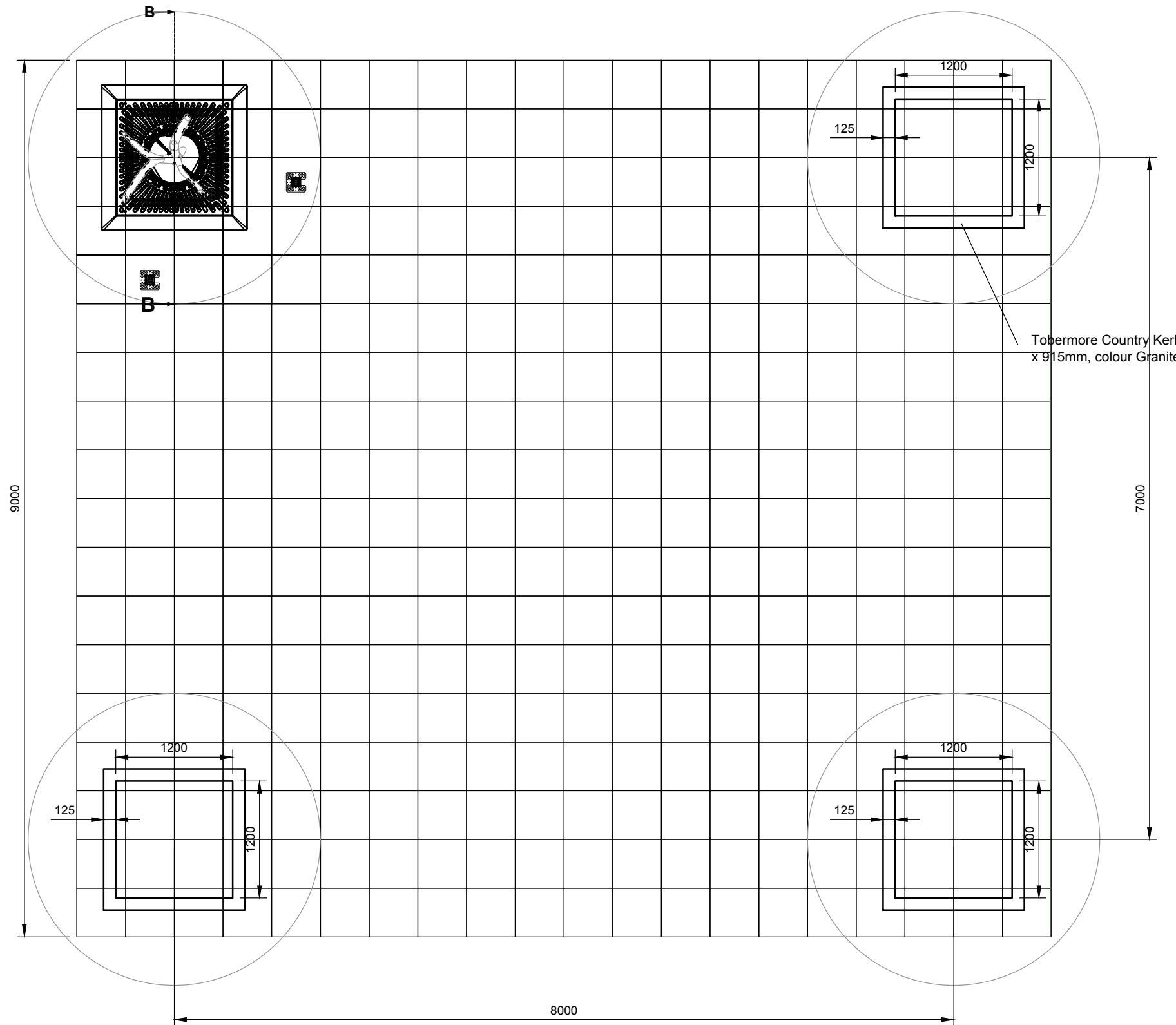
RootSpace structure - 1 upright deep x areas as shown on Soft Landscaping drawing (1 x 2 x 2 module void below RootDirector) loaded with RootSoil 20 c/w Airflow deck

GRN20 plastic open reinforcing mesh, 20mm aperture laid below and around sides of RootSpace structure

Additional twinwall GeoNet (GLTWGNA) to be installed where sub-base is installed below 3% CBR - Minimum 2%

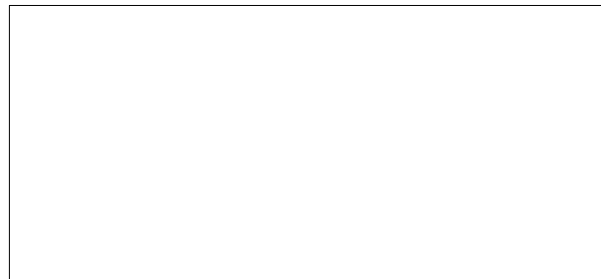
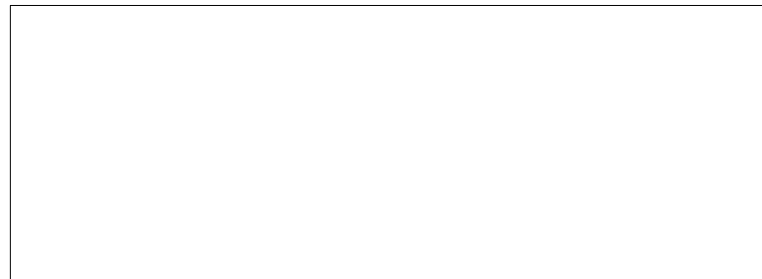


Tobermore Country Kerb, 125 x 255 x 915mm, colour Granite Aggregate



Tobermore Country Kerb, 125 x 255 x 915mm, colour Granite Aggregate

P01	17.10.19	STAGE 4	NH	MK
REV	DATE	REVISION NOTE	BY	CHECK



elliswilliams
ARCHITECTS

Wellfield Chester Road Preston Brook WA7 3BA
T: +44 (0)1928 752 200 E: info@ewa.co.uk

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Trees in Hard paving details

2434_LG(90)05

STATUS | STAGE 4

DRAWN BY | NH

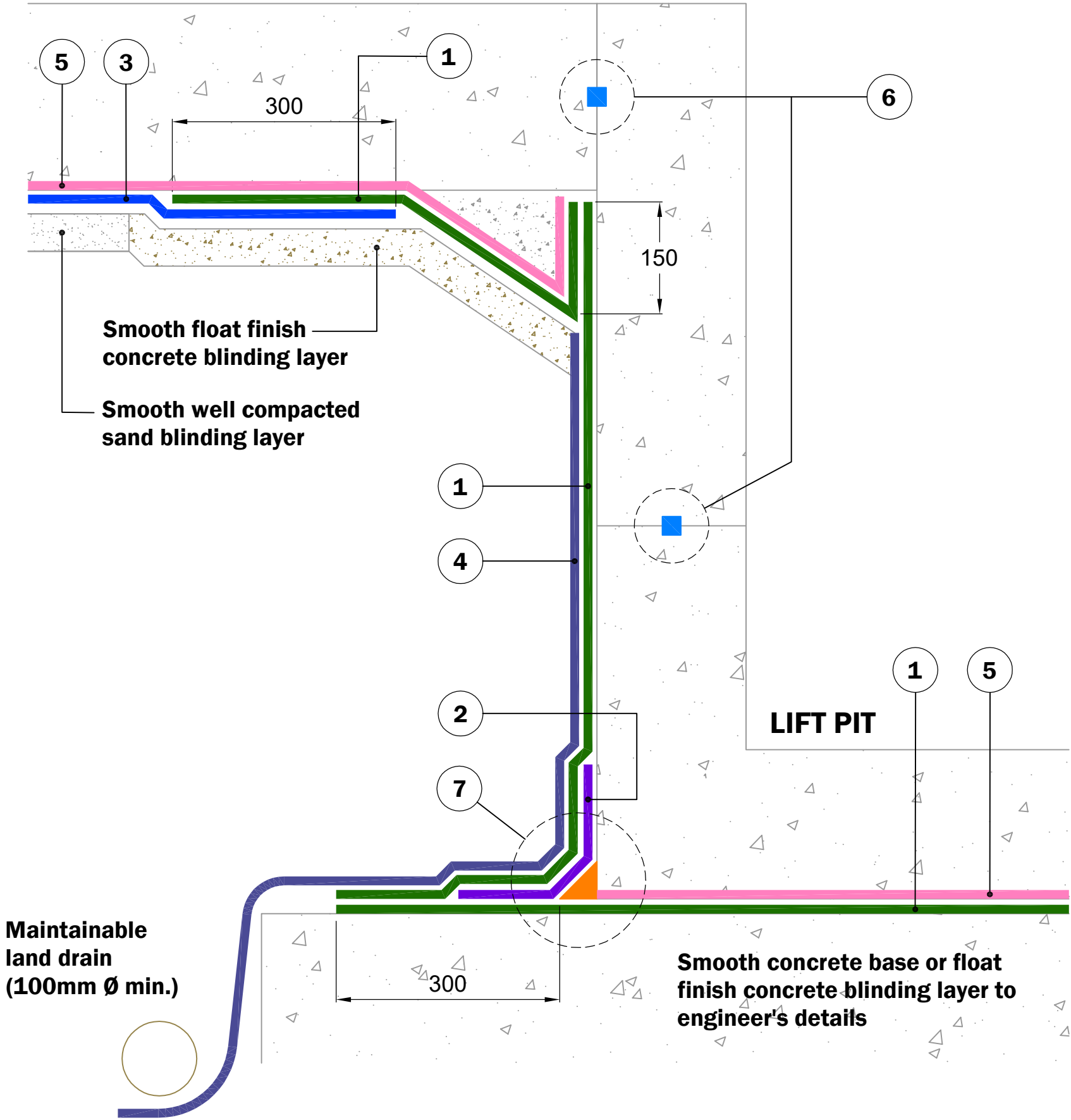
SCALE | 1:50 @ A2

DATE | 17.10.19

REV P01

LP44107-EWL-ZZZ-ZZ-DR-L-94005

KEY TO MATERIALS :-	
1	Visqueen GR SAM on Visqueen HP Tanking Primer.
2	Visqueen 300mm Detailing Strip on Visqueen HP Tanking Primer.
3	Visqueen Gas Barrier.
4	Visqueen Protect&Drain 12mm.
5	Visqueen TreadGUARD 300.
6	Visqueen IGW Waterstops to engineer's details.
7	Visqueen Axiom UniSeal Angle Fillet (35mm x 35mm).



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Detail issued for guidance only. Designer's approval required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the designer.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

DPCs and DPC cavity trays to be installed in accordance with BS8215:1991, PD6697:2019 and BS8000-3:2020.

Do not scale, use figured dimensions only. All figured dimensions are in mm.

For all details of the building structure refer to the current architect's or engineer's details.



