

**FORMER TETROSYL WORKS, BEVIS  
GREEN, BURY**

**PHASE 2 EARLY HANDOVER AREA (2E &  
2F – SOUTHWEST): DEVELOPER-STAGE  
REMEDIATION STRATEGY**

**For: Barratt Homes Manchester**

**May 2025**

**R2174-R19-v3 FINAL**

## DOCUMENT CONTROL SHEET

**Report Title:** Former Tetrosyl Works, Bevis Green, Bury  
Phase 2E+2F (Southwest) Developer-Stage  
Remediation Strategy

**Client:** Barratt Homes Manchester

**Report Reference Number:** R2174-R19

**Issue** Final

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### Signed For Smith Grant LLP

|          | Name                                         | Position          | Signature                                                                            | Date     |
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### Document Revision Record:

| Version | Report Status | Date     | Details of Revision                                                                                                     |
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| v1      | Draft         | 08.11.24 | For issue to client for review                                                                                          |
| v2      | Draft         | 28.03.25 | Draft updated to include low-rise dwellings foundation designs                                                          |
| V2      | Final         | 02.04.25 | Finalised to include apartment buildings foundation designs                                                             |
| v3      | Final         | 16.05.25 | Additional verification information and amended Gas Protection Design & Specification plans included at request of NHBC |

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456\_P\_PL04                  Planning Layout

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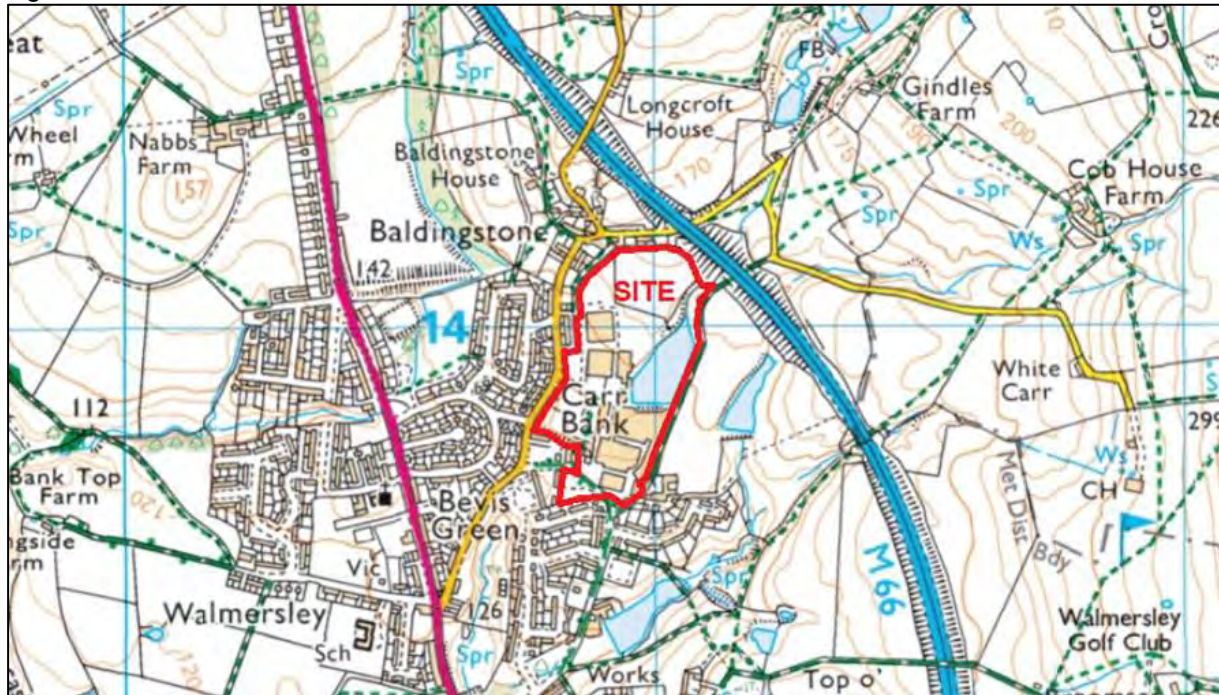
## 1. Introduction

- 1.1. The former Tetrosyl Bevis Green works located off Mill Road, Bury has been granted Planning Consent (63533) for residential redevelopment. Barratt Homes Manchester (BHM) is currently developing the site and appointed Urban Regen Ltd. (URL) to carry out the demolition and preparatory remedial earthworks. URL and BHM subsequently instructed Smith Grant LLP (SGP) to undertake supplementary site investigations and assessments (as well as Groundtech Consulting), and produce an Outline Remediation Strategy (ORS), a Phase 2 Detailed Remediation Strategy (DRS) and phased Developer-Stage Remediation Strategies for submission to Bury Metropolitan Borough Council (BMBC) to satisfy Condition 4 of the Planning Consent.
- 1.2. Remedial works have previously been completed within the areas referred to as Phase 1A (Plots 1-40, 42-57 and 143-151) and Phase 1B (Plots 152-189) under the ORS and SGP subsequently produced Developer-Stage Strategies for both of these parcels (refs. R2174-R07-v5 and R2174-R12-v2, respectively). URL has now been completed preparatory works within an early handover area of Phase 2 located to the immediate southeast of Phase 1B, referred to as Remediation Phases 2E and 2F (southwest). Verification reporting has been undertaken by Groundtech Consulting on behalf of URL for Phase 2 which encompasses this area (ref. GRO-21459-5053), and BHM has now instructed SGP to produce this Developer-Stage Strategy.
- 1.3. For clarity, this report pertains to a Phase 2 early handover area which is to include **Plots 219-248**, the extent of which is indicated on Figure 1.2 below. The proposed development layout for the whole site is included in the appended BHM Planning Layout drawing (ref: 456\_P\_PL04).
- 1.4. Site details are:

**Table 1: Site Details**

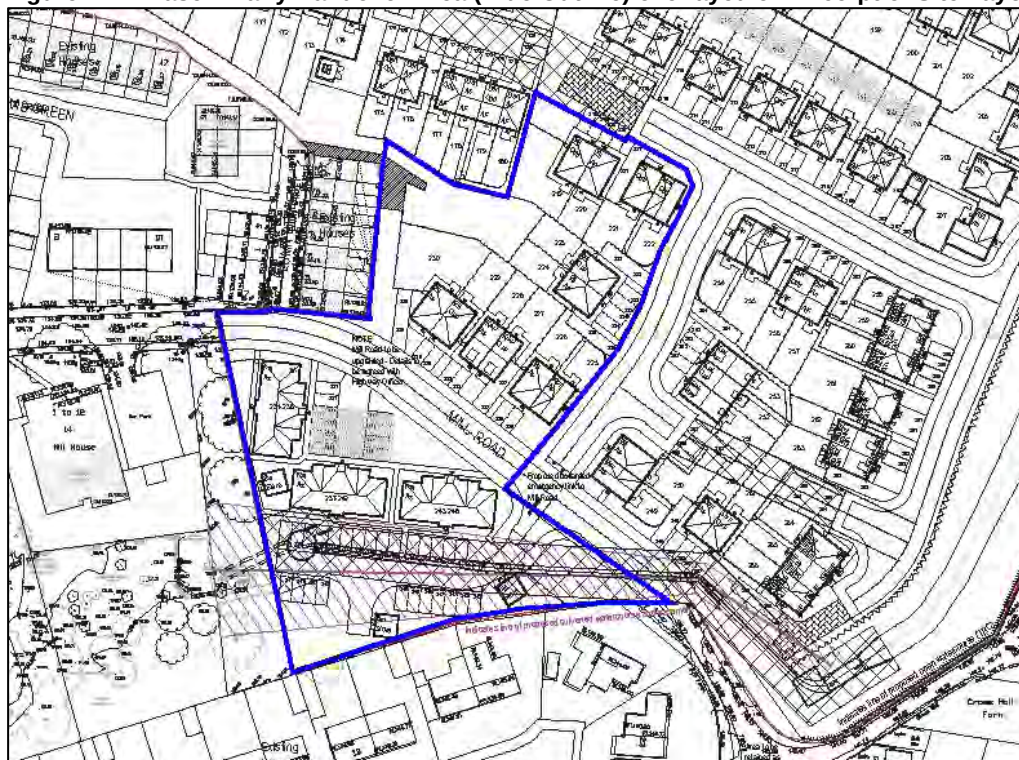
|                                |                                                                                                                                                                                        |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Address</b>                 | Bevis Green Works, Mill Road, Bury BL9 6RE                                                                                                                                             |
| <b>National Grid Reference</b> | 380950, 413950                                                                                                                                                                         |
| <b>Local Authority</b>         | Bury Metropolitan Borough Council (BMBC)                                                                                                                                               |
| <b>Site Area</b>               | Total: 10.4 ha total. Development area: 7.2 ha. Phase 2E and 2F (southwest) area: ~0.57 ha                                                                                             |
| <b>Previous Use of Site</b>    | Area referred to as 'The Croft' in southwest corner (deep ash fill up to >11m overlying culvert), Mill Road, former gatehouse, part of former mill / warehouse building and diesel AST |
| <b>Site Access</b>             | Entrance off Walmersley Old Road and Mill Road                                                                                                                                         |
| <b>Planning Reference</b>      | 63533                                                                                                                                                                                  |
| <b>Proposed Use</b>            | Residential dwellings (houses and apartments), parking areas and landscaping                                                                                                           |

**Figure 1.1: Site Location**



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**Figure 1.2: Phase 2 Early Handover Area (Blue Outline) overlaid on Excerpt of Site Layout Plan**



- 1.5. Planning permission for redevelopment of the site has been granted by BMBC (ref: 63533) for the construction of up to 268 dwellings with open space, landscaping, private gardens and infrastructure. Condition 4 of the Planning Consent relates to the requirement for site investigation, risk assessment and remediation proposals to be submitted to, and approved by, BMBC and is worded as follows:

**Table 1.2: Planning Condition relating to Contaminated Land**

|          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>4</b> | <p><i>No development, other than site clearance, demolition, or works relating to site investigation, remediation or ground works, shall commence unless and until: -</i></p> <ul style="list-style-type: none"> <li>• <i>A contaminated land Preliminary Risk Assessment report to assess the actual/potential contamination and/or ground gas/landfill gas risks at the site shall be submitted to, and approved in writing by, the Local Planning Authority.</i></li> <li>• <i>Where actual/potential contamination and/or ground gas/landfill gas risks have been identified, detailed site investigation and suitable risk assessment shall be submitted to and approved in writing by the Local Planning Authority.</i></li> <li>• <i>Where remediation/protection measures is/are required, a detailed Remediation Strategy shall be submitted to, and approved in writing by, the Local Planning Authority.</i></li> </ul> |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

1.6. To partially satisfy Condition 4 for the Phase 2 area covered by this report, the following documents have been submitted to BMBC and the Environment Agency (EA):

- ESNR Phase I and Phase II Environmental Site Assessment (ref. 10468-1(01)), dated January 2003;
- RSK STATS Geoconsult Ltd. Revised Environmental Site Assessment (ref. 16565-R1(00)), dated February 2011;
- e3p Phase I and Phase II Geo-environmental Site Investigation (ref. 10-110-r1), dated May 2014;
- e3p Remediation and Enabling Works Strategy (ref. 11-500-R1), dated February 2017;
- SGP Outline Remediation Strategy (ref. R2174-R01-v2), dated May 2019;
- SGP Phase 2 Supplementary Groundwater Investigation (ref. R2174C-R05-v1), dated December 2020.
- SGP Phase 2 Supplementary Groundwater Investigation No.2 (ref. R2174C-R09-v1), dated June 2021.
- SGP Phase 2: Supplementary Site Investigation (ref: R2174-R06-v1), dated April 2021.
- Groundtech Groundwater Investigation Factual Report (GRO021459-3627) dated July 2022.
- Groundtech Supplementary Geo-Environmental Appraisal (GRO-21459-3928), dated December 2022.
- Groundtech Letter Report Containing Proposed Soil RTVs (GRO-21459-4595), dated July 2023.
- SGP Phase 2 Area (excluding Phase 2A & 2B and Former Mill Lodge Reservoir) Detailed Remediation Strategy (ref: R2174-R11-v6), dated October 2023.
- Groundtech Consulting Verification Report – Phase 2 (excluding Phase 2A and 2B) (ref. GRO-21459-5053), dated June 2024.

- SGP Phases 2E & Phase 2F – Southwest Ground Gas / Vapour Risk Assessment (ref: R2174-R18-v1), dated August 2024
- 1.7. The ORS produced by SGP (the general provisions of which were approved by both BMBC (ref: CL584.240719.1; July 2019) and the EA (February 2020)) was to allow preparatory earthworks to commence on site whilst site investigations were on-going.
- 1.8. The subsequent Phase 2 supplementary investigation works carried out by both SGP and Groundtech included soil and groundwater sampling and monitoring. This enabled production of updated risk assessments for Phase 2 which ultimately informed production of the SGP Phase 2 DRS (ref: R2174-R11-v6) which was approved by both BMBC (ref: CL584.140224.1; February 2024) and the EA (SO/2020/120065/06-L01; February 2024). The DRS covered appropriate working methods, contamination hotspot removal, health and safety control measures, soil treatment and sampling requirements and additional mitigation measures to manage residual risks from soil contamination. The DRS also detailed the requirement for post-remediation gas and vapour monitoring within the Phase 2 area.
- 1.9. The Phase 2 remediation and preparatory earthworks were carried out by URL between March 2022 and January 2024 and are detailed within the Groundtech Verification Report – Phase 2 (excluding Phases 2A and 2B) (ref. GRO-21459-5053). It is understood that this report has been submitted to BMBC and the EA for comment, however responses are currently outstanding. To allow construction works to commence, it is a requirement that standalone construction-stage Remediation Strategies are provided to compile and summarise all the recommendations from the previous Phase 2 reporting.
- 1.10. Following completion of the Phase 2 remediation works, SGP undertook the required post-remediation ground gas / vapour monitoring and sampling programme for Remediation Phases 2E and 2F (southwest). A subsequent gas / vapour risk assessment was then produced (ref: R2174-R18-v1) in order to inform the ground gas / vapour protection measures required for this part of the site. This report has been submitted to BMBC and a response is currently outstanding.
- 1.11. This Developer-Stage Remediation Strategy has been produced to detail the final remedial measures to be implemented within Remediation Phases 2E and 2F (southwest) by the developer, including their verification, prior to the onset of construction works at the site.
- 1.12. The assessment methodology in the production of this Remediation Strategy follows the framework described in the EA / DEFRA Contaminated Land Report 11: 'Model Procedures for the Management of Land Contamination' 2004, updated in Land Contamination: Risk Management (LCRM): 2019, comprising an options appraisal to evaluate and identify feasible remediation options, specification of appropriate techniques, and an implementation programme and verification plan.

## 2. Information Sources

2.1. The principal reporting that has informed production of this report is as follows:

**Table 2.1: Information Sources**

| Report                                                                                                                                                                                                             | Information                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SGP<br>Phase 2 Area (excluding Phase 2A & 2B and Former Mill Lodge Reservoir) Detailed Remediation Strategy<br>Bevis Green Works (Tetrosyl)<br>Mill Road, Bury BL9 6RE<br>Report Ref. R2174-R11-v6<br>October 2023 | <p>Review of factual information from previous site investigations and assessments (see Section 1.6), updated site characterisation and Conceptual Site Model, risk assessment, remediation objectives, options appraisal, details of the remedial strategy to be implemented by the earthwork's contractor / housebuilder, verification plan, recommendations for general / dedicated site inspections and further investigation / reporting required.</p> <p>Detail provided on the validation testing requirements for site won / imported soils and aggregates, verification of remediated hotspots, and the post-remediation VOC and gas monitoring / sampling programme to be implemented. Construction phase remediation recommendations including placement of 600mm clean soil cover in all private gardens (reduced to 450mm in landscaped areas) in combination with an underlying warning/barrier geotextile where made ground is present at the formation surface and gas protection measures compliant to Ciria CS2 in all plots as a minimum (subject to post-remediation gas / VOC monitoring and sampling); however, these recommendations were subject to being finalised within a <u>Developer-Stage Remediation Strategy</u>.</p>                                                                                                   |
| Groundtech Consulting<br>Verification Report (Phase 2 excluding Phases 2A&2B), Tetrosyl Bevis Green Works, Bury<br>Report ref. GRO-21459-5053<br>June 2024                                                         | <p>Details of the remediation of nine previously identified hotspots in Phase 2 under the provisions outlined in the SGP Phase 2 DRS with stockpiling of excavated, impacted materials for future treatment or disposal. Additional consideration into hotspot 'HS2' required as remediation was constrained. Exceedances of the Level 3 Remediation Target Values were also reported following remediation of 'HS1' warranting further discussion with the EA (it is, however, noted that both of these hotspots were located outside the area covered by this report). No unexpected contamination encountered therefore no revisions to the SGP DRS required.</p> <p>Summary of the surface water monitoring programme undertaken – no elevated contaminants of concern recorded. Detail also provided with respect to the asbestos testing carried out on site-recovered aggregate (deemed suitable for reuse as haul roads and subbase for hardstanding and in the construction of roads based) and the asbestos air monitoring undertaken.</p> <p>Remedial recommendations for the construction phase of development detailed in the DRS confirmed to be appropriate and it was acknowledged that vapour protection measures may be required depending on the results of the gas / vapour monitoring and sampling programme to be undertaken.</p> |

|                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>SGP<br/>Phase 2 Early Handover Area<br/>(Phase 2E &amp; 2F – Southwest)<br/>Ground Gas / Vapour Risk<br/>Assessment<br/>Tetrosyl, Waldmers Wood, Bury<br/>Report Ref. R2174-R18-v1<br/>August 2024</p> | <p>Details of the ground gas / vapour monitoring programme carried out in Remediation Phases 2E &amp; 2F (southwest) area which comprised:</p> <ul style="list-style-type: none"><li>• The drilling of 8 continuous tube sample boreholes to 5m bgl on an approximate 25m grid spacing.</li><li>• Logging of ground conditions and screening of arisings with PID.</li><li>• Monitoring of vapour concentrations (8/8 wells) – 4 rounds.</li><li>• Monitoring of ground gas concentrations (6/8 wells) – 6 rounds.</li><li>• Collection of vapour samples (4/8 wells) for VOC, BTEX and TPH CWG hydrocarbons analysis and comparison with derived inhalation criteria.</li><li>• Ground gas and vapour risk assessment.</li></ul> <p>Low ground gas concentrations reported across the site, however, elevated VOCs above the derived criteria identified. Concluded that VOC protection measures and high-level verification required across the Phase 2 Early Handover Area, although it was considered that further detailed assessment may negate this requirement.</p> |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 3. Site Characterisation

#### 3.1. Summary of Historical Contamination Status

- 3.1.1. The site has been subject to industrial use since the earliest available mapping (1844) with the southeast occupied by the Lumn and Bentley Cotton Mills, later used as a Dye and Print Works which were supplied by a series of man-made reservoirs in the centre-east and southeast of the site; the southwestern and northern parts of the site remained largely undeveloped at this time. Other features of the wider site were a quarry in the northeast and mine entries in the southeast. Mapping from 1890 shows an earth-retained reservoir had been constructed across the majority of the southwest (Phase 1B) area.
- 3.1.2. Tetrosyl acquired and developed the site in the mid-1960s and the 1971 map annotates the site as a 'Car Accessories Factory' with some storage tanks indicated. A solvent tank farm was constructed in the northeast at some point after 1981 and an office / reception building was constructed in the centre-south after 1996. Two large warehouses are shown occupying much of the northwest of the site on the 1984 mapping which, according to Tetrosyl personnel, were constructed in the 1970s (as reported by ENSR). To construct the northern warehouse, significant excavation works were required which generated rock and soil which was used to infill the reservoir located in Phase 1B.
- 3.1.3. The Phase 2E & 2F (Southwest) early handover area previously comprised 'The Croft' (an area of deep ash fill up to >11m overlying culvert), Mill Road, a gatehouse, part of a mill / warehouse building and a diesel AST (hotspot 'HS4'), all of which have since been demolished / removed from the site with the exception of Mill Road.
- 3.1.4. Asbestos containing materials (ACMs) are known to have been used within the site buildings including structural asbestos cement boarding and insulation. All site buildings underwent an asbestos strip and were demolished prior to the Phase 2 Remediation Earthworks.
- 3.1.5. Post-remediation soil-vapour monitoring / sampling was undertaken within entries across Phase 2E and the southwest of Phase 2F with exceedances for benzene, chloromethane and PCE reported. Gas monitoring was also undertaken on 6/8 wells with a maximum of 6 monitoring rounds achieved – no elevated methane or carbon dioxide was reported. It was determined that the plots within this early handover phase would require VOC protection measures in accordance with current CIRIA guidance unless further assessment was undertaken; however, due to development time constraints, BHM advised a preference to install VOC protection measures in the absence of further assessment.
- 3.1.6. The groundwater monitoring did not indicate any extensive impacts to the underlying aquifer in the sandstone units below Phase 2 (excluding Phases 2A and 2B).

### 3.2. Summary of Enabling Remediation Works

3.2.1. Enabling remediation works in accordance with the SGP Phase 2 DRS have been carried out to prepare Phase 2E & 2F (Southwest) for the construction phase of development and the elements concerning tank decommissioning and disposal, product removal, hotspot remediation and testing of site-recovered aggregate are detailed within the Groundtech Consulting Verification Report (Phase 2). In summary, the preparatory enabling remediation works included:

- asbestos strip and demolition of existing buildings;
- removal of ground floor slabs, relict foundations and other sub-structures;
- Removal of IBCs, drums and product from the site;
- site regrade to achieve development levels;
- removal of hydrocarbon impacted soils from hotspot 'HS4' (diesel AST removed prior to URL mobilisation) and placement within Phase 2 treatment area;
- crushing of suitable recovered hard materials (i.e. masonry, concrete and brick) to produce aggregate for placement in pile mats and as road capping;

### 3.3. Risk Assessment Summary

3.3.1. The potential contamination sources identified which could impose constraints on the proposed redevelopment of the Phase 2E & 2F (Southwest) early handover area for residential use can be summarised as:

- the presence of made ground soils, confirmed locally as containing elevated concentrations of metals, PAHs, non-volatile hydrocarbons and trace asbestos fibres;
- elevated soil-vapour (VOC) concentrations;

3.3.2. An options appraisal was provided within the SGP Phase 2 DRS which identified that whilst remedial works including the investigation / excavation and remediation of any potential hydrocarbon hotspots would be carried out, it was not practical to remove all made ground from the site which contained elevated concentrations of PAHs, heavy metals, hydrocarbons and asbestos fibres. Consequently, a 600mm clean soil cover system was recommended for all private gardens in Phase 2 in combination with a warning/barrier geotextile where residual made ground is present at the formation surface. Only clean and validated soils are to be used for this purpose.

3.3.3. The Phase 2 Early Handover Area Ground Gas / Vapour Risk Assessment (ref: R2174-R18-v1) which utilised the results of the post-remediation ground gas / vapour monitoring exercise concluded that VOC/Gas protection measures are required within all of the dwellings covered by the report in accordance with current CIRIA guidance.

- 3.3.4. A risk assessment for water supply pipes has not been undertaken within the Phase 2 area and one is likely to be required by the utility provider, however it is understood that the developer will install barrier pipe in any case.
- 3.3.5. The preliminary construction phase remediation measures summarised within the SGP Phase 2 DRS (Section 9) are now detailed further with respect to the Phase 2E & 2F (Southwest) early handover area with consideration to the remediation works and post-remediation monitoring carried out since. A detailed verification plan is also included.

## 4. VOC Protection Measures

4.1. The Phase 2 Early Handover Area Ground Gas and Vapour Risk Assessment (ref: R2174-R18-v1) recommends that VOC vapour resistant protection measures are installed within all dwellings across the area covered by the report. This corresponds to Plots 219-248 according to the layout plan provided by BHM with Plots 219-230 consisting of low-level semi-detached and terraced housing and Plots 231-248 comprising 3no. apartment blocks.

### 4.2. Vapour Protection Design

4.2.1. BHM has provided detailed design drawings for their VOC vapour protection measures, copies of which are provided in Appendix A. These show the placement of a 'Gas Resistant Membrane' across the footprint of the low-rise dwellings / apartment blocks in combination with a ventilated, sub-floor void.

#### *Membrane*

4.2.2. SGP understand that the designer (BHM) has approved the membrane's performance specification in accordance with the requirements of CIRIA C748<sup>1</sup>. The VOC resistant membrane is to be installed with the supporting ancillary products in all plots as per the manufacturer's instructions.

*The developer (as the designer) has confirmed that a Visqueen Ultimate HC Block membrane will be installed which is compliant with CIRIA C748:2014 VOC protection. A copy of the technical datasheet for the membrane is provided in Appendix A.*

4.2.3. The technical datasheet referred to above includes the specification details for how service entries are to be sealed to the VOC membrane and gives two options for achieving this, as reproduced below. It is understood that BH's preferred method will be to use the VisqueenPro detailing strip.

*"Airtight seals should be formed around all service entry points. Visqueen Ultimate 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 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. The upstand should be secured with the supplied jubilee clip. **Alternatively VisqueenPro Detailing Strip can be used to seal service entry points. The upstand should be secured with a jubilee clip**"*

#### *Slab (Low rise dwellings)*

4.2.4. All slabs to be constructed with a minimum 150mm, ventilated, sub-floor void.

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<sup>1</sup> CIRIA C748: Guidance on the use of plastic membranes as VOC vapour barriers (2014)

*The developer has confirmed that the foundations will consist of strip footings with a block and beam suspended Jet Floor System and a minimum 150mm, ventilated, sub-floor void. Design drawings have been provided showing how the VOC membrane will be constructed across the footprint of the buildings in combination with the ventilated sub-floor void and airbricks which are to be installed along the external walls (the VOC membrane construction detail drawings are provided in Appendix A– ref: BM-GM05).*

#### *Slab (Apartment Blocks)*

- 4.2.5. All slabs to be constructed with a minimum 150mm, ventilated, sub-floor void.

*The developer has confirmed that the foundations will consist of strip footings with a block and beam suspended Jet Floor System and a minimum 150mm, ventilated, sub-floor void. Design drawings have been provided showing how the VOC membrane will be constructed across the footprint of the buildings in combination with the ventilated sub-floor void and airbricks which are to be installed along the external walls (the VOC membrane construction detail drawings are provided in Appendix A – ref: JF-TF21).*

#### 4.3. Installation of Membrane

- 4.3.1. Each membrane is to be installed by a suitably qualified installer (holds relevant qualification NVQ Level 2 in gas protection). Membrane laps are to be heat sealed.

*The developer will appoint PRS Manchester<sup>2</sup> who are specialists in the installation of gas / VOC resistant membranes. The installer will provide an installation certificate and provide suitable evidence that they hold the relevant qualifications.*

#### 4.4. Vapour Protection Verification Plan

- 4.4.1. As VOC resistant membranes have been recommended for all dwellings in the Phase 2 early handover area these require the following verification to demonstrate compliance as per the CIRIA C748 guidance:

##### Plots 219-230 (Low rise housing)

*Verifier (consultant or third party qualified and experienced installer) to conduct thorough verification (visual) inspection of all plots, and after placement of reinforcement if no protection provided. All joints, pipe penetrations etc air lanced to ASTM D4437. Consideration given to need for/scope of integrity testing.*

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<sup>2</sup> <https://prsmanchester.co.uk/gas-membranes>

Plots 231-248 (apartments – reinforced slab)

*Verifier (consultant or third party qualified and experienced installer) to conduct a thorough verification (visual) inspection prior to all concrete pours including vented void, subgrade etc. All joints, pipe penetrations etc air lanced to ASTM D4437. 100 per cent leak detection considered on VOC/hydrocarbon contaminated sites. Consideration given to need for/scope of integrity testing.*

- 4.4.2. It is deemed prudent to carry out visual inspection and integrity testing of all membranes installed within the plots and apartment blocks in the Phase 2 early handover area. The membranes will be inspected after construction is completed and prior to the placement of insulation to ensure that the full footprint of the membranes can be inspected for any defects. Visual inspection and specialist air-lance testing as per ASTM D4437 will be undertaken by third-party specialist verifier GeoEngineerSeer Ltd<sup>3</sup>.
- 4.4.3. A photographic record of the verified plot will be maintained including details on the number of service entries and airbricks, along with information on the use of appropriate ancillary products (single- and double-sided tape, preformed top hats etc.).
- 4.4.4. To ensure that the subfloor voids for the dwellings are being constructed in accordance with the design plans, it is proposed that SGP inspects the first plot constructed on Phase 2 to ensure that a minimum 150mm clear void has been provided. A photographic record will be maintained. It is then proposed that BH (i.e., the site manager or groundworker) will maintain a photographic record of the subfloor construction of 1 in 4 of the remaining plots in Phase 2 to demonstrate this thereafter.
- 4.4.5. A verification certificate will be produced for each validated plot. SGP has produced a guide on what to look for when inspecting membranes based on NHBC and Environment Agency guidance as reported within Appendix C of the Ground Gas Handbook. An example of the verification certificate to be produced for each of the validated plots is provided in Appendix B. In addition, the details of the air-lance testing performed on the VOC resistant membrane installations will be appended to the verification reports. Integrity testing beyond air-lance testing is not proposed which is consistent with the validation requirements of earlier phases.