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Scale : NTS

Date : August.2021

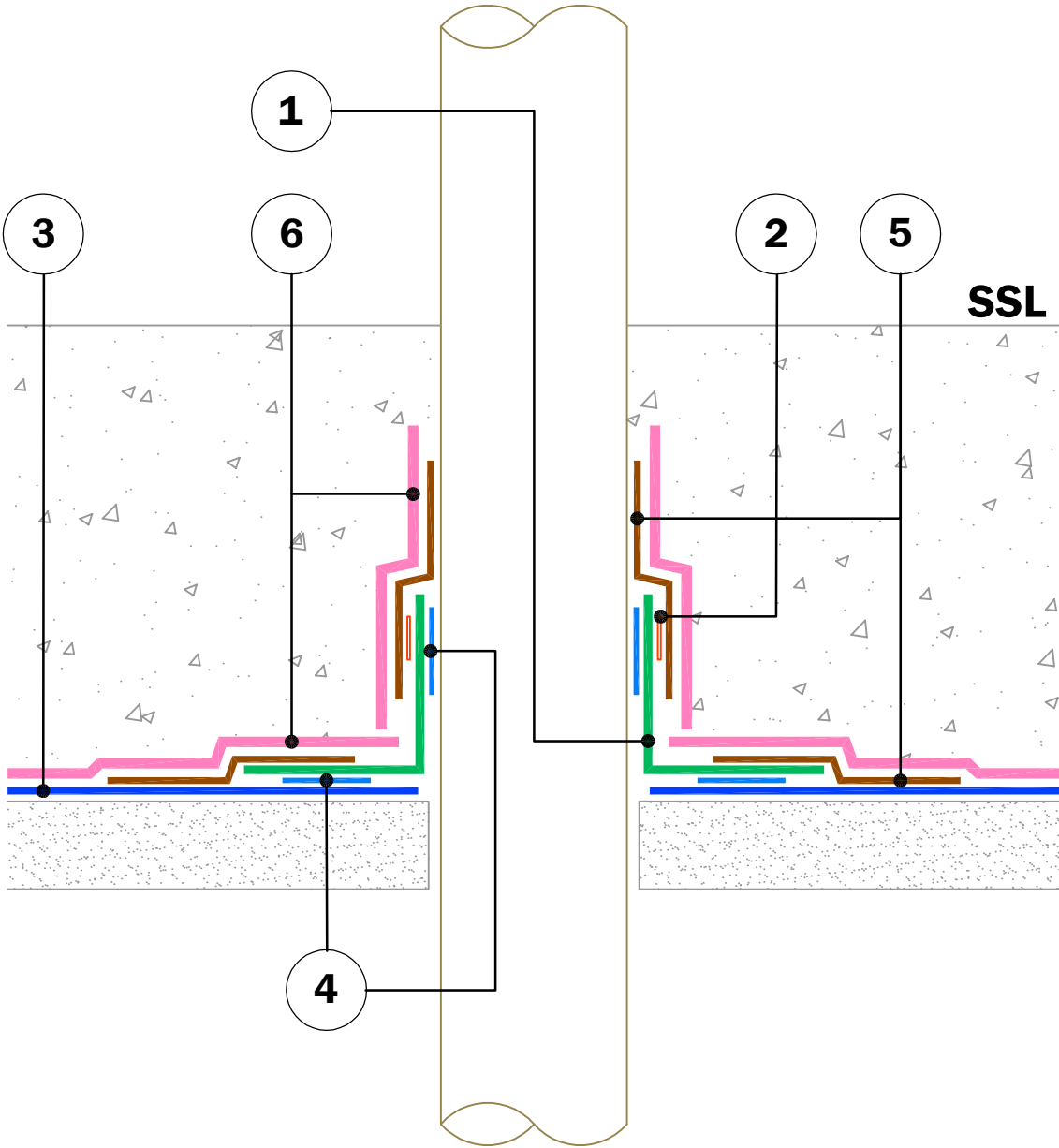
Drawing No : 4538-01



Abraham Moss Library & Leisure Centre
Typical Lift Pit Detail

VISQUEEN
0333 202 6800
www.visqueen.com
enquiries@visqueen.com

KEY TO MATERIALS :-	
1	Visqueen Ultimate Preformed Top Hat.
2	Jubilee clip.
3	Visqueen Gas Barrier.
4	Visqueen Double Sided Tape.
5	Visqueen Gas Resistant Foil Tape.
6	Visqueen TreadGUARD 300.



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Scale : NTS

Date : August.2021

Drawing No : 4538-02



Abraham Moss Library & Leisure Centre
Typical Service Pipe Penetration Detail

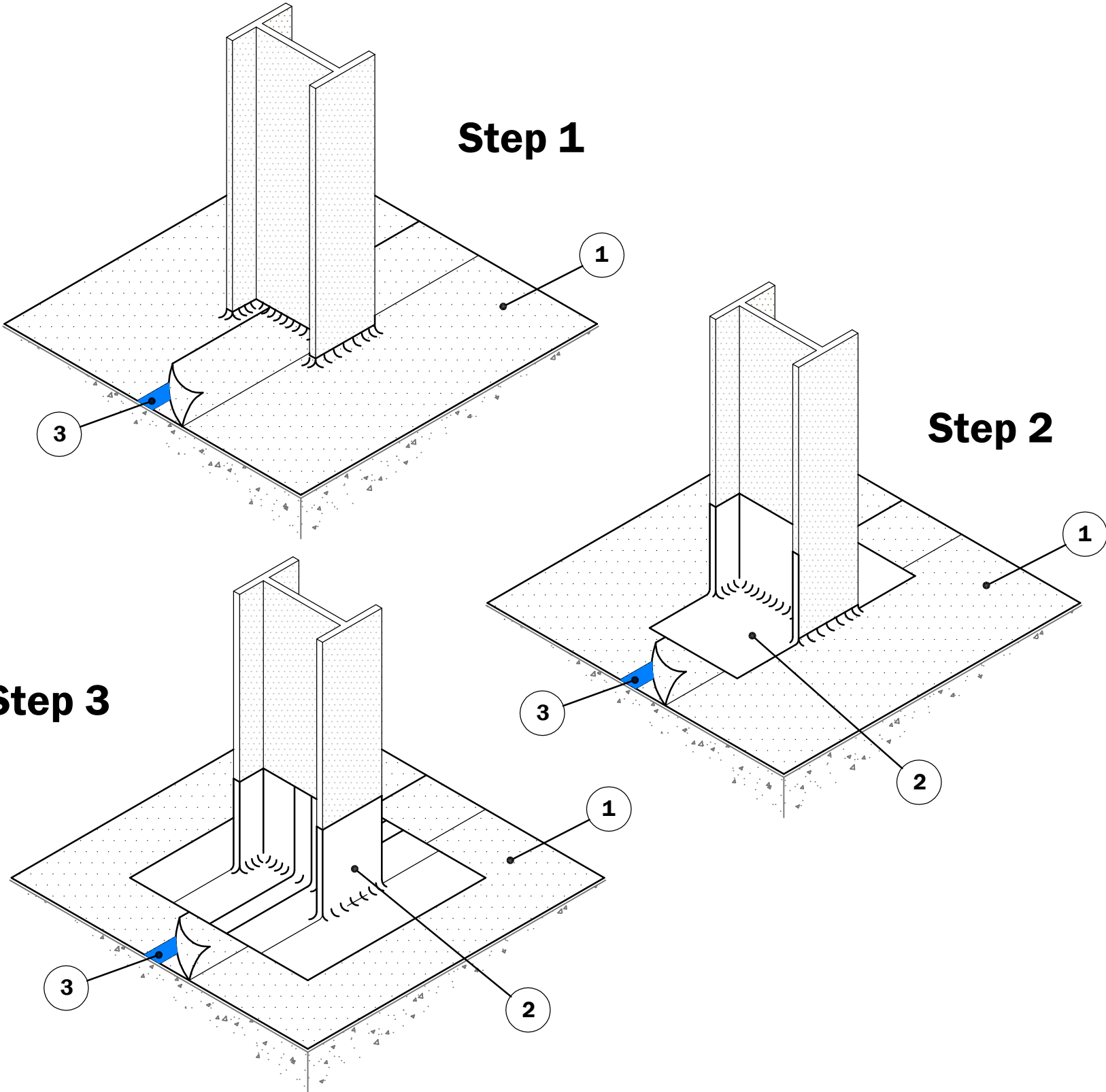
VISQUEEN
0333 202 6800
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enquiries@visqueen.com

KEY TO MATERIALS :-	
1	Visqueen Gas Barrier.
2	Visqueen 300mm / 500mm Detailing Strip.
3	Visqueen Double Sided Tape (10m x 50mm).

Step 1.
 Install Visqueen Gas Barrier DPM on a suitable smooth & well compacted blinding layer. All laps to be 150mm minimum & fully sealed using Visqueen Double Sided Tape & Visqueen Gas Resistant Foil Tape. Neatly cut the DPM around the profile of the steel column.

Step 2.
 Ensure steelwork is clean & dry before applying Visqueen Detailing Strip (300mm or 500mm). Ensure that the Detailing Strip extends 150mm minimum horizontally onto the DPM & 150mm minimum vertically onto the steel column. Ensure all laps are fully sealed.

Step 3.
 Apply more Detailing Strip to the remaining exposed steel flanges ensuring all laps are 150mm in all directions & fully sealed.



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Detail issued for guidance only. Designer's approval required.

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All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

DPCs and DPC cavity trays to be installed in accordance with BS8215:1991, PD6697:2019 and BS8000-3:2020.

Do not scale, use figured dimensions only. All figured dimensions are in mm.

For all details of the building structure refer to the current architect's or engineer's details.



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Date : August.2021

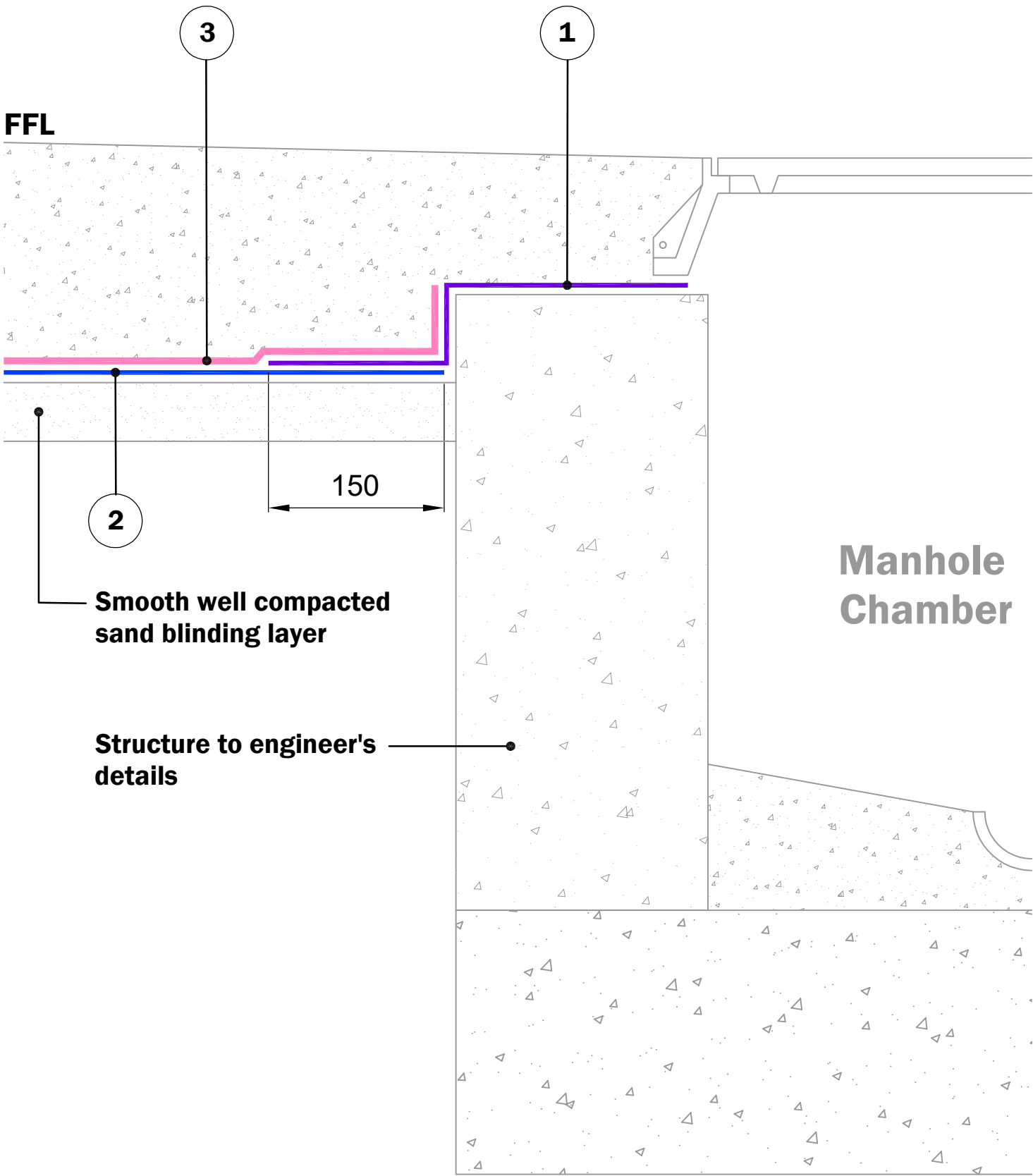
Drawing No : 4538-03



Abraham Moss Library & Leisure Centre
 Typical Steel Column Sealing Details

VISQUEEN
 0333 202 6800
www.visqueen.com
enquiries@visqueen.com

KEY TO MATERIALS :-	
1	Visqueen 300mm or 500mm Detailing Strip on Visqueen HP Tanking Primer.
2	Visqueen Gas Barrier.
3	Visqueen TreadGUARD 300.



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Detail issued for guidance only. Designer's approval required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the designer.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

DPCs and DPC cavity trays to be installed in accordance with BS8215:1991, PD6697:2019 and BS8000-3:2020.

Do not scale, use figured dimensions only. All figured dimensions are in mm.

For all details of the building structure refer to the current architect's or engineer's details.