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<sup>3</sup> <https://geoengineerltd.com>

## 5. Soil Cover System

### 5.1. Depth of Garden and Landscaping Soils

5.1.1. The site levels have been regraded to allow placement of inert cover systems during the construction phase of development.

5.1.2. The cover system to be placed by the developer within all private gardens in the early handover phase (Phase 2E and the southwest of 2F) will comprise 600mm clean soil cover within garden areas (typically comprising 450mm of subsoil and 150mm of imported topsoil). This will be in combination with a basal geotextile as made ground is present across the formation surface of the early handover phase as demonstrated during the post-remediation drilling / logging works. Landscaping areas will require a reduced 450mm soil cover system in combination with a basal geotextile.

### 5.2. Import / Site-Won & Formation Sampling Requirements

5.2.1. Verification testing of all soils (subsoil and topsoil) for use within the cover system will be subject to chemical testing to ensure suitability for use. Sampling should be undertaken by an independent consultant. The frequency of testing will be dependent on the provenance of the soil and will be completed as follows:

- site won subsoil (if natural soils recovered from wider development): 1 sample per 50m<sup>3</sup>;
- imported topsoil / subsoil (well-characterised Greenfield source): 1 sample per 250m<sup>3</sup>;
- imported topsoil / subsoil (unknown / well-characterised Brownfield source with evidence that extraction of suitable soils for transfer is feasible): 1 sample per 100m<sup>3</sup>;
- minimum of 3 samples to be collected from each source;

5.2.2. The quality criteria for garden cover soils are as that detailed in the SGP Phase 2 DRS (Table 4.4) which has been reproduced in the table below. Soils testing is to be undertaken at an MCERTS or UKAS accredited environmental laboratory.

**Table 5.1 Garden Cover System Compliance Criteria**

| Contaminant         | Residential Use Screening criteria<br>(mg/kg unless stated) |
|---------------------|-------------------------------------------------------------|
| Asbestos            | <0.001% by mass (limit of detection)                        |
| Arsenic             | 37 LQM/CIEH S4UL                                            |
| Cadmium             | 11 LQM/CIEH S4UL                                            |
| Chromium (total)    | 910 LQM/CIEH S4UL                                           |
| Hexavalent Chromium | 6 LQM/CIEH S4UL                                             |
| Copper              | 2,400 LQM/CIEH S4UL                                         |
| Lead                | 200 (C4SL)                                                  |
| Mercury             | 40 LQM/CIEH S4UL                                            |
| Nickel              | 180 LQM/CIEH S4UL                                           |
| Zinc                | 3,700 LQM/CIEH S4UL                                         |

| Contaminant           | Residential Use Screening criteria<br>(mg/kg unless stated) |
|-----------------------|-------------------------------------------------------------|
| Naphthalene           | 2.3 LQM/CIEH S4UL                                           |
| Acenaphthylene        | 170 LQM/CIEH S4UL                                           |
| Acenaphthene          | 210 LQM/CIEH S4UL                                           |
| Fluorene              | 170 LQM/CIEH S4UL                                           |
| Phenanthrene          | 95 LQM/CIEH S4UL                                            |
| Fluoranthene          | 2,400 LQM/CIEH S4UL                                         |
| Anthracene            | 280 LQM/CIEH S4UL                                           |
| Pyrene                | 620 LQM/CIEH S4UL                                           |
| Benzo(a)anthracene    | 7.2 LQM/CIEH S4UL                                           |
| Chrysene              | 15 LQM/CIEH S4UL                                            |
| Benzo(b)fluoranthene  | 2.6 LQM/CIEH S4UL                                           |
| Benzo(k)fluoranthene  | 77 LQM/CIEH S4UL                                            |
| Benzo(a)pyrene        | 2.2 LQM/CIEH S4UL                                           |
| Indeno(123cd)pyrene   | 27 LQM/CIEH S4UL                                            |
| Dibenzo(ah)anthracene | 0.24 LQM/CIEH S4UL                                          |
| Benzo(ghi)perylene    | 320 LQM/CIEH S4UL                                           |
| Aliphatic C5-C6       | 42 LQM / CIEH S4UL                                          |
| Aliphatic C6-C8       | 100 LQM / CIEH S4UL                                         |
| Aliphatic C8-C10      | 27LQM / CIEH S4UL                                           |
| Aliphatic C10-C12     | 130LQM / CIEH S4UL                                          |
| Aliphatic C12-C16     | 1100 LQM / CIEH S4UL                                        |
| Aliphatic C16-C21     | 65,000 LQM / CIEH S4UL                                      |
| Aliphatic C21-C35     | 65,000 LQM / CIEH S4UL                                      |
| Aromatic C5-C6        | 70 LQM / CIEH S4UL                                          |
| Aromatic C6-C8        | 130 LQM / CIEH S4UL                                         |
| Aromatic C8-C10       | 34 LQM / CIEH S4UL                                          |
| Aromatic C10-C12      | 74 LQM / CIEH S4UL                                          |
| Aromatic C12-C16      | 140 LQM / CIEH S4UL                                         |
| Aromatic C16-C21      | 260 LQM / CIEH S4UL                                         |
| Aromatic C21-C35      | 1,100 LQM / CIEH S4UL                                       |
| Benzene               | 0.08 LQM / CIEH S4UL                                        |
| Toluene               | 130 LQM / CIEH S4UL                                         |
| Ethyl-benzene         | 47 LQM / CIEH S4UL                                          |
| m/p-xylene            | 56 LQM / CIEH S4UL                                          |
| o-xylene              | 60 LQM / CIEH S4UL                                          |

### 5.3. Cover System Validation

5.3.1. Following application of the soil cover system, an independent consultant is required to attend site to excavate trial holes to prove that the prescribed 600mm clean soil cover (450mm in landscaped areas) has been placed and that an underlying warning geotextile is present.

5.3.2. Depth validation testing will be undertaken in all rear gardens with 1 entry per plot (or a 25m grid in landscaped areas around apartment buildings – Plots 231-248) and a photographic record will be maintained to confirm the depth of soil cover, placement of the underlying warning geotextile, the strata placed, and the location of the depth entry in relation to the plot.

5.3.3. Upon completion, the consultant will produce a verification certificate detailing the presence of the basal geotextile and depth of soil cover with accompanying photos, confirmation on the source of topsoil and/or subsoil, and the corresponding laboratory test results for the placed soils. An example of the soil cover system certificate proforma is provided in Appendix C.

5.4. Imported Soils

5.4.1. It is not anticipated that any site-recovered topsoil will be suitable for use in garden areas therefore the import of topsoil for use in the soil cover system is required. If these materials would otherwise be wastes from other development sites or construction projects, then the import must be carried out under the provisions of a Material management Plan for Direct Transfer as defined in The Definition of Waste: Development Industry Code of Practice.

## 6. Other Construction-Stage Considerations

### 6.1. Watching Brief

6.1.1. It is not considered likely that any uncharacterised contamination remains in this early handover phase (Phase 2E and southwest of Phase 2F), however it is a proportional response to any residual uncertainty that construction workers are briefed on the history of the site and instructed to maintain a watching brief during excavations for visual or olfactory indicators of contamination.

6.1.2. If encountered, any suspect materials should be inspected by a competent Contaminated Land professional and subject to appropriate analysis to determine their status. If any contamination that requires revision to this Remediation Strategy is encountered, the Local Planning Authority Contaminated Land Officer must be informed immediately.

### 6.2. Waste Materials

6.2.1. Site-won material referred to as 'Use on the Site of Origin' under the DoWCoP (Appendix 1) states that excavated materials can be used directly within the development subject to it being suitable for use and demonstration that there is certainty of use.

6.2.2. In practice it may not be possible to accommodate any such arisings in Phase 2, but this would be at shallow depths and effectively form part of the soil cover system. If it is intended that any natural soils generated during excavations (foundations etc.) are to be reused as garden subsoils, these should be segregated, quarantined and subject to testing and inspection in accordance with the provisions set out in Section 5.2. However, it should be noted that it is considered unlikely that such materials will be recovered from the Phase 2E and 2F Early Handover Area given the depth of made ground across this part of the site.

6.2.3. Any material movements proposed in this early handover phase must be undertaken under the provisions of the Earthworks-Stage Materials Management plan in place for the wider site preparatory and enabling remediation earthworks being carried out under the SGP Phase 2 DRS.

6.2.4. Any other waste materials for disposal offsite must be accurately classified and taken to a facility permitted to accept such materials.

## 7. Conclusions & Recommendations

### 7.1. Summary of Construction-Stage requirements to be implemented by Developer.

7.1.1. Based on the totality of the information available, it is concluded that construction works may commence in the Phase 2E & 2F (Southwest) early handover area provided that the following measures are adopted:

- maintenance of a watching brief for indicators of residual contamination during excavations;
- provision of VOC vapour resistant membranes in all plots (specialist installation);
- Visual inspection and air-lance testing of membrane installations in all plots by specialist verifier;
- placement of a 600mm soil cover system (reduced to 450mm in landscaping areas) using clean validated soil materials with placement of basal geotextile;
- Visual inspection and photographic record of subfloor void construction to confirm a 150mm clear void has been provided: SGP to inspect first plot on Phase 2 and maintain photographic record, BH to provide photographic record of a minimum 1 in 4 plots thereafter;
- verification of depth of soil cover system through the excavation of a hand-dug trial pit in the rear gardens on a plot by plot basis or a 25m grid in landscaped areas;
- verification of the quality of soil used in the cover systems via testing as outlined in Section 5.2;
- provision of individual plot certificates for gas protection and soil cover system verification activities;
- adoption of construction-stage MMP for import of soils;
- classification of waste materials for disposal or use under the Phase 2 MMP;
- backfill of all utility trenches with clean imported materials;
- completion of Pipeline Risk Assessment utilising post-remediation data where possible or use of barrier pipe.

### 7.2. Limitations

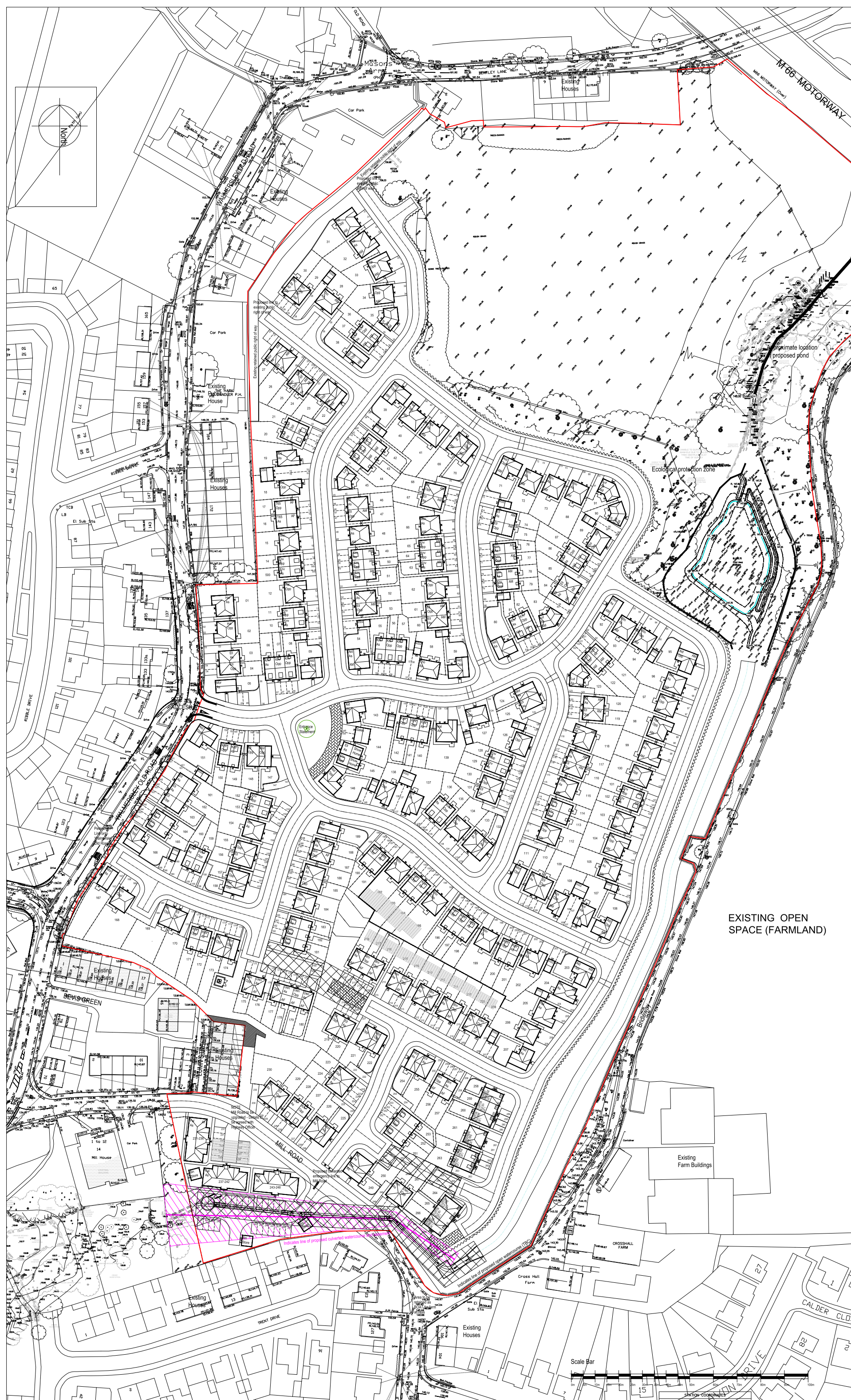
7.2.1. This report has been prepared by SGP for the sole and exclusive use of Barratt Homes Manchester. Reasonable skill, care and diligence has been exercised within the budget available, and in accordance with the technical requirements of the brief. Notwithstanding the efforts made by the professional team in undertaking the assessment and preparing this report, it is possible that other ground conditions and contamination as yet undetected may exist. Reliance on the findings of this report must therefore be limited accordingly. Such reliance must be based on the whole report and not on extracts which may lead to incomplete or incorrect conclusions when taken out of context.

7.2.2. The factual information and recommendations have been partly informed by information prepared by third parties and provided to SGP. The recommendations contained within this report have been made in good faith, based on the totality of the information provided to SGP, however SGP accepts no responsibility or liability for errors or omissions caused by information which has been

withheld, or where errors or omissions within previous reporting have led to false or unreliable conclusions by others relating to the contamination status of the site.

- 7.2.3. SGP reserves the right to alter any of the foregoing information in the event of new information being disclosed or provided and in the light of changes to legislation, guidelines, and responses by the statutory and regulatory authorities.

## DRAWING



|    |                                                                                                       |     |          |
|----|-------------------------------------------------------------------------------------------------------|-----|----------|
| 07 | Centers 218-223 amended to accommodate revised retaining wall design. Plot 222 drive width increased. | AA  | 18.08.24 |
| 08 | Maintenance type changed to Ellarons.                                                                 | AA  | 05.04    |
| 09 | Plot 135/136 moved forward to resolve retaining wall conflict.                                        | AA  | 02.04    |
| 10 | Updated plant assessment to suit final engineering layout.                                            | GB  | 08.24    |
| 02 | Plot 162 garden and Newforce amended to engineers design.                                             | AA  | 01.24    |
| 03 | Electrics removed and replaced with fiberoptics.                                                      | JMB | 12.23    |
| 31 | Layout updated                                                                                        | AA  | 11.23    |



|           |            |                |     |
|-----------|------------|----------------|-----|
| Job       |            |                |     |
| Title     |            |                |     |
| Design By | Date       | Drawing Number | Rev |
| Drawn By  | Scale @ A0 |                |     |

## **Appendix A**

### **Gas Protection Detail**

## Visqueen Ultimate HC BLOK

### Features & benefits

- Agreement certified - third party accreditation
- Complies with NHBC Foundation's NF94 guidance for use in Type A and Type B membrane locations
- Complies with CIRIA C748:2014 - industry standard for volatile organic compounds (VOC) protection
- Complies with the methane gas transmission rate, mass per unit area and thickness requirements of BS 8485:2015 + A1:2019 - industry standard for methane and carbon dioxide protection
- Also provides radon and damp proof membrane protection
- Dual jointing methods - depending upon specification, lap joints can be taped or heat welded

### Product description

Visqueen Ultimate HC Blok is a 0.5mm thick, chemically resistant co-extruded volatile organic compound barrier and gas barrier. It is coloured gold on the upper surface and white on the reverse. The product is supplied in single wound rolls (not folded), 2.44m x 41m.

### Approvals and standards

- Third party accreditation (BDA certificate BAF-18-051-P-A-UK)
- Complies with NHBC Foundation's NF94 guidance for use in Type A and Type B membrane locations
- Complies with CIRIA C748:2014
- Complies with the methane gas transmission rate, mass per unit area and thickness 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 211:2023
- UKCA UKNI CE to EN 13967:2012
- Visqueen certified with Quality Management System ISO 9001:2015
- Visqueen certified with Occupational Health and Safety System ISO 45001:2018
- Visqueen certified with Environmental Management System ISO 14001:2015

### Usage

Visqueen Ultimate HC Blok is suitable for use in all types of buildings to prevent the ingress of harmful levels of volatile organic compounds (VOCs), methane, carbon dioxide and radon. The barrier can be positioned above or below a concrete ground floor slab or above a precast suspended segmental ground floor system, e.g. beam and block floor.

The barrier also acts as a damp proof membrane.

Radon, carbon dioxide, methane, and VOC protection – NHBC NF94 guidance:  
Visqueen Ultimate HC Blok when installed with either taped or welded joints (welded only for VOC protection) complies with NHBC Foundation's NF94 publication, Hazardous ground gas - an essential guide for housebuilders, in Type A membrane locations in precast suspended segmental subfloors and reinforced cast in situ concrete floor slabs (ground bearing, suspended or raft). Visqueen Ultimate HC Blok also complies with this guidance when installed with welded joints in Type B membrane locations in reinforced cast in situ concrete floor slabs (ground bearing, suspended or raft). For site or zone characteristic gas situations of CS4 and above, contact Visqueen Technical Services.

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

### System components

- VisqueenPro Detailing Strip, 300mm x 10m, 500mm x 10m
- Visqueen Ultimate Top Hat Units
- Visqueen GR Lap Tape, 150mm x 10m
- Visqueen 100mm Double Sided Butyl Tape, 100mm x 15m

### Storage and handling

Visqueen Ultimate HC Blok 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 Ultimate HC Blok should be installed on a smooth continuous surface free from irregularities such as voids or protrusions e.g. grouted beam and block floor, 50mm thick sand blinding, or smooth concrete blinding.

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

Different jointing options are available depending on product use. Where protection against VOCs or hydrocarbon contamination is required, the barrier system should be applied with welded joints.

## Visqueen Ultimate HC BLOK

### Installation

Visqueen Ultimate HC Blok should be loose laid on the substrate with the gold side up so as to avoid sunlight glare. Different jointing options are available depending on product use. Where protection against VOCs or hydrocarbon contamination is required, the barrier system should be applied with welded joints.