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Scale : NTS

Date : August.2021

Drawing No : 4538-04



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Typical Manhole Detail

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Detail issued for guidance only.
Designer's approval required.

Site construction sequencing should be assessed before the appropriate Visqueen Standard Detail is selected & approved by the designer.

All Visqueen materials must be installed in strict accordance with the manufacturer's instructions. Refer to the current Visqueen datasheets.

DPCs and DPC cavity trays to be installed in accordance with BS8215:1991, PD6697:2019 and BS8000-3:2020.

Do not scale, use figured dimensions only. All figured dimensions are in mm.

For all details of the building structure refer to the current architect's or engineer's details.



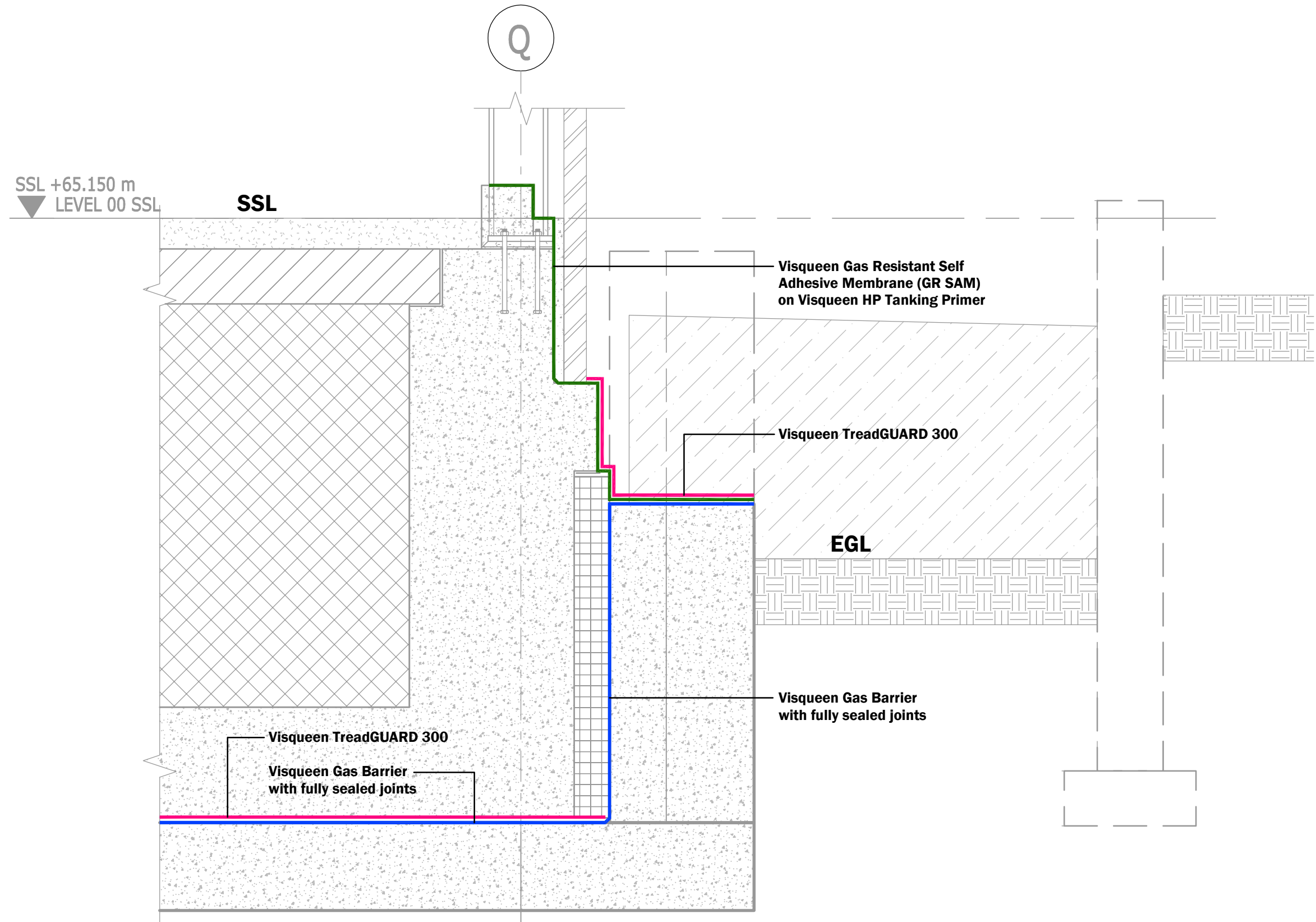
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Scale : NTS

Date : August.2021

Drawing No : 4538-05

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See also Ramboll Drg : DR-S-12102



Abraham Moss Library & Leisure Centre
FOUNDATION SECTION F16

Visqueen Gas Barrier

Features and benefits

- BBA certified - third party accreditation
- Complies with BS 8485:2015 + A1:2019 - industry standard for methane and carbon dioxide protection
- Flexible - easy to detail and install on site
- Multi functional - also acts as a radon and damp proof membrane
- Dual jointing methods - lap joints can be taped or heat welded

Product description

Visqueen Gas Barrier is a multi-layer reinforced polyethylene gas barrier with a 20 micron aluminium foil. The barrier is coloured blue on the upper surface and silver on the reverse. The product is supplied in single wound rolls (not folded), 2m x 50m.

Approvals and standards

- Third party accreditation (BBA 13/5069)
- Conforms to the specification requirements of BS 8485:2015 + A1:2019
- Suitable for all Characteristic Gas Situation (CS) ground gas regimes
- Conforms to the specification requirements of NHBC Amber 1 and Amber 2 applications
- Conforms to the specification requirements of BR 211:2015
- CE Mark EN 13967:2017
- Quality Management System ISO 9001:2015
- Occupational Health and Safety System ISO 45001:2018
- Environmental Management System ISO 14001:2015

Usage

Visqueen Gas Barrier is suitable for use in all types of buildings to prevent the ingress of harmful levels of ground gases e.g. methane, carbon dioxide and radon.

The barrier can be positioned above or below a solid concrete ground floor slab or above a precast suspended segmental ground floor system, e.g. beam and block floor.

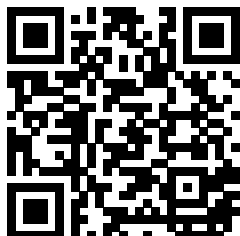
The barrier can also be used as a high performance radon membrane and/or damp proof membrane.

The product is not intended for use where there is a risk of hydrostatic pressure.

System components

- VisqueenPro Double Sided Jointing Tape, 50mm x 10m
- Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m
- Visqueen GR Lap Tape, 150mm x 10m
- Visqueen Ultimate Top Hat Units
- Visqueen Preformed Units
- VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m
- Visqueen TreadGUARD 300, 2m x 75m
- Visqueen TreadGUARD 1500, 1m x 2m

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Visqueen Gas Barrier

Storage and handling

Visqueen Gas Barrier should be stored horizontally, under cover in its original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

Preparation

Visqueen Gas Barrier should be installed on a smooth continuous surface e.g. grouted beam and block floor, a compacted blinding layer e.g. 50mm thick sand blinding, or smooth concrete blinding. The substrate should be free from irregularities such as voids or protrusions.

The barrier can be cut with a sharp retractable safety knife or robust scissors.

When installing the membrane in demanding site conditions, use Visqueen GR Lap Tape in place of Visqueen Gas Resistant Foil Lap Tape.

Installation

Visqueen Gas Barrier should be loose laid on the substrate with the blue side up so as to avoid sunlight glare.

The barrier should be clean and dry at the time of jointing. It should be overlapped by at least 150mm, bonded with Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Gas Resistant Foil Lap Tape.

Alternatively lap joints can be heat welded to achieve an effective seal. Welded lap joints can be less than 150mm provided the joint integrity is not compromised.

Airtight seals should be formed around all service entry points. Visqueen Preformed Top Hat Units should be used for sealing service entry pipes. The base of the top hat and the upstand should be bonded using Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Gas Resistant Foil Lap Tape. The upstand should be secured with the supplied jubilee clip.

Forming an effective barrier to gases may give rise to complex three-dimensional detailing where, it is recommended Visqueen Preformed Units are used e.g. corners. Alternatively Visqueen Pro Detailing Strip can be used to seal awkward junctions.

If the barrier is punctured or perforated a patch of the same material should be lapped at least 150mm beyond the limits of the puncture and bonded with Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Gas Resistant Foil Lap Tape. Alternatively a patch can be formed using Visqueen Pro Detailing Strip and lapped at least 150mm beyond the extents of the puncture.

Long periods of exposure to ultraviolet light will reduce the effectiveness of the membrane. The membrane should be covered by a protective layer immediately after installation to prevent damage from following trades, ultraviolet light, etc. Care should be taken to ensure that the membrane is not punctured, stretched or displaced when applying a screed or final floor covering. A minimum thickness of 50mm screed is recommended. When reinforced concrete is to be laid over the barrier the wire reinforcements and spacers must be prevented from puncturing the barrier. Where there is a high risk of potential damage, the barrier should be covered with Visqueen TreadGuard protection, screed, or other approved protection material before positioning the reinforcement.

Usable temperature range

It is recommended that Visqueen Gas Barrier and all associated system components should not be installed below 5°C.

Additional information

When used in accordance BS8485:2015 + A1:2019 a subfloor ventilation system or pressure relief maybe required
Where hydrocarbon or VOC contamination is present use Visqueen Ultimate VOC or HC Blok gas protection systems
To assist build sequencing, Visqueen GR DPC is available for gas protection through the wall constructions
For suspended beam and block floor detailing see GB-01
Visqueen Preformed Top Hat Units should be used at service pipe penetrations see GB-51
For internal and external corners Visqueen Ultimate Preformed Units should be used see PFU-553
To seal around steel columns use Visqueen Pro Detailing Strip see GB-52
For additional detailing information, contact Visqueen Technical Services +44 (0) 333 202 6800

The information in this datasheet was correct at the time of publication. It is the user's responsibility to obtain the latest version of the datasheet as it is updated on a regular basis. The information contained in the latest datasheet supersedes all previously published editions.

Visqueen Gas Barrier

Property	Test method	Units	Compliance criteria	Result
Dimensions	EN 1848-2	m		2 x 50
Overall thickness including scrim mesh	EN 1849-2	mm	+/-10%	0.52
Mass	EN 1849-2	g/m ²	-0%/+5%	400
Tensile strength - MD	EN 12311	N	MLV	350
Tensile strength - CD	EN 12311	N	MLV	350
Tensile elongation - MD	EN 12311	%	MLV	20
Tensile elongation - CD	EN 12311	%	MLV	21
Joint strength	EN 12317-2	N	MLV	332
Watertightness 2kPa	EN 1928	-	Pass/Fail	Pass
Resistance to impact	EN 12691	mm	MDV	150
Dart impact	BS 2782	g	MDV	731
Low temperature flexibility	EN 495-5	°C	MDV	-40
Durability against ageing	EN 1296 and EN 1928	-	Pass/Fail	Pass
Durability chemical resistance	EN 1847	-	Pass/Fail	Pass
Resistance to tearing (nail shank) CD	EN 12310-1	N	MDV	358
Resistance to tearing (nail shank) MD	EN 12310-1	N	MDV	368
Resistance to static loading	EN 12730	kg	MLV	20
Water vapour transmission - resistance	EN 1931	MNs/g	MDV	7000
Water vapour transmission - permeability	EN 1931	g/m ² /d	MDV	0.03
Visible defects	EN 1850 -2	-	Pass/Fail	Pass
Reaction to fire	EN 13501-1	Class	MDV	F
BS 8485:2015 + A1:2019 testing requirements				
Mass	EN 1849-2	g/m ²	Average >370	400
Methane permeability	ISO 15105-1	mls/m ² /d/atm	Pass/Fail	<0.15
Puncture CBR	BS EN ISO 12236	N	MDV	1114
Tensiles yield strength MD	ASTM D4885-01	kN/m	MDV	12.5
Tensiles yield strength CD	ASTM D4885-02	kN/m	MDV	7.3
Resistance to static loading	EN 12730	kg	>MLV	20
Yield elongation CD	ASTM D4885-04	%	MDV	19
Tear resistance - trouser method A - MD	BS ISO 34-1	kN/m	MDV	48.2
Tear resistance - trouser method A - CD	BS ISO 34-1	kN/m	MDV	44.8
Tear resistance - angle method B - MD	BS ISO 34-1	N	MDV	53.5
Tear resistance - angle method B - CD	BS ISO 34-1	N	MDV	60.6

Health and safety information

Refer to the Visqueen Gas Barrier material safety datasheet (MSDS).