The barrier should be clean and dry at the time of jointing. It should be overlapped by at least 150mm, bonded with Visqueen 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. Alternatively lap joints can be heat welded to achieve an effective seal. The overlap in the barrier is typically 100mm and when hand welding, a 35mm weld is normally achieved. When hand welding, a roller must be used.

Airtight seals should be formed around all service entry points. Visqueen Ultimate 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 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. The upstand should be secured with the supplied jubilee clip. Alternatively VisqueenPro Detailing Strip can be used to seal service entry points. The upstand should be secured with a jubilee clip.

Forming an effective barrier to gases may give rise to complex three-dimensional detailing where, it is recommended Visqueen Ultimate Preformed Units are used e.g. corners. Alternatively VisqueenPro 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 100mm Double Sided Butyl Tape and sealed with Visqueen GR Lap Tape. Alternatively a patch can be formed using VisqueenPro 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 Ultimate HC Blok and all associated system components should not be installed below 5°C.

### Additional information

When used in accordance with CIRIA C748:2014 or BS8485:2015 + A1:2019, a subfloor ventilation system or pressure relief maybe required.  
To assist build sequencing, Visqueen Ultimate Gas DPC is available for gas protection through the wall constructions.

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.

| Property                                | Test method          | Units | Criteria | Result     |
|-----------------------------------------|----------------------|-------|----------|------------|
| Colour                                  |                      |       |          | Gold/white |
| Weight                                  |                      | kg    |          | 49         |
| Length                                  | BS EN 1848-2         | m     | -0/+10%  | 41         |
| Width                                   | BS EN 1848-2         | m     | -0/+10%  | 2.44       |
| Thickness                               | BS EN 1849-2         | mm    | +/-10%   | 0.5        |
|                                         |                      |       |          |            |
| BS 8485 and C748 physical test results  |                      | Units | Criteria | Result     |
| Puncture                                | BS EN ISO 12236:2006 | N     | MDV      | 1640       |
| Impact resistance Method A hard surface | BS EN 12691          | mm    | MDV      | 200        |
| Impact resistance Method B soft surface | BS EN 12691          | mm    | MDV      | 1250       |
| Tensiles yield strength MD 1            | ASTM D4885-01        | kN/m  | MDV      | 5.1        |

## Visqueen Ultimate HC BLOK

|                                                                                                      |               |                             |                      |                      |
|------------------------------------------------------------------------------------------------------|---------------|-----------------------------|----------------------|----------------------|
| Tensiles yield strength CD 1                                                                         | ASTM D4885-01 | kN/m                        | MDV                  | 4.91                 |
| Yield elongation MD 1                                                                                | ASTM D4885-01 | %                           | MDV                  | 76                   |
| Yield elongation CD 1                                                                                | ASTM D4885-01 | %                           | MDV                  | 62                   |
| Tear resistance - trouser method A - MD                                                              | BS ISO 34-1   | kN/m                        | MDV                  | 60.2                 |
| Tear resistance - trouser method A - CD                                                              | BS ISO 34-1   | kN/m                        | MDV                  | 66.1                 |
| Tear resistance - angle method B - MD                                                                | BS ISO 34-1   | N                           | MDV                  | 48.7                 |
| Tear resistance - angle method B - CD                                                                | BS ISO 34-1   | N                           | MDV                  | 49.6                 |
| 1 - this is at yield and not break as the equipment used was not strong enough to break the membrane |               |                             |                      |                      |
| BS 8485 - Methane testing                                                                            | Test method   | Units                       | Criteria             | Result               |
| Methane gas transmission rate (unjointed)                                                            | ISO 15105-1   | ml/m <sup>2</sup> /day/ atm | <40                  | 1.3                  |
| Methane gas transmission rate (welded joint)                                                         | ISO 15105-1   | ml/m <sup>2</sup> /day/ atm | <40                  | 24                   |
| Carbon dioxide gas transmission rate                                                                 | ISO 15105-1   | ml/m <sup>2</sup> /day/ atm | <40                  | 8.3                  |
| C748:2014 - Permeation vapour tests - 100% concentration                                             |               | Criteria                    | ml/m <sup>2</sup> /d | mg/m <sup>2</sup> /d |
| Benzene                                                                                              | ISO 15105-2   | MDV                         | 0.08                 | 70                   |
| Toluene                                                                                              | ISO 15105-2   | MDV                         | 0.09                 | 78.5                 |
| Ethyl benzene                                                                                        | ISO 15105-2   | MDV                         | 0.11                 | 93.8                 |
| m,p xylene                                                                                           | ISO 15105-2   | MDV                         | 0.01                 | 6.7                  |
| Hexane                                                                                               | ISO 15105-2   | MDV                         | gas                  | 2.6                  |
| Vinyl chloride                                                                                       | ISO 15105-2   | MDV                         | 0                    | 6.4                  |
| Tetrachloroethene (PCE)                                                                              | ISO 15105-2   | MDV                         | 0                    | 3.2                  |
| Trichloroethene (TCE)                                                                                | ISO 15105-2   | MDV                         | solid                | 0.3                  |
| Naphthalene                                                                                          | ISO 15105-2   | MDV                         | 0.03                 | 19.7                 |
|                                                                                                      |               |                             |                      |                      |
|                                                                                                      |               |                             |                      |                      |
| C748:2014 - Chemical immersion testing                                                               |               | weight %                    | Thickness %          | Tensiles/elongation  |
| Pass is achieved if the aged membrane is within 25% of the fresh sample                              |               |                             |                      |                      |
| Benzene                                                                                              | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Toluene                                                                                              | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Ethyl benzene                                                                                        | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| (m,p, and o) xylene                                                                                  | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Hexane                                                                                               | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Vinyl chloride                                                                                       | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Tetrachloroethene                                                                                    | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Trichloroethene                                                                                      | BS EN 14414   | Pass                        | Pass                 | Pass                 |
| Naphthalene                                                                                          | BS EN 14414   | Pass                        | Pass                 | Pass                 |
|                                                                                                      |               |                             |                      |                      |
|                                                                                                      |               |                             |                      |                      |
| CE Marking to EN13967 Type A                                                                         |               |                             |                      |                      |

## Visqueen Ultimate HC BLOK

| Characteristic                              | Test method    | Units               | Criteria  | Result                   |
|---------------------------------------------|----------------|---------------------|-----------|--------------------------|
| Tensile strength - MD                       | BS EN 12311    | N/mm <sup>2</sup>   | MDV       | 32.8                     |
| Tensile strength - CD                       | BS EN 12311    | N/mm <sup>2</sup>   | MDV       | 33.1                     |
| Tensile elongation - MD                     | BS EN 12311    | %                   | MDV       | 699                      |
| Tensile elongation - CD                     | BS EN 12311    | %                   | MDV       | 723                      |
| Joint strength                              | BS EN 12317-2  | N                   | MDV       | 265                      |
| Watertightness to 2kPa for 24 hours         | BS EN 1928     | -                   | Pass/Fail | Pass                     |
| Resistance to impact                        | BS EN 12691    | mm                  | >MLV      | 200                      |
| Durability watertightness after heat ageing | BS EN 1296     | -                   | Pass/Fail | Pass                     |
| Durability watertightness against chemicals | BS EN 1847     | -                   | Pass/Fail | Pass                     |
| Resistance to tearing (nail shank) CD       | BS EN 12310-1  | N                   | MDV       | 245                      |
| Resistance to tearing (nail shank) MD       | BS EN 12310-1  | N                   | MDV       | 270                      |
| Water vapour transmission - resistance      | BS EN 1931     | MNs/g               | MDV       | 1034                     |
| Water vapour transmission - permeability    | BS EN 1931     | g/m <sup>2</sup> /d | MDV       | 0.13                     |
| Radon permeability                          | Sp Method 3873 | m <sup>2</sup> /s   | MDV       | <1.5 x 10 <sup>-12</sup> |

### Health and safety information

Refer to the Visqueen Ultimate HC Blok safety datasheet (SDS).

### About Visqueen

Visqueen is a leading provider of construction membrane technologies and design-based solutions for ground gas, structural waterproofing, damp proofing and fire protection.

We offer complete support at every stage of the specification, including the supply chain process. As the UK's principal technical authority, we are best placed to ensure that the principal designer and contractor specify the most technically suited, durable, and competitive solution to guarantee their project is protected for the lifetime of the building.

Visqueen is at the forefront of advanced membrane technology and innovation in the construction industry, earning the trust and loyalty of specifiers throughout the UK and Europe.

For more information, visit [visqueen.com](https://visqueen.com) or contact our sales office at [+44 \(0\) 333 202 6800](tel:+44203332026800) or [enquiries@visqueen.com](mailto:enquiries@visqueen.com)

### Complete Range, Complete Solution



Passive Fire Protection



Gas Protection



Damp Proof Membrane



Air and Vapor Control



Stormwater



Damp Proof Course



Temporary Protection

### Visqueen Technical Support

Visqueen offer a comprehensive full nationwide technical support. Our team of CSSW qualified technical support managers provide on site design-based solutions for specifiers, contractors and builders merchants, and will ensure that from design stage to installation the project is fully risk assessed and the specification is approved by all stakeholders.

Our Technical Office, can design, prepare and manage CAD detailing, together with assisting in quantity take offs, while offering advice on technical installations and product selection.

### Competency & Design

Visqueen promotes competency in building design by ensuring that its technical team possesses the necessary

## Visqueen Ultimate HC BLOK

skills, knowledge, experience, and ethical practices. The company adopts the "golden thread of information," ensuring all project data is digitally secure and accessible throughout a building's lifecycle. This approach aligns with the Building Safety Act and aims to foster accountability and compliance with evolving regulations, providing clients with confidence in the safety and reliability of their projects.

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### Visqueen CPD Seminars

Visqueen's CPD Seminars offer insights into Building Regulations, Standards, and industry guidance related to damp proofing, hazardous ground gas protection, and structural waterproofing. These one-hour seminars are tailored for construction design professionals and delivered by our Technical Support Managers. Visit our website to book a free CPD.

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### Visqueen Contract Design Services

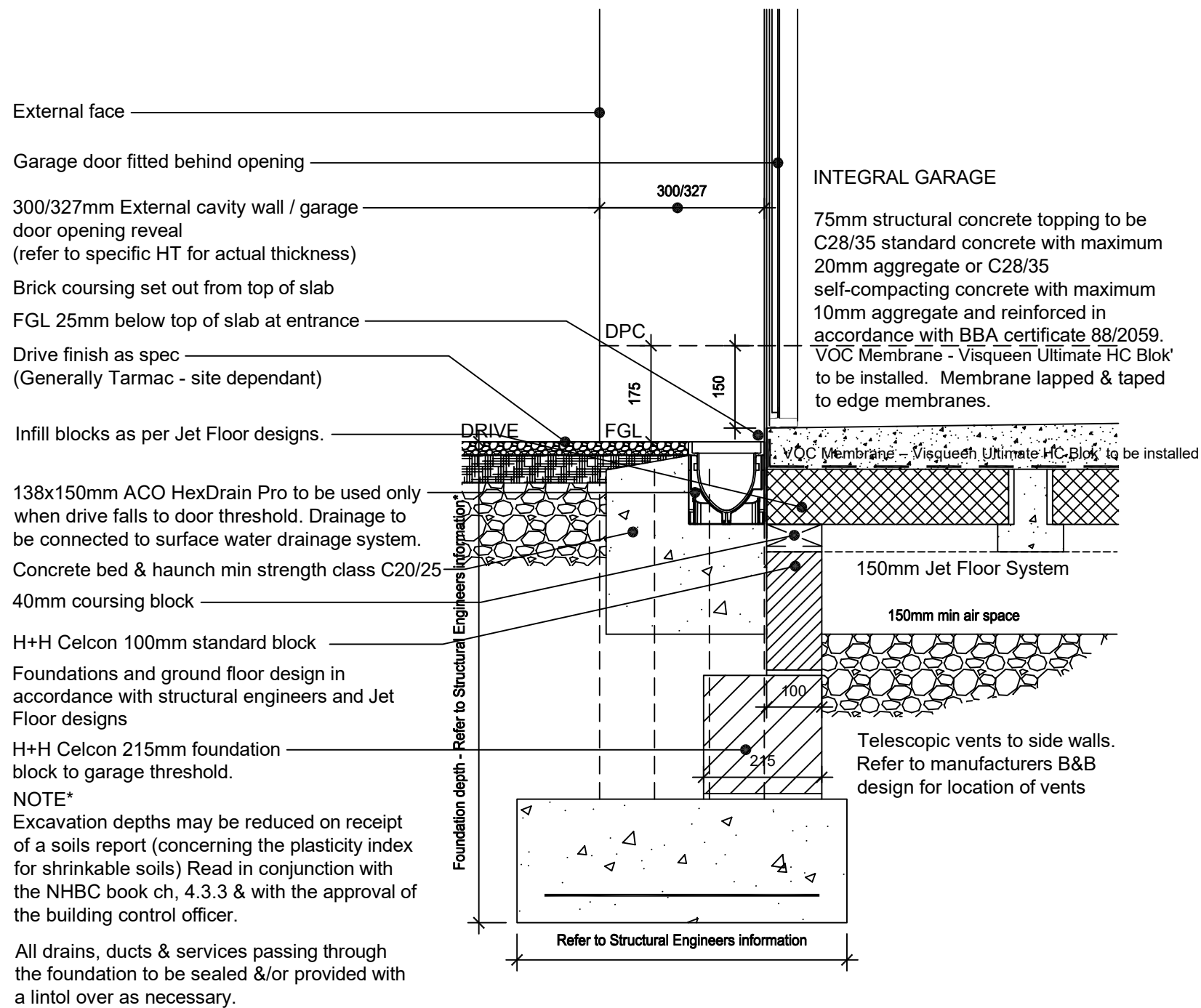
Visqueen Contract Design Services offers a bespoke design service led by our team of Certified Surveyors in Structural Waterproofing (CSSW), providing experienced and specialised waterproofing design expertise for complex projects. We provide comprehensive support throughout the entire project, ensuring that all work meets the requirements of warranty providers and adheres to the highest standards of quality, reliability and current legislation.

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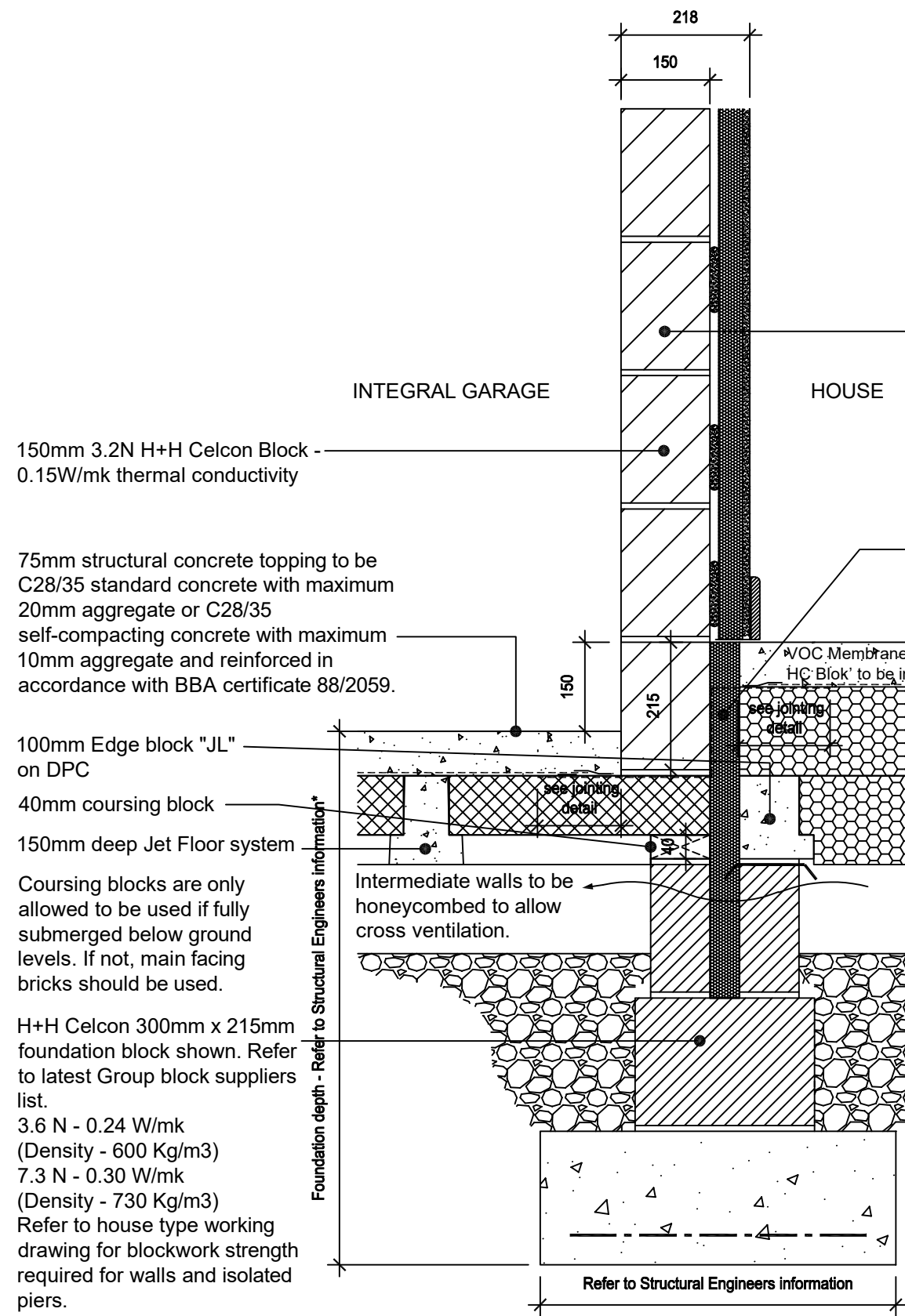
### Visqueen Training Academy

Based at our Derbyshire facility, the Visqueen Training Academy offers a variety of training programs across the UK. These include one-day product awareness sessions for distributors and builders' merchants, and intensive two-day courses for hands-on product installation training. Contact us for more information.

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Section showing integral garage door thresh - door fitted behind opening  
(Refer to details DB SD06-213, DB SD06-214 & DB SD06-215)



## INTERNAL WALL/GARAGE FLOOR JUNCTION - BEAM & BLOCK TO HOUSE & GARAGE FLOOR

150mm 3.2N H+H Celcon Block -  
0.15W/mk thermal conductivity

75mm structural concrete topping to be  
C28/35 standard concrete with maximum  
20mm aggregate or C28/35  
self-compacting concrete with maximum  
10mm aggregate and reinforced in  
accordance with BBA certificate 88/2059.

100mm Edge block "JL"  
on DPC

40mm coursing block

150mm deep Jet Floor system

Coursing blocks are only  
allowed to be used if fully  
submerged below ground  
levels. If not, main facing  
bricks should be used.

H+H Celcon 300mm x 215mm  
foundation block shown. Refer  
to latest Group block suppliers  
list.

3.6 N - 0.24 W/mk  
(Density - 600 Kg/m<sup>3</sup>)

7.3 N - 0.30 W/mk  
(Density - 730 Kg/m<sup>3</sup>)

Refer to house type working  
drawing for blockwork strength  
required for walls and isolated  
piers.