Visqueen Gas Barrier

About Visqueen

The Visqueen name has long been recognised as one of the leading manufacturers of high quality advanced membrane technologies and design based solutions by specifiers, distributors, builders merchants and contractors throughout the UK and Europe.

For further guidance on the Visqueen services shown below, please refer to the relevant section of the Visqueen website (www.visqueen.com) or contact Visqueen Technical Services on +44 (0) 333 202 6800 or enquiries@visqueen.com

Complete Range, Complete Solution



Structural
Waterproofing



Gas
Protection



Damp Proof
Membrane



Tapes



Damp Proof
Course



Stormwater



Vapour
Control

Visqueen Technical Support

Visqueen combine an extensive product portfolio with industry leading levels of service and support which includes guidance over the phone, bespoke CAD drawings to help with complex detailing, electronic NBS specifications and access to a dedicated team of highly knowledgeable and experienced field based Technical Support Managers.

Visqueen Technical Support is available to all our customers including architects, specifiers, distributors, builders merchants, contractors and end users. All of our technical team have been awarded the industry recognised qualification Certificated Surveyor in Structural Waterproofing (CSSW).

Visqueen CPD Seminars

The Visqueen Continuing Professional Development (CPD) Seminars provide up-to-date information on changes within Building Regulations/Building Standards and nationally recognised industry guidance affecting damp proofing, water vapour control, hazardous ground gas protection and below ground structural waterproofing.

The one hour seminars have been produced for design specialists within the construction sector and are delivered by our team of Technical Support Managers.

Visqueen PI designs and special projects

From initial design to the completed project, Visqueen are with you every step of the way. Whether it be hazardous ground gas protection and/or below ground waterproofing protection employing barrier, structurally integral or drained systems, Visqueen can offer professional indemnity (PI) insurance for bespoke Visqueen design solutions.

Visqueen Technical Support Managers work with all stakeholders to provide cost effective Visqueen solutions offering complete peace of mind throughout the construction phase and beyond.

Visqueen Training Academy

Based at our manufacturing facility in Derbyshire, the Visqueen Training Academy is available to support Visqueen customers throughout the UK by providing a wide range of both theory and practical skills related training.

Courses include one day product awareness training for our distributors and builders merchants to help them in their day-to-day jobs, through to intensive three day courses giving detailed hands-on training in the practical skills required for safe and robust product installation.

Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m

Features and benefits

- BBA certified jointing system - third party accreditation
- Complies with BS 8485:2015 + A1:2019 - industry standard for methane and carbon dioxide protection
- Good adhesion properties - provides an overlap seal to Visqueen gas protection membranes
- Joint integrity - stops poured concrete entering the lap joint
- Health and Safety - seals the exposed lap from risk of installer accidents

Product description

Visqueen Gas Resistant (GR) Foil Lap Tape is an overlap tape which has a solvent acrylic adhesive with a composite aluminium/PET carrier therefore it is resistant to alkaline which is present in cement and concrete. The tape also has a release film.

The product is supplied in roll format 75mm x 50m.

To be used in conjunction with Visqueen Pro Double Sided Jointing Tape 50mm x 10m.

Approvals and standards

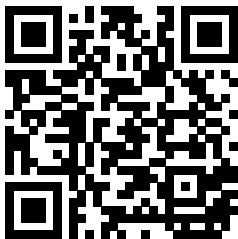
- Third party accreditation (BBA 13/5069)
- Conforms to the specification requirements of BS 8485:2015 + A1:2019
- Quality Management System ISO 9001:2015
- Occupational Health and Safety System ISO 18001:2007
- Environmental Management System ISO 14001:2015

Usage

Visqueen Gas Resistant Foil Lap Tape is used to bond lap joints on gas protection membranes. It can be used internally and externally and is suitable in compressed load applications.

System components

Find your local stockist



Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m

Storage and handling

Store in warm, dry and clean environment in its current packaging. The tape should not be exposed to long periods of ultraviolet light. In very cold weather, prior to use ensure that the material is stored in warm conditions above 5°C.

Preparation

Ensure all surfaces are clean and dry. The membrane joint surfaces should be dry and free from contamination such as dust or sand. Ensure the surface and working area is not water logged. Avoid areas of unsupported jointing.

Installation

The membrane should be overlapped by at least 150mm, bonded with Visqueen Pro Double Sided Jointing Tape and sealed with Visqueen Gas Resistant Foil Lap Tape.

When using the GR Foil Lap tape, apply the tape equidistant over the lap area of the laid sheet and the overlap adjoining membrane. Apply pressure to the jointed area to ensure adhesion. Once the tape is applied, the completed lap should be well rolled with firm pressure to ensure a complete seal joint has occurred, and continuity with the adjacent sheet has been achieved.

Usable temperature range

It is recommended that the system components should be used above 5°C.

Additional information

In demanding site conditions seal lap joints with Visqueen Ultimate GR Lap Tape.

Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m

Property	Result
Dimensions	75mm x 50m
Peel adhesion	750N/m
Adhesive type	Solvent acrylic

Health and safety information

Please refer to material safety datasheet.

Visqueen Gas Resistant Foil Lap Tape, 75mm x 50m

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Complete Range, Complete Solution



Structural Waterproofing



Gas Protection



Damp Proof Membrane



Tapes



Damp Proof Course



Stormwater



Vapour Control

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Visqueen Gas Resistant Self Adhesive Membrane

Features and benefits

- BBA certified - third party accreditation
- Type A Barrier Membrane (Tanking Membrane) - resistant to ground water in accordance with BS 8102:2009
- Complies with BS 8485:2015 + A1:2019 - industry standard for methane and carbon dioxide protection
- Flexible - easy to detail and install on site
- Multi functional - also acts as a radon and damp proof membrane
- Self adhesive application - no jointing tapes required

Product description

Visqueen Gas Resistant Self Adhesive Membrane is a foil lined modified bitumen rubber membrane with a self adhesive coating protected by a removable polyethylene release film. The product is silver on the upper surface and supplied in rolls 1m x 20m.

Approvals and standards

- Third party accreditation (BBA 15/5208)
- Suitable for use as a Type A Barrier Membrane (Tanking Membrane) to BS 8102:2009
- Conforms to the specification requirements of BS 8485:2015 + A1:2019
- Conforms to the specification requirements of BR 211: 2015
- CE Mark EN 13969:2004
- Quality Management System ISO 9001:2015
- Occupational Health and Safety System ISO 45001:2018
- Environmental Management System ISO 14001:2015

Usage

Visqueen Gas Resistant Self Adhesive Membrane is a cold applied product, suitable for use as a Type A Barrier Membrane (Tanking Membrane) for above and below ground applications e.g. basements, retaining walls and lift pits.

It is also suitable for use in all types of buildings to prevent the ingress of harmful levels of ground gases e.g. methane, carbon dioxide and radon.

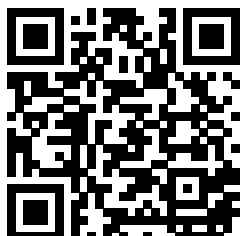
The membrane can be applied to a variety of substrates including concrete, blockwork, brickwork, particle boards and steelwork, in both vertical and horizontal applications.

The membrane can be used to achieve waterproofing to Grades 1, 2 and 3 as defined in BS 8102:2009.

System components

- Visqueen HP Tanking Primer, 5L
- Visqueen Ultimate Top Hat Units
- Visqueen TreadGUARD 1500, 1m x 2m
- Visqueen Protect&Drain
- Visqueen Pile Cap Sealer, 25kg
- Visqueen VX25 Waterstop, 20mm x 25mm x 5m

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Visqueen Gas Resistant Self Adhesive Membrane

Storage and handling

Visqueen Gas Resistant Self Adhesive Membrane should be stored vertically under cover in its original packaging.

Care should be taken when handling the product in line with current manual handling regulations.

Preparation

All surfaces to which Visqueen Gas Resistant Self Adhesive Membrane are to be applied should be free from cavities or projections, have a smooth finish, be dry and free from dust, loose particles and frost. The surface should be sealed using Visqueen HP Tanking Primer and allowed to dry thoroughly.

When applying to blockwork or brickwork the joints must be flush pointed. In demanding applications the masonry face must be rendered prior to applying the membrane.

The membrane can be cut with a sharp retractable safety knife.

Installation

Visqueen Gas Resistant Self Adhesive Membrane lap joints should be a minimum of 150mm and should be pressed and rolled to form a continuous bond and to ensure watertightness.

At 90 degree changes of direction a Visqueen Axiom UniSeal fillet should be formed prior to membrane installation.

For vertical applications cut the membrane to a suitable length allowing an additional 150mm for laps. Position and peel back release film and apply the self adhesive face to the substrate. Apply pressure to ensure a full bond is achieved. Commence at the top of the wall and work downwards, progressively removing the release film.

For horizontal applications unroll the membrane where required allowing an additional 150mm for laps. Re-roll one half of the membrane and cut release film taking care not to damage the membrane. Roll out the membrane progressively removing the release film. Press the membrane onto the substrate e.g. using a soft broom to ensure full adhesion. Repeat for the other half of the roll.

Watertight seals should be formed around all service entry points. Visqueen Preformed Top Hat Units should be used for sealing service entry pipes.

If the membrane is punctured or perforated, a patch of the same material should be lapped and bonded at least 150mm beyond the extents of the puncture.

The membrane should always be fully protected immediately after it is installed. When used externally on a retaining wall, the membrane should be protected from backfill with Visqueen Protect&Drain, which also provides a preferential pathway for ground gases.

When forming day joints, the upper edge of the membrane should be adequately secured e.g. bonding onto the top of the retaining wall, or if terminated on a vertical face, the upper edge should be secured with Visqueen Fixing Strip and Visqueen Fixings Pins for Masonry.

Usable temperature range

It is recommended that Visqueen Gas Resistant Self Adhesive Membrane and all associated system components should not be installed below 5°C.

The membrane requires no additional bonding methods however during cold weather conditions the application of hot air to the self adhesive coating will aid adhesion.

Additional information

Where hazardous ground gases are not present use Visqueen Self Adhesive Membrane

Where concrete construction joints occur Visqueen VX25 Waterstop system should be incorporated see T-04

Where wall ties penetrate the membrane, seal with Visqueen Axiom UniSeal see T-41

When waterproof concrete is required, or for additional detailing information, contact Visqueen Technical Services +44 (0) 333 202 6800.

The information in this datasheet was correct at the time of publication. It is the user's responsibility to obtain the latest version of the datasheet as it is updated on a regular basis. The information contained in the latest datasheet supersedes all previously published editions.

Visqueen Gas Resistant Self Adhesive Membrane

Property	Test method	Units	Compliance criteria	Result
Length	EN 1848-2	m	-0%/+5%	20
Width	EN 1848-2	m	-5%/+5%	1
Thickness	EN 1849-2	mm	-5%/+10%	1.2
Mass	EN 1849-2	g/m ²	-10%/+10%	1100
Watertightness	EN 1928	kPa	MDV	60
Durability after artificial ageing	EN 1847	-	Pass/Fail	Pass
Durability against chemicals	EN 1847	-	Pass/Fail	Pass
Resistance to tearing (nail shank) MD	EN 12310-1	N	>	100
Resistance to tearing (nail shank) CD	EN 12310-1	N	>	100
Resistance to static loading	EN 12730	kg	MLV	20
Resistance to Impact method A and B	EN 12691	mm	>	A >500 B >1000
Reaction to fire	EN 13501-1		Class	E
Joint Resistance	EN 12317-1	N	>	30
Tensile properties - MD	EN 12311-2	N/mm ²	>	2
Tensile properties - CD	EN 12311-2	N/mm ²	>	2
Tensile elongation - MD	EN 12311-1	%	>	130
Tensile elongation - CD	EN 12311-2	%	>	130
Reaction to fire	EN 13501-1	Class	MDV	F
Methane permeability	ISO 15105-1	ml/m ² /d	MDV	<1
Radon transmission rate	SP RI.SE	m/s	MDV	4.7 x 10 ⁻⁹
Radon permeability	SP RI.SE	m ² /s	MDV	0.56 x 10 ⁻¹²
Mean water vapour resistance factor	EN 1931	(μ)	MDV	3960000
Mean water vapour diffusion equivalent air layer thickness	EN 1931	(Sd) in m	MDV	4752
Mean water vapour resistance	EN 1931	MNs/g	MDV	23760
Mean water vapour permeability	EN 1931	g/m ² /day	MDV	0.03

Health and safety information

Refer to the Visqueen Gas Resistant Self Adhesive Membrane material safety datasheet (MSDS).

Visqueen Gas Resistant Self Adhesive Membrane

About Visqueen

The Visqueen name has long been recognised as one of the leading manufacturers of high quality advanced membrane technologies and design based solutions by specifiers, distributors, builders merchants and contractors throughout the UK and Europe.

For further guidance on the Visqueen services shown below, please refer to the relevant section of the Visqueen website (www.visqueen.com) or contact Visqueen Technical Services on +44 (0) 333 202 6800 or enquiries@visqueen.com

Complete Range, Complete Solution



Structural
Waterproofing



Gas
Protection



Damp Proof
Membrane



Tapes



Damp Proof
Course



Stormwater



Vapour
Control

Visqueen Technical Support

Visqueen combine an extensive product portfolio with industry leading levels of service and support which includes guidance over the phone, bespoke CAD drawings to help with complex detailing, electronic NBS specifications and access to a dedicated team of highly knowledgeable and experienced field based Technical Support Managers.

Visqueen Technical Support is available to all our customers including architects, specifiers, distributors, builders merchants, contractors and end users. All of our technical team have been awarded the industry recognised qualification Certificated Surveyor in Structural Waterproofing (CSSW).

Visqueen CPD Seminars

The Visqueen Continuing Professional Development (CPD) Seminars provide up-to-date information on changes within Building Regulations/Building Standards and nationally recognised industry guidance affecting damp proofing, water vapour control, hazardous ground gas protection and below ground structural waterproofing.

The one hour seminars have been produced for design specialists within the construction sector and are delivered by our team of Technical Support Managers.

Visqueen PI designs and special projects

From initial design to the completed project, Visqueen are with you every step of the way. Whether it be hazardous ground gas protection and/or below ground waterproofing protection employing barrier, structurally integral or drained systems, Visqueen can offer professional indemnity (PI) insurance for bespoke Visqueen design solutions.

Visqueen Technical Support Managers work with all stakeholders to provide cost effective Visqueen solutions offering complete peace of mind throughout the construction phase and beyond.

Visqueen Training Academy

Based at our manufacturing facility in Derbyshire, the Visqueen Training Academy is available to support Visqueen customers throughout the UK by providing a wide range of both theory and practical skills related training.

Courses include one day product awareness training for our distributors and builders merchants to help them in their day-to-day jobs, through to intensive three day courses giving detailed hands-on training in the practical skills required for safe and robust product installation.

**ABRAHAM MOSS LIBRARY & LEISURE CENTRE
REMEDIAL STRATEGY**

**APPENDIX B: MANCHESTER CITY COUNCIL PLANNING
APPLICATION CONDITIONS (125033/VO/2020)**

Important – Planning permission & notices of consent

Compliance with conditions

- Your planning approval or consent is attached. It will contain conditions that you must comply with.
- Please read the conditions and understand their requirements and restrictions, for example submission and approval of details or measures to protect trees.
- Some conditions will require action before you start development and it is imperative that you seek to have these discharged before any work commences.
- Whilst every effort has been made to group conditions logically, it is your responsibility to ensure that you are aware of the requirements and/or restrictions of all conditions.
- If you fail to comply with the conditions this may result in a breach of planning control and this may lead to enforcement action.
- Failure to comply with conditions may also result in the development not being lawful.
- It is in your interests to demonstrate that conditions have been complied with. Failure to do so may cause difficulties if the property is sold or transferred.
- A fee is payable for each request to discharge conditions.
- For advice on any of these matters, please contact Planning, Manchester City Council, PO Box 532, Town Hall, Manchester M60 2LA or email planning@manchester.gov.uk

Town & Country Planning Act 1990 (as amended)

Planning Permission

Applicant

Mr Neil Fairlamb
Manchester City Council
Neighbourhoods Directorate
Floor 1 Town Hall Extension
Manchester
M60 2LA

Agent (if used)

Mr Michael Kavanagh
Ellis Williams Architects
Chester Road
WA7 3BA

Part 1 – Particulars of the application/development

Proposal: CITY COUNCIL DEVELOPMENT Demolition of existing Library and Leisure Centre and the erection of a new Library and Leisure Centre incorporating 2 swimming pools, sports hall, gyms, squash courts, dance and community space with changing facilities and associated car parking.

Location: Abraham Moss Leisure Centre , Crescent Road, Manchester, M8 5UF

Date of application: 3 October 2019

Application number: 125033/VO/2019

Part 2 – Particulars of decision

Manchester City Council gives notice that the development referred to in Part 1 has been **Approved** in accordance with the application and plans submitted subject to the condition(s) listed below (if any).

Article 35 Declaration

Officers have worked with the applicant / agent in a positive and proactive manner to guide the application through all stages of the planning process and resolve any issues that arose in dealing with the planning application.

Condition(s) attached to this decision

1) The development must be begun not later than the expiration of three years beginning with the date of this permission.

Reason - Required to be imposed pursuant to Section 91 of the Town and Country Planning Act 1990.

2) The development hereby approved shall be carried out in accordance with the following drawings and documents:

04000 Rev P07
04001 Rev P06
04002 Rev P05
4010 Rev P01
4011 Rev P01
05000 Rev P03
5010 Rev P01
0600 Rev P02
0601 Rev P02
90001 Rev P02
94000 Rev P03
04022 Rev P01
Location Plan 91001 P01
Design and Access Statement Rev P01
Supporting Information from United utilities and Drainage Information
Air Quality Assessment from Laing O'Rourke
Construction Management Plan from Laing O'Rourke
Crime Impact Statement version A
External lighting Plan Statement from BDP
Mixed Use Statement from Ellis Williams Architecture Rev P01
Open Space Statement Rev P01 from Ellis Williams Architecture
Outline MEP Specification from BDP
Resource Management Plan
Sustainable Appraisal BREEHAM UK New Construction Statement 2018 Assessment
Utility Assessment Rev P01 from BDP
91010 Rev P01
Noise Assessment by RAMBOLL
Below Ground Drainage Statement by RAMBOLL
Flood Risk Assessment by RAMBOLL
Contaminated Land and Geotechnical Desk Study Report by RAMBOLL
Waste Management Strategy
Transport Statement by RAMBOLL
Framework Travel Plan by RAMBOLL, stamped as received by the city council as local planning authority on the 3rd October 2019.
Contaminated Land and Geotechnical Desk Study Report by RAMBOLL, stamped as received by the city council on the 3rd October 2019.

94000 P6 Landscape Masterplan
64002 P2 Soft Landscaping Scheme
Proposed Site Plan 91010 P02,
The Ecology Report by The Environment Partnership
The Ground Investigation Report Factual Report 00003 Rev 1
Contaminated Land Interpretive Report 00004 Rev 3 by Ramboll, stamped as received by the city council as local planning authority on the 20 February 2020.

The Revised Construction Management Plan by Laing O'Rourke Lang and the Electrical Car Charging Point Appraisal by Laing O'Rourke, stamped as received on the 27 February 2020.

Drawing Number L-94000 rev P6, stamped as received by the City Council, as Local Planning Authority, on the 28 February 2010.
The email from Ellis Williams Architects, dated 23 December 2019.

Reason - To ensure that the development is carried out in accordance with the approved plans. Pursuant to policies SP1 and DM1 of the Core Strategy.

3) Prior to any above ground works, all material to be used on all external elevations of the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. This shall include the submission of samples (including a sample panel as indicated on drawing 05000 and 05010 stamped as received by the City Council, as Local Planning Authority, 3 October 2019 and specifications of all materials to be used on external elevations of the development along with the jointing and fixing details of the drips to be used to prevent staining in, ventilation/air brick and a strategy for quality control management. The approved materials shall then be implemented as part of the development.

Reason - To ensure that the appearance of the development is acceptable to the City Council as local planning authority in the interests of the visual amenity of the area within which the site is located, as specified in policies SP1 and DM1 of the Core Strategy.

4) Prior to the commencement of the development, details of a Local Benefit Proposal, in order to demonstrate commitment to recruit local labour for the duration of the construction of the development, shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved document shall be implemented as part of the construction of the development. In this condition a Local Benefit Proposal means a document which includes:

- i) the measures proposed to recruit local people including apprenticeships
- ii) mechanisms for the implementation and delivery of the Local Benefit Proposal
- iii) measures to monitor and review the effectiveness of the Local Benefit Proposal in achieving the objective of recruiting and supporting local labour objectives

(b) Within one month prior to construction work being completed, a detailed report which takes into account the information and outcomes about local labour recruitment pursuant to items (i) and (ii) above shall be submitted for approval in writing by the City Council as Local Planning Authority.

Reason - The applicant has demonstrated a commitment to recruiting local labour pursuant to policies SP1, EC1 and DM1 of the Manchester Core Strategy (2012).

5) Notwithstanding contaminated land desk study prepared by Ramboll dated 14 June 2019 (ref 1620005164) stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019, (a) the following information shall be submitted for approval in writing by the City Council, as Local Planning Authority following demolition of the building, but prior to the commencement of the development hereby approved:

- Submission of an updated site investigation and risk assessment report once the buildings have been demolished from the site and ground gas monitoring complete;
- Submission of a remediation strategy.

In the event of the Preliminary Risk Assessment identifying risks which in the written opinion of the Local Planning Authority require further investigation, the development shall not commence until a scheme for the investigation of the site and the identification of remediation measures (the Site Investigation Proposal) has been submitted to and approved in writing by the City Council as local planning authority.

The measures for investigating the site identified in the Site Investigation Proposal shall be carried out, before the development commences and a report prepared outlining what measures, if any, are required to remediate the land (the Site Investigation Report and/or Remediation Strategy) which shall be submitted to and approved in writing by the City Council as local planning authority.

b) When the development commences, the development shall be carried out in accordance with the previously agreed Remediation Strategy and a Completion/Verification Report shall be submitted for approval in writing by the City Council as local planning authority prior to the first use of the development hereby approved.

In the event that ground contamination, groundwater contamination and/or ground gas, not previously identified, are found to be present on the site at any time before the development is occupied, then development shall cease and/or the development shall not be occupied until, a report outlining what measures, if any, are required to remediate the land (the Revised Remediation Strategy) is submitted to and approved in writing by the City Council as local planning authority and the development shall be carried out in accordance with the Revised Remediation Strategy, which shall take precedence over any Remediation Strategy or earlier Revised Remediation Strategy.

Reason - To ensure that the presence of or the potential for any contaminated land and/or groundwater is detected and appropriate remedial action is taken in the interests of public safety, pursuant to policies DM1 and EN18 of the Core Strategy.

6) Notwithstanding the email from Michael Kavanagh 'Abraham Moss- Highways Comments' dated 5 March 2020 and Construction management plan Rev B stamped as received by the City Council, as Local Planning Authority, on the 27 February 2020, prior to the commencement of the development a detailed construction management plan outlining working practices during development shall be submitted for approval in writing by the City Council, as local planning authority, which for the avoidance of doubt should include;

- *Details of Wheel Washing;
- *Dust suppression measures;
- *Compound locations where relevant;
- * Communication strategy with residents;
- *Location, removal and recycling of waste;
- *Routing strategy and swept path analysis;
- *Parking of construction vehicles and staff;
- *Sheeting over of construction vehicles;
- *Communication strategy with residents and local businesses which shall include details of how there will be engagement, consult and notify them during the works

Development shall be carried out in accordance with the approved construction management plan.

Reason - To safeguard the amenities of nearby residents and highway safety, pursuant to policies SP1, EN9, EN19 and DM1 of the Manchester Core Strategy (July 2012).

7) Prior to the commencement of development, a construction management plan in relation to the proximity to the tram line shall be submitted for approval in writing by the

City Council, as Local Planning Authority. For the avoidance of doubt the plan shall include the following details:

- the parking of vehicles of site operatives and visitors and the retention of vehicle parking for Metrolink;
- the retention of 24hr unhindered access to the track access and trackside equipment cabinets and chambers for the low voltage power, signalling and communications cables for Metrolink both during construction and once operational.
- loading and unloading of plant and materials; - storage of plant and materials used in constructing the development; construction and demolition methods to be used; including the use of cranes (which must not over sail the tramway); - measures to control the emission of dust and dirt during construction.

The approved plan shall be implemented for the duration of the works.

Reason: In the interest of working in close proximity to the tram line pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012).

8) Prior to the commencement of development, a surface water drainage scheme shall be submitted for approval in writing by the Local Planning Authority. For the avoidance of doubt the following details are required:

- Details of surface water attenuation that offers a reduction in surface water runoff rate in line with the Manchester Trafford and Salford Strategic Flood Risk Assessment, i.e. at least a 50% reduction in runoff rate compared to the existing rates, as the site is located within Conurbation Core Critical Drainage Area;
- Evidence that the drainage system has been designed (unless an area is designated to hold and/or convey water as part of the design) so that flooding does not occur during a 1 in 100 year rainfall event with allowance for climate change in any part of a building;
- Assessment of overland flow routes for extreme events that is diverted away from buildings (including basements). Overland flow routes need to be designed to convey the flood water in a safe manner in the event of a blockage or exceedance of the proposed drainage system capacity including inlet structures. A layout with overland flow routes needs to be presented with appreciation of these overland flow routes with regards to the properties on site and adjacent properties off site.
- Hydraulic calculation of the proposed drainage system;
- Construction details of flow control and SuDS elements;
- Management and maintenance plan for the lifetime of the development which shall include the arrangements for adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.

The approved details must be implemented as part of the development and thereafter retained and maintained in situ.

Reason: To promote sustainable development, secure proper drainage and to manage the risk of flooding and pollution, pursuant to policy EN14 of the Manchester.

9) Prior to the first use of the development hereby approved, details of the implementation, maintenance and management of the sustainable drainage scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt this shall include:

- Verification reporting providing photographic evidence of constriction; - Management and maintenance plan for the lifetime of the development which shall include the arrangements adoption by any public body or statutory undertaker, or any other arrangements to secure the operation of the sustainable drainage scheme throughout its lifetime.
- Timescale for implementation

The implementation of the management and maintenance plan shall be implemented in accordance with the timescales agreed and retained for as long as the development remains in use.

Reason - To manage flooding and pollution and to ensure that a managing body is in place for the sustainable drainage system and there is funding and maintenance mechanism for the lifetime of the development pursuant to policies SP1, EN14 and DM1 of the Manchester Core Strategy (2012).

10) Prior to demolition of the existing building hereby approved a bat assessment by a suitably experienced bat worker shall be submitted for approval in writing by the City Council, as Local Planning Authority. The assessment should include as a minimum a visual inspection of the existing roof space for evidence of bats and exterior of the building for potential bat access points and appropriate mitigation should this be necessary.

Reason - To ensure the protection of habitat of species that are protected under the Wildlife and Countryside Act 1981 or as subsequently amended in order to comply with policy EN15 of the Core Strategy.

11) Notwithstanding the noise assessment prepared by Ramboll (dated 2/08/2019) stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019, (a) prior to the first use of the development hereby approved, a scheme to secure a reduction in the level of noise emanating from the building shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved scheme shall be implemented prior to the first use of the development hereby approved.

Where entertainment noise is proposed the LAeq (entertainment noise) shall be controlled to 10dB below the LA90 (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63Hz and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB, respectively.

(b) Prior to the first use of the development a verification report will be required to validate that the work undertaken throughout the development conforms to them recommendations and requirements in the approved acoustic consultant's report.

The report shall also undertake post completion testing to confirm that acceptable criteria has been met. Any instances of non-conformity within the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason - To safeguard the amenities of the occupiers of nearby accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.

12) (a) Before the building hereby approved is first used details of any externally mounted ancillary plant, equipment and servicing submitted for approval in writing by the City Council as local planning authority. The approved scheme shall be implemented prior to the first use of the development hereby approved.

The plant selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (LAeq) below the typical background (LA90) level at the nearest noise sensitive location.

(b) Prior to the first use of the development, a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report.

The report shall also undertake post completion testing to confirm that the noise criteria has been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation, pursuant to policies SP1 and DM1 of the Core Strategy.

13) The sports hall facility and library shall not be open outside the following hours:-

06:30 - 22:00 Monday to Friday

09:00 - 17:00 - Sunday and Bank Holidays

Reason - To safeguard the amenities of the occupiers of nearby residential accommodation when the development is complete, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1 and DM1 of the Core Strategy for Manchester.

14) Prior to the first use of the development hereby approved, a scheme of off site highway works shall be submitted for approval in writing by the City Council, as Local Planning Authority.

For the avoidance of doubt this shall include the following:

-Junctions of Crescent Road/Greenhill Road, Crescent Road/Crescent Avenue & Crescent Road/Maureen Avenue to be amended to provide dropped kerbs and tactile paving

The approved scheme shall be implemented and be in place prior to the first use of the development hereby approved and thereafter retained and maintained in situ for as long as the development remains in use.

Reason - To ensure safe access to the development site in the interest of pedestrian and highway safety pursuant to policies SP1, EN1 and DM1 of the Manchester Core Strategy (2012) and in accordance with the New Cross Public Realm Strategy.

15) The development hereby approved shall be carried out in accordance with the Crime Impact Statement prepared by Design for Security at Greater Manchester Police

stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019. The development shall only be carried out in accordance with these approved details. The development hereby approved shall not be occupied or used until the Council as local planning authority has acknowledged in writing that it has received written confirmation of a Secured by Design accreditation.

Reason - To reduce the risk of crime pursuant to policies SP1 and DM1 of the Core Strategy and to reflect the guidance contained in the National Planning Policy Framework.

16) The air quality mitigation measures carried out during the construction phase shall be carried out in accordance with the Air Quality impact assessment prepared by Ramboll dated August 2019, submitted to and approved in writing by the City Council as local planning authority. Any agreed mitigation measures shall be implemented as part of the development and shall remain in situ whilst the use or development is in operation.

Reason: To secure a reduction in air pollution from traffic or other sources in order to protect existing and future residents from air pollution, pursuant to policies EN16, SP1 and DM1 of the Core Strategy.

17) The development hereby approved shall include a building and site lighting scheme and a scheme for the illumination of external areas during the period between dusk and dawn. Full details of such a scheme shall be submitted for approval in writing by the City Council, as Local Planning Authority before the first occupation of the development hereby approved. The approved details shall be implemented in full prior to the first occupation of the development and shall remain in operation for so long as the development is occupied.

Reason - In the interests of amenity, crime reduction and the personal safety of those using the proposed development in order to comply with the requirements of policies SP1 and DM1 of the Core Strategy.

18) If any lighting at the development hereby approved, when illuminated, causes glare or light spillage which in the opinion of the Council as local planning authority causes detriment to adjoining and nearby properties, within 14 days of a written request, a scheme for the elimination of such glare or light spillage shall be submitted to the Council as local planning authority and once approved shall thereafter be retained in accordance with details which have received prior written approval of the City Council as Local Planning Authority.

Reason - In order to minimise the impact of the illumination of the lights on the occupiers of nearby residential accommodation, pursuant to policies DM1 and SP1 of the Manchester Core Strategy.

19) Prior to the first occupation of the development, the provision of 40 cycle spaces, as indicated in the Design and Access Statement and the Transport Plan by Ramboll, stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019, shall be implemented prior to the first use of the development hereby approved and retained and maintained in situ for as long as the development remains in use.

Reason - To ensure there is sufficient cycles stand provision at the development and the residents in order to support modal shift measures pursuant to policies SP1, T1, T2 and DM1 of the Manchester Core Strategy (2012).

20) Prior to the first use development a signage strategy for the entire building shall be submitted for approval in writing by the City Council, as Local Planning Authority.

The signage strategy will include timescales for implementation. The approved strategy shall then be implemented and used to inform any future advertisement applications for the building.

Reason - In the interest of visual amenity pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012).

21) Prior to the first use of the development hereby approved, details of the number, siting and appearance bird and bat boxes at the development shall be submitted for approval in writing by the City Council, as Local Planning Authority. The approved details shall be implemented and be in place prior to the first occupation of the development hereby approved and shall thereafter be retained and maintained in situ.

Reason - In the interest of providing habitats for birds to improve the ecological value of the application site pursuant to policies SP1 and EN15 of the Manchester Core Strategy (2012).

22) The development hereby approved shall include for full disabled access to be provided to the building and communal walkways and via the main entrances and to the floors above.

Reason - To ensure that satisfactory disabled access is provided by reference to the provisions Core Strategy policy DM1.

23) Prior to the first use of the development hereby approved, details of the siting, scale and appearance of the solar panels to the roof (including cross sections). The approved details shall then be implemented prior to the first use of the development and thereafter retained and maintained in situ.

Reason - In the interest of ensuring the solar panels are installed and to ensure that they are appropriate in terms of visual amenity pursuant to policies SP1, EN1, EN6 and DM1 of the Manchester Core Strategy (2012).

24) The development hereby approved shall be carried out in accordance with site waste management strategy, stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019. The details shall be implemented prior to the first occupation of the development and thereafter retained and maintained in situ.

Reason - To ensure adequate refuse arrangement are put in place for the development pursuant to policies EN19 and DM1 of the Manchester Core Strategy.

25) (a) Notwithstanding Environmental Standards Statement stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019, further details shall be provided in respect of the Environmental Standards for the scheme prior to any above ground works,
The development hereby approved shall be carried out in accordance with the approved scheme.

(b) A post construction review certificate/statement shall be submitted for approval, within a timescale that has been previously agreed in writing, to the City Council as Local Planning Authority.

Reason - In order to minimise the environmental impact of the development pursuant to policies SP1, T1-T3, EN4-EN7 and DM1 of the Core Strategy and the principles contained within The Guide to Development in Manchester SPD (2007) and the National Planning Policy Framework.

26) The development hereby approved shall be carried out in accordance with the Landscape Masterplan numbered 94000 P6 and the Soft Landscaping Plan 94002 P2 , stamped as received by the City Council, as Local Planning Authority, on the 20 February 2020. The development shall only be carried out in accordance with these approved details. If within a period of 5 years from the date of the planting of any tree or shrub, that tree or shrub or any tree or shrub planted in replacement for it, is removed, uprooted or destroyed or dies, or becomes, in the opinion of the local planning authority, seriously damaged or defective, another tree or shrub of the same species and size as that originally planted shall be planted at the same place.

Reason - To ensure that a satisfactory landscaping scheme for the development is carried out that respects the character and visual amenities of the area, in accordance with policies SP1, EN9 and DM1 of the Core Strategy.

27) The development shall be carried out in accordance with the Travel Plan by Ramboll, stamped as received by the City Council, as Local Planning Authority, on the 3 October 2019.

In this condition a Travel Plan means a document which includes:

- i) the measures proposed to be taken to reduce dependency on the private car by those living at the development;
- ii) a commitment to surveying the travel patterns of residents/staff during the first three months of the first use of the building and thereafter from time to time
- iii) mechanisms for the implementation of the measures to reduce dependency on the private car
- iv) measures for the delivery of specified travel plan services
- v) measures to monitor and review the effectiveness of the Travel Plan in achieving the objective of reducing dependency on the private car
- vi) consideration and linkages with other users at the Abraham Moss Campus to reduce the dependency on the car.

Within six months of the first occupation of the development, a Travel Plan which takes into account the information about travel patterns gathered pursuant to item (ii) above shall be submitted for approval in writing by the City Council as Local Planning Authority. Any Travel Plan which has been approved by the City Council as Local Planning Authority shall be implemented in full at all times when the development hereby approved is in use.

Reason - To assist promoting the use of sustainable forms of travel for residents, pursuant to policies T1, T2 and DM1 of the Manchester Core Strategy (2012).

28) Prior to the first use of the development hereby approved a car park management and monitoring framework shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt this shall include details of how monitoring for a 12 month period of the use of the car park and its operations will take

place including details and timescales to review. Within 14 months of approval of the car park management and monitoring framework, a review of the monitoring of the use of the car park shall be submitted for approval in writing by the City Council, as Local Planning Authority. This review shall include measures to be implemented to improve the management of the car park should this be necessary. Any agreed measures shall then be implemented

within a timescale to be agreed with the City Council, as Local Planning Authority, and thereafter retained and maintained in situ.

Reason - In the interest of ensure that the car park is appropriate managed in line with other uses at the Abraham Moss Campus pursuant to policies SP1, T2 and DM1 of the Manchester Core Strategy (2012).

29) Prior to the first use of the use of the development 3 electric car charging points shall be installed within the car parking area (as indicated on drawing L-94000 rev P6, stamped as received by the City Council, as Local Planning Authority, on the 28 February 2010) in accordance with a scheme submitted for approval in writing by the City Council, as Local Planning Authority. The approved scheme shall be implemented prior to the first use of the development and made available and thereafter retained for as long as the development is in place.

Reason - In the interest of promoting alternatives and minimising the impact of the development on air quality pursuant to policies EN16 of the Manchester Core Strategy (2012).

30) Prior to the first use of the development, details of any roller shutters to the ground floor of the building shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt the shutters shall be fitted internally to the premises. The approved details shall be implemented prior to the first use of the building and thereafter retained and maintained in situ.

Reason - To ensure that the roller shutters are appropriate in visual amenity terms pursuant to policies SP1, EN1 and DM1 of the Manchester Core Strategy (2012).

31) When the development is first occupied, deliveries, servicing and collections including waste collections shall not take place outside the following hours:

Monday to Saturday 07:30 to 20:00
No deliveries on Sundays

Reason - In the interest of residential amenity pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012).

32) Prior to the first use of the development hereby approved, details of a servicing and operational management plan shall be submitted for approval in writing by the City Council, as Local Planning Authority. For the avoidance of doubt this shall include how servicing arrangements will be managed at the development including ensuring the access road remains unrestricted. The approved plan shall be implemented upon the first use of the development and thereafter retained and maintained.

Reason - In the interest of highway and pedestrian safety pursuant to policies SP1, T2 and DM1 of the Manchester Core Strategy (2012)

33) Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) Order 2015 (or any order revoking and re-enacting that Order with or without modification) the premises shall only be used for leisure, library and educational purposes (Use Class D1), and for the ancillary use of its facilities by the public, and for no other purpose.

Reason - In the interest of retaining the D1 use pursuant to policies EC1, EC4 of the Manchester Core Strategy (2012).

34) Prior to the first use of the development hereby approved, the car parking layout (including the provision of 11 disabled car parking spaces) as indicated on drawing 91010 P02, stamped as received by the City Council, as Local Planning Authority, on the 20 February 2020, shall be laid out, demarcated and made available. The car parking layout shall be retain and maintained for as long as the development remains in use.

Reason - To ensure disabled car parking is available for the development pursuant to policies SP1, T1, and DM1 of the Manchester Core Strategy (2012).

35) The development hereby approved shall achieve a post-construction Building Research Establishment Environmental Assessment Method (BREEAM) rating of at least an 'Very Good' rating. Post construction review certificate(s) shall be submitted to, and approved in writing by the City Council as local planning authority, before first use.

Reason - In order to minimise the environmental impact of the development, pursuant to policies SP1, T1-T3, EN4-EN7 and DM1 of the Core Strategy, and the principles contained within The Guide to Development in Manchester SPD (2007), and the National Planning Policy Framework.

36) Prior to the first use of the development hereby approved, details of the boundary treatment shall be submitted for approval in writing by the City Council, as Local Planning Authority. This shall include the siting, scale and appearance of any boundary treatment. The approved details shall be implemented as part of the development and thereafter retained and maintained in situ.

Reason - To ensure the visual amenity of the boundary treatment is acceptable pursuant to policies SP1 and DM1 of the Manchester Core Strategy (2012).

Informatives

Building Regulations 2010

This permission does not grant approval under Building Regulations.

Street Naming & Numbering Requirements

Manchester City Council is responsible for allocating street naming and numbering within Manchester for new developments or property conversions. Individuals or businesses are not permitted to allocate their own property numbers, building or street names.

If your development includes the creation of new dwellings (either new build or conversion of existing buildings), creation of new commercial properties or the subdivision of existing properties you must ensure that you request new or changes to addresses through us so they can be officially allocated and registered in accordance

with the Public Health Act 1925 Sections 17-19 & Greater Manchester Act 1981 Section 22.

Failure to do this may result in difficulties for the developer/occupier when requiring services such as connections to utilities, phone lines and postal services and may delay your development.

You can apply online at the following address:

http://www.manchester.gov.uk/info/100011/roads_parking_and_transport/1988/naming_and_numbering_of_houses_buildings_streets_and_roads/2

Mining Information

The proposed development lies within an area which could be subject to current coal mining or hazards resulting from past coal mining. Please read the Standing Advice from the Coal Authority in Appendix A.

Any signage, wayfinding, banners or any other advertisements to be installed in and around the application site for the purpose of the promotion of the developments and routes to it may require consent under the Town and Country Planning (Control of Advertisements) (England) Regulations 2007.

Date: 6 March 2020

Signed: 

Julie Roscoe
Director of Planning, Building Control & Licensing

Manchester City Council, P O Box 532, Town Hall, Manchester M60 2LA

Notes

1. This permission refers only to that required under the Town and Country Planning Act 1990 does not include any consent or approval under any other enactment, byelaw, order or regulation.

2 If the applicant is aggrieved by the decision of the local planning authority to refuse permission or approval for the proposed development, or to grant permission or approval subject to conditions, they may appeal to the Secretary of State in accordance with Section 78(1) of the Town and Country Planning Act 1990 within six months of the date of the notice of the decision.

The Planning Inspectorate have introduced an online appeals service that can be used to make appeals online. This service is available through the gov.uk website – www.gov.uk/planning-inspectorate. The Inspectorate will publish details of your appeal on the internet. Alternatively If you are unable to access the online appeal form, please contact the Planning Inspectorate to obtain a paper copy of the appeal form on tel: 0303 444 5000.

The Secretary of State has power to allow a longer period for the giving of a notice of appeal but they will not normally be prepared to exercise this power unless there are special circumstances that excuse the delay in giving notice of appeal.

If you intend to submit an appeal that you would like examined by inquiry then you must notify the City Council (planning@manchester.gov.uk) and the Planning Inspectorate (inquiryappeals@planninginspectorate.gov.uk) at least 10 days before submitting the appeal. Further details are on GOV.UK.

3. The statutory requirements are those set out in Section 79(6) of the Town and Country Planning Act 1990, namely Sections 70(1) and 72(1) of the Act.

4. If either the local planning authority or the Secretary of State refuses permission to develop land or grants it subject to conditions, the owner may claim that they can neither put the land to a reasonably beneficial use in its existing state nor render the land capable of a reasonably beneficial use by the carrying out of any development which has been or would be permitted.

In these circumstances, the owner may serve a purchase notice on the Council in whose area the land is situated. This notice will require the Council to purchase his interest in the land in accordance with the provisions of Part VI of the Town and Country Planning Act 1990

5. In certain circumstances, a claim may be made against the local planning authority for compensation, where permission is refused or granted subject to conditions by the Secretary of State on appeal or on a reference of the application to them. The circumstances in which such compensation is payable are set out in Section 114 of the Town and Country Planning Act 1990.

Appendix A



The Coal
Authority

Any Planning Enquiries should be directed to:

Planning and Local Authority Liaison

Telephone: 01623 637 119

Email: planningconsultation@coal.gov.uk

Website: www.gov.uk/government/organisations/the-coal-authority

STANDING ADVICE - DEVELOPMENT LOW RISK AREA

The proposed development lies within a coal mining area which may contain unrecorded coal mining related hazards. If any coal mining feature is encountered during development, this should be reported immediately to the Coal Authority on 0345 762 6848.

Further information is also available on the Coal Authority website at:

www.gov.uk/government/organisations/the-coal-authority

This Standing Advice is valid from 1st January 2019 until 31st December 2020

**ABRAHAM MOSS LIBRARY & LEISURE CENTRE
REMEDIAL STRATEGY**

**APPENDIX C: CHEMICAL CRITERIA FOR REUSE AND
IMPORTED MATERIAL (RESIDENTIAL WITHOUT PLAN
UPTAKE)**

RAMBOLL		Generic Assessment Criteria (GAC) for soils - to be protective of human health					REH UK - Soil GAC - v1a Feb 2017
Pathway	Units	Residential	Residential without homegrown produce	Public Open Space 1 Green space close to housing	Public Open Space 2 Green space far enough from housing for negligible tracking back of soil	Commercial / Industrial	Theoretical Saturation Limit
C4SL Compounds							
Arsenic	mg/kg	37	40	79	170	640	NR
Benzene	mg/kg	0.15	0.37	140	140	15	1100
Benzo(a)pyrene	mg/kg	5	5.3	10	21	76	0.91
Chromium VI	mg/kg	21	21	21	250	49	NR
Lead	mg/kg	200	310	630	1300	2300	NR
Cadmium	mg/kg	22	150	220	880	410	NR
Common compounds							
Metals							
Aluminium	mg/kg	40000	44000	71000	330000	370000	NR
Antimony	mg/kg	610	620	1100	3300	7400	NR
Arsenic	mg/kg	37	40	79	170	640	NR
Barium	mg/kg	1300	1300	2700	5800	22000	NR
Beryllium	mg/kg	1.7	1.7	2.2	63	12	NR
Boron	mg/kg	290	11000	21000	46000	240000	NR
Cadmium	mg/kg	22	150	220	880	410	NR
Chromium (III)	mg/kg	910	910	1500	33000	8600	NR
Chromium VI	mg/kg	21	21	21	250	49	NR
Copper	mg/kg	2400	7100	12000	44000	68000	NR
Lead	mg/kg	200	310	630	1300	2300	NR
Mercury - Elemental	mg/kg	0.1	0.1	16	22	8.9	26
Mercury - Inorganic	mg/kg	40	56	120	240	1100	NR
Mercury - Methylmercury	mg/kg	7.6	9	39	66	290	300
Molybdenum	mg/kg	670	670	1400	2900	18000	NR
Nickel	mg/kg	180	180	230	6600	980	NR
Selenium	mg/kg	250	430	1100	1800	12000	NR
Tributyl tin oxide	mg/kg	0.26	2.5	30	46	130	241
Vanadium	mg/kg	410	1200	2000	5000	9000	NR
Zinc	mg/kg	3700	40000	81000	170000	730000	NR
Miscellaneous							
Cyanide (free)	mg/kg	26	49 ^[1]	49 ^[1]	49 ^[1]	49 ^[1]	NR
Phenol	mg/kg	110	380 ^[2]	380 ^[2]	380 ^[2]	380 ^[2]	20000
BTEX, MTBE							
Benzene	mg/kg	0.15	0.37	140	140	15	1100
Ethylbenzene	mg/kg	26	34	23000	10000	3200	510
Toluene	mg/kg	100	370	55000	70000	33000	840
Xylene-m	mg/kg	29	34	38000	9600	3400	610
Xylene-o	mg/kg	31	37	38000	9900	3700	470
Xylene-p	mg/kg	28	33	38000	9400	3300	560
Methyl tert-butyl ether	mg/kg	31	39	74000	71000	3800	17000
Total Petroleum Hydrocarbons (TPH)							
TPH Aliphatic C5-6	mg/kg	24	24	530000	55000	2400	370
TPH Aliphatic C6-8	mg/kg	53	53	560000	81000	5300	160
TPH Aliphatic C8-10	mg/kg	13	13	12000	8700	1300	79
TPH Aliphatic C10-12	mg/kg	62	62	13000	16000	6100	48
TPH Aliphatic C12-16	mg/kg	510	510	13000	23000	43000	24
TPH Aliphatic C16-35	mg/kg	41000	42000	250000	410000	1000000	8.5
TPH Aliphatic C35-44	mg/kg	41000	42000	250000	410000	1000000	8.5
TPH Aromatic C8-10	mg/kg	20	22	5000	4800	2200	610
TPH Aromatic C10-12	mg/kg	63	120	5000	7900	11000	360
TPH Aromatic C12-16	mg/kg	140	1100	5000	9800	35000	170
TPH Aromatic C16-21	mg/kg	260	1900	3800	7900	29000	54
TPH Aromatic C21-35	mg/kg	1100	1900	3800	7900	29000	4.8
TPH Aromatic C35-44	mg/kg	1100	1900	3800	7900	29000	4.8
TPH Ali&Aro C44-70	mg/kg	1600	1900	3800	7800	28000	0.29
Polyaromatic Hydrocarbons (PAHs)							
Acenaphthene	mg/kg	200	2000	15000	28000	75000	57
Acenaphthylene	mg/kg	170	2000	15000	28000	76000	86
Anthracene	mg/kg	2300	30000	74000	150000	520000	1.2
Benzo(a)anthracene ^[3]	mg/kg	7.5	12	29	54	170	1.7
Benzo(a)pyrene ^[3]	mg/kg	5	5.3	10	21	76	0.91
Benzo(b)fluoranthene ^[3]	mg/kg	2.6	4	7.2	15	45	1.2
Benzo(ghi)perylene ^[3]	mg/kg	320	360	640	1500	3900	0.015
Benzo(k)fluoranthene ^[3]	mg/kg	77	110	190	420	1200	0.69
Chrysene ^[3]	mg/kg	15	30	57	110	350	0.44
Dibenz(ah)anthracene ^[3]	mg/kg	0.24	0.31	0.57	1.3	3.5	0.0039
Fluoranthene	mg/kg	280	1500	3100	6300	23000	19
Fluorene	mg/kg	170	2200	9900	19000	60000	31
Indeno(123-cd)pyrene ^[3]	mg/kg	27	45	82	170	510	0.06
Naphthalene	mg/kg	0.99	0.99	4900	670	110	75
Phenanthrene	mg/kg	95	1300	3100	6200	22000	36
Pyrene	mg/kg	620	3700	7400	15000	54000	2.2

Assumptions

C4SL exposure scenario adopted (DEFRA SP1010 2013 - C4SL documents).

Soil: Sand

Soil organic matter (SOM) 1%

Modelling package used: CLEA 2015 (Environment Agency, 2015)

Toxicity data sourced in accordance with Environment Agency defined heirarchy of data sources, based on minimal risk with the exception of the published C4SL compounds which are based on a low risk level.

Notes

^[1] Cyanide (free) capped for all scenarios at value calculated based on acute toxicity.

^[2] Phenols capped based on EA approach to limit phenol to 1% by weight in soil solution (Phenol SGV report)

^[3] Benzo(a)pyrene used as surrogate marker for PAHs in grey. Likely to be applicable to the majority of sites. Only use GAC in grey if bap marker approach not applicable.

	Generic Assessment Criteria for soils - to be protective of human health						REH UK - Soil GAC - v1a Feb 2017
		Residential	Residential without homegrown produce	Public Open Space 1 Green space close to housing	Public Open Space 2 Green space far enough from housing that there will be negligible tracking back of soil	Commercial / Industrial	Theoretical Saturation Limit
Pathway	Units						
Pesticides							
Aldrin	mg/kg	5.5	7	18	30	170	25
Atrazine	mg/kg	3.2	620	1200	2400	9400	100
Dichlorvos	mg/kg	0.03	6.4	16	26	140	9500
Dieldrin	mg/kg	0.96	6.7	18	30	160	0.15
Endosulfan-α	mg/kg	7.1	90	1200	2300	4500	0.0028
Endosulfan-β	mg/kg	6.8	130	1200	2300	5500	0.000066
Hexachlorocyclohexane-α	mg/kg	0.23	7	24	47	170	17
Hexachlorocyclohexane-β	mg/kg	0.085	3.7	8.1	15	65	2
Hexachlorocyclohexane-γ	mg/kg	0.06	3	8.2	15	67	51
Explosives							
HMX	mg/kg	5.6	6700	13000	25000	110000	0.27
RDX	mg/kg	110	13000	27000	52000	210000	17
Trinitrotoluene-2,4,6 (TNT)	mg/kg	1.6	66	130	270	1000	310
SVOCs							
Biphenyl	mg/kg	56	140	9400	15000	11000	34
Bis (2-ethylhexyl) phthalate	mg/kg	290	3900	9700	17000	85000	8.7
Butyl benzyl phthalate	mg/kg	1400	62000	130000	260000	940000	26
Chloronaphthalene-2	mg/kg	2.3	2.3	6100	660	210	110
Chlorophenol-2	mg/kg	3.7	110	620	1100	3600	54000
Dichlorophenol-2,4	mg/kg	0.85	100	620	1100	3500	4600
Diethyl Phthalate	mg/kg	110	1900	49000	86000	120000	13
Dimethylphenol-2,4	mg/kg	18	200	5000	8700	13000	1300
Di-n-butyl phthalate	mg/kg	13	650	1300	2600	15000	4.6
Dinitrotoluene-2,4	mg/kg	1.4	250	500	970	3700	130
Dinitrotoluene-2,6	mg/kg	0.75	110	250	490	1900	270
Di-n-octyl phthalate	mg/kg	2800	4900	11000	20000	89000	33
Hexachlorobenzene	mg/kg	1.4	2.5	16	29	91	0.2
Hexachloroethane	mg/kg	0.12	0.13	120	120	11	8.1
Methylphenol-2	mg/kg	79	5500	25000	48000	160000	14000
Methylphenol-3	mg/kg	78	6900	25000	48000	170000	25000
Methylphenol-4	mg/kg	78	5700	25000	48000	160000	26000
Pentachlorophenol	mg/kg	0.21	27	60	120	400	16
Phenol	mg/kg	110	380 ^[2]	380 ^[2]	380 ^[2]	380 ^[2]	20000
VOCs							
Bromobenzene	mg/kg	0.53	0.54	4700	990	51	830
Bromodichloromethane	mg/kg	0.0097	0.011	70	34	1	1600
Bromoform	mg/kg	2	3.1	3900	2900	390	2500
Chlorobenzene	mg/kg	0.19	0.19	8800	700	31	650
Chloroethane	mg/kg	5.2	5.3	520000	82000	530	2400
Chloroethene (Vinyl Chloride)	mg/kg	0.00034	0.00037	3.5	3.7	0.038	1400
Chloromethane	mg/kg	0.0053	0.0053	470	74	0.56	1700
Chlorotoluene, o (chlorotoluene-2)-	mg/kg	17	37	5000	9200	3200	530
Dichlorobenzene-1,2	mg/kg	9.6	9.8	80000	13000	1100	560
Dichlorobenzene-1,3	mg/kg	0.18	0.18	300	270	17	520
Dichlorobenzene-1,4	mg/kg	25	25	17000	36000	2400	220
dichloroethane-1,1	mg/kg	1.4	1.4	42000	11000	140	1600
Dichloroethane-1,2	mg/kg	0.0031	0.0035	28	12	0.34	2800
Dichloroethene-1,1,	mg/kg	0.15	0.15	9200	2000	14	2200
Dichloroethene-1,2-cis	mg/kg	0.066	0.069	1200	390	7.3	3500
Dichloroethene-1,2-trans	mg/kg	0.11	0.12	3600	920	12	3100
Dichloromethane	mg/kg	0.47	1.2	760	1400	130	6000
Dichloropropane-1,2	mg/kg	0.013	0.013	1200	80	1.6	1100
Hexachloro-1,3-butadiene	mg/kg	0.12	0.13	25	43	17	310
Iso-propylbenzene	mg/kg	6.6	6.8	24000	15000	710	390
Propylbenzene	mg/kg	21	23	25000	28000	2100	400
Styrene	mg/kg	6.9	21	3000	5600	1900	610
Tetrachloroethane-1,1,1,2	mg/kg	0.56	0.63	1400	1000	59	2500
Tetrachloroethane-1,1,2,2,	mg/kg	0.98	1.6	1400	1300	150	2500
Tetrachloroethene	mg/kg	0.074	0.074	1300	460	10	420
Tetrachloromethane (Carbon Tetrachl	mg/kg	0.011	0.011	790	100	1.6	1500
Trichlorobenzene-1,2,3	mg/kg	0.61	0.61	1700	430	55	130
Trichlorobenzene-1,2,4	mg/kg	1.1	1.1	11000	890	120	320
Trichloroethane-1,1,1	mg/kg	3.7	3.8	130000	32000	370	1400
Trichloroethane-1,1,2	mg/kg	0.39	0.51	970	770	48	3700
Trichloroethene	mg/kg	0.007	0.0071	110	41	0.68	1500
Trichloromethane (Chloroform)	mg/kg	0.43	0.48	2500	1900	53	4600
Trimethylbenzene-1,2,4	mg/kg	0.22	0.24	240	230	22	550
Trimethylbenzene-1,3,5	mg/kg	0.079	0.079	3500	210	12	230
Misc							
Carbon disulphide	mg/kg	0.066	0.066	9000	690	6.7	2000
Pentachlorobenzene	mg/kg	4.6	11	100	180	510	43
Tetrachlorobenzene-1,2,3,4	mg/kg	8.1	9.7	830	1300	1100	120
Tetrachlorobenzene-1,2,3,5	mg/kg	0.29	0.3	78	96	26	39
Tetrachlorobenzene-1,2,4,5	mg/kg	0.23	0.3	13	24	25	20
Trichlorobenzene-1,3,5	mg/kg	0.13	0.13	1500	210	12	37
Trichlorophenol-2,4,6	mg/kg	1.4	150	620	1100	4000	850

Assumptions

C4SL exposure scenario adopted.
Soil: Sand
SOM 1%
Modelling package used: CLEA 2015 (EA 2015)
Toxicity data sourced in accordance with Environment Agency defined heirarchy of data sources, based on minimal risk with the exception of the published C4SL compounds which are based on a low risk level.

		Generic Assessment Criteria for soils - to be protective of human health		REH UK - Soil GAC - v1a Feb 2017
Pathway	Units	Residential	Commercial / Industrial	Theoretical Saturation Limit
Anthraquinone, 9,10-	mg/kg	3.8	430	0.85
Azobenzene	mg/kg	4.3	150	490
Bis (2-chloroethoxy) methane	mg/kg	0.057	2.3	2700
Bis (2-chloro-ethyl) ether	mg/kg	0.017	0.51	3000
Bis (2-chloroisopropyl) ether	mg/kg	0.74	25	3500
Bromomethane	mg/kg	0.11	1	6300
Bromophenyl phenylether, 4-	mg/kg	0.036	1	690
Butylbenzene, n-	mg/kg	420	83000	190
Butylbenzene, sec-	mg/kg	310	75000	230
Butylbenzene, tert-	mg/kg	320	75000	220
Carbazole	mg/kg	12	900	10
Chloro-3-methylphenol, 4-	mg/kg	66	8300	29000
Chloroaniline, p-	mg/kg	0.32	83	2300
Chlorobromomethane (bromochloromethane)	mg/kg	220	75000	7600
Chlorophenyl phenylether, 4-	mg/kg	0.0068	0.54	110
Chlorotoluene, p- (4-chlorotoluene)	mg/kg	110	41000	370
Cymene (isopropyltoluene)	mg/kg	800	150000	230
Dibenzofuran	mg/kg	120	6700	140
Dibromo-3-chloropropane, 1,2-	mg/kg	0.00074	0.012	1200
Dibromochloromethane	mg/kg	0.76	260	3000
Dichlorodifluoromethane	mg/kg	2.3	21	1500
Dichloropropane, 1,3-	mg/kg	0.11	2.2	2000
Dichloropropane, 2,2-	mg/kg	0.084	0.84	2000
Dichloropropene, 1,1-	mg/kg	0.051	0.52	1000
Dichloropropene, 1,3-	mg/kg	0.052	0.61	840
Dichloropropene, 1,3-cis	mg/kg	0.09	4.8	1300
Dichloropropene, 1,3-trans	mg/kg	0.052	0.68	1400
Dimethylphthalate	mg/kg	3700	330000	1600
Dinitrophenol, 2,4-	mg/kg	5.4	3800	1200
Ethylene dibromide	mg/kg	0.00038	0.0035	2300
Hexachlorocyclopentadiene	mg/kg	0.0046	0.042	100
Isophorone	mg/kg	20	18000	4500
Methylene bromide	mg/kg	0.45	7.4	14000
Methyl naphthalene, 1-	mg/kg	4.6	620	380
Methylnaphthalene, 2-	mg/kg	92	7100	640
Nitroaniline, 2-	mg/kg	0.88	110	450
Nitroaniline, 3-	mg/kg	1.4	440	200
Nitroaniline, 4-	mg/kg	2.6	830	170
Nitrobenzene	mg/kg	0.84	14	1800
Nitrophenol, 2-	mg/kg	4.5	3300	5600
Nitrophenol, 4-	mg/kg	5.8	3800	1000
Nitrosodi-n-propylamine, n-	mg/kg	0.007	1.9	3100
Polychlorinated biphenyls (liquid)	mg/kg	0.19	8.1	170
Trichloro-1,2,2-trifluoroethane, 1,1,2-	mg/kg	680	330000	2700
Trichlorofluoromethane	mg/kg	37000	290000	2200
Trichlorophenol, 2,4,5-	mg/kg	300	150000	2300
Trichloropropane, 1,2,3-	mg/kg	0.0037	0.57	4700
Trimethylbenzene, 1,2,3-	mg/kg	0.57	8.9	270

Assumptions

C4SL exposure scenario adopted (DEFRA SP1010 2013 - C4SL documents).

Soil: Sand

Soil organic matter (SOM) 1%

Modelling package used: RBCA

Toxicity data sourced in accordance with Environment Agency defined heirarchy of data sources, based on minimal risk with the exception of the published C4SL compounds which are based on a low risk level.

Notes

Saturation limit - If GAC > theoretical saturation limit, there is a potential for free product on site. This must be assessed seperately through site observations etc.

GAC rounded to 2 significant figures in accordance with EA guidance.