Foundation depth - Refer to Structural Engineers information\*

Refer to Structural Engineers information

### NOTE\*

Excavation depths may be reduced on  
receipt of a soils report (concerning the  
plasticity index for shrinkable soils) Read  
in conjunction with the NHBC book ch,  
4.3.3 & with the approval of the building  
control officer.

All drains, ducts & services passing  
through the foundation to be sealed &/or  
provided with a lintel over as necessary.

Internal walls to garage to be 150mm  
Aircrete blockwork faced with 53mm  
Gyproc ThermaLine PIR Board on 15mm  
plaster adhesive dabs.  
Continuous dabs at board perimeters -  
see air leakage detail for positioning.

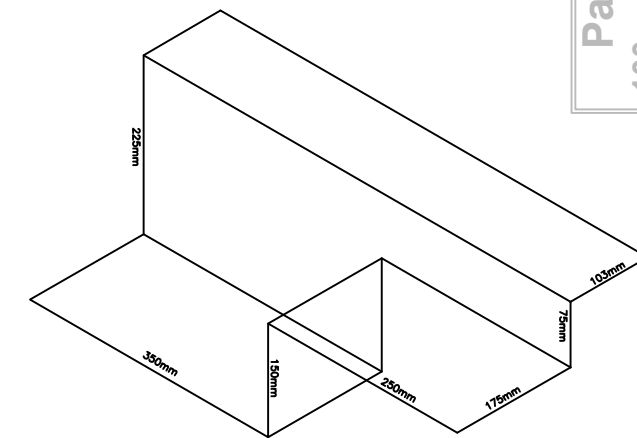
50mm TE Alreflex 'Platinum'  
Board to slab perimeter

75mm structural concrete topping to be  
C28/35 standard concrete with maximum  
20mm aggregate or C28/35  
self-compacting concrete with maximum  
10mm aggregate and reinforced in  
accordance with BBA certificate 88/2059.  
The topping is to be laid as soon as  
possible after the installation of the  
polystyrene components.

150mm Structural Overlay sheet (Grey)  
below VOC Membrane - Visqueen Ultimate  
HC Blok'

"Wide" or "Narrow" Poly blocks. Beam  
spacing is set with the relevant "Wide" or  
"Narrow" TS End Space Blocks. Refer to  
plot specific designs.

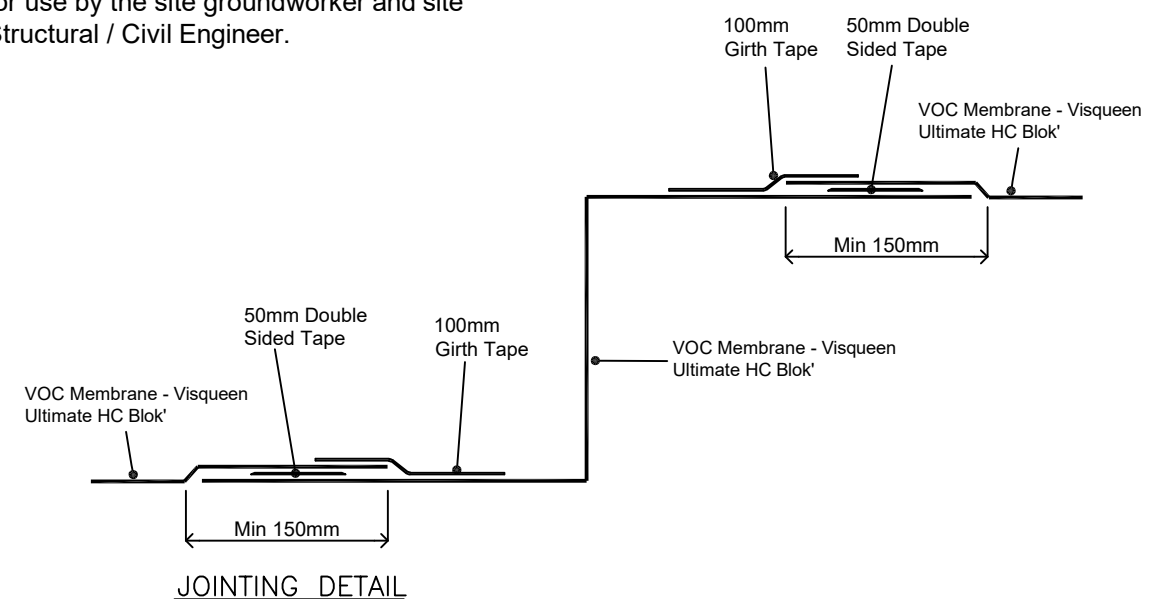
On some sites it may be possible to use  
site won material as fill instead of  
hardcore. This material needs to meet the  
requirements of NHBC Standards 5.1.9  
and must be approved as being suitable  
for use by the site groundworker and site  
Structural / Civil Engineer.



Part L  
100mm Cavity  
"X" Drawings

### Gas Resistant Garage External Wall to Semi Exposed Wall Cavity Tray

All Party Wall units are made to Order and  
should be ordered in sufficient time to allow  
manufacture.



EXTERNAL REFERENCE : 22/029/GW01 ( $\psi = 0.053 \text{ W/mK}$ )

Brand: **BARRATT - WALDMERS WOOD**  
Range: **2016**

Title: **Jet Floor Integral Garage Wall Detail - Gas Membrane**  
Detail No: **BM-GM05-206**

Drawn: **SAH** Checked: **SAH** Scale: **1:10** Date: **Jan 24**

Date: 13.05.25

Description: GAS\_MEMBRANE\_SPEC\_ADDED

Rev: A

**BARRATT**  
MANCHESTER DIVISION

**Part L**  
**100mm Cavity**  
**"X" Drawings**

Composite front door with weather bar and compression weather strip.

Standard mobility threshold.

DPC min. 150mm above ramp.

I.G / Ian Firth 2 part synthetic cill with 30mm overhang

DPC sandwiched in joint below cill.

Gradient 1 in 20.  
Paving slab.

Perpend to be left open to facilitate drainage.

30mm P34 insulation strip

100mm thick Thermal Economics Platinum Ground Floor Insulation Board cut to suit 110mm cavity and to fill the cavity at door opening only.

Lean mix cavity fill

H+H Celcon 325mm x 215mm foundation block shown. Refer to latest Group block suppliers list.

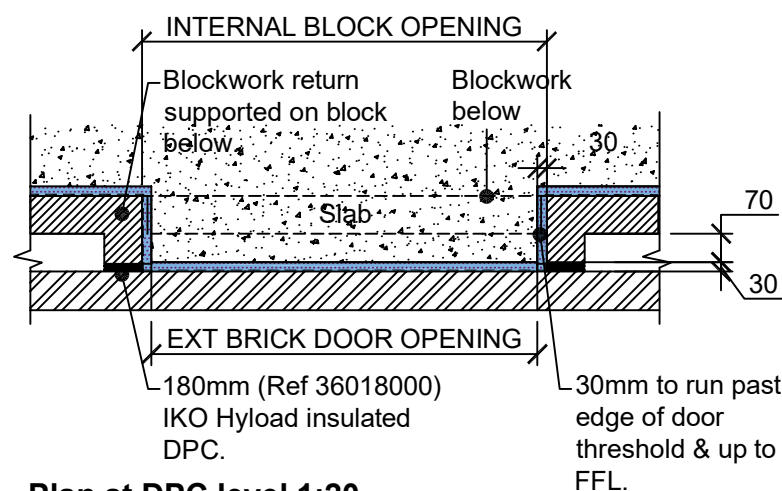
3.6 N - 0.24 W/mk  
(Density - 600 Kg/m<sup>3</sup>)  
7.3 N - 0.30 W/mk  
(Density - 730 Kg/m<sup>3</sup>)

Refer to house type working drawing for blockwork strength required for walls and isolated piers.

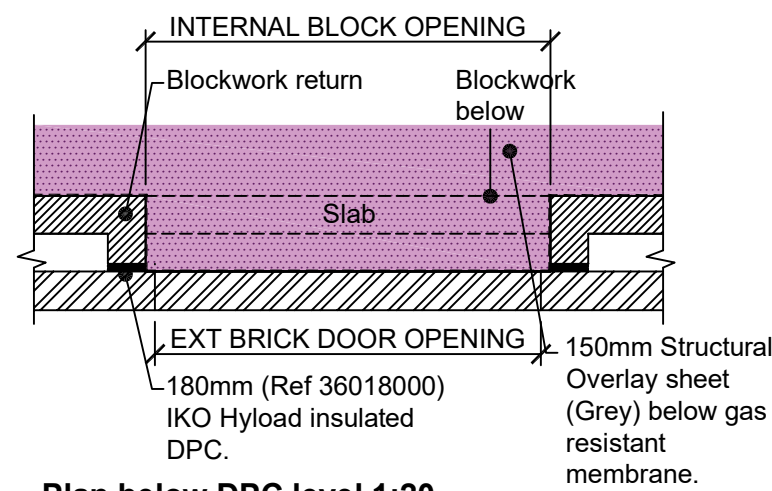
Coursing blocks are only allowed to be used if fully submerged below ground levels. If not, main facing bricks should be used.

Scale 1:10

Colours shown for clarity only



**Plan at DPC level 1:20**



**Plan below DPC level 1:20**

Ian Firth internal transition piece shown. Transition piece clips into back of door cill cut to full width of reveal between skirting boards and is bedded on mastic sealant. No screw fixings required.

Alternative Aluminium internal transition ramp from Ian Firth is available if required, Ref - STO844INRAMP (844mm long) or STO920INRAMP (920mm long). Longer lengths are available if level access is required to rear french doors. Sealed with mastic along each edge and secured to floor with 3 no screws for standard lengths referenced above.

VOC Membrane - Visqueen Ultimate HC Blok' taken up back of insulation and lapped under DPC.

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC Membrane - Visqueen Ultimate HC Blok'

"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

**NOTE\***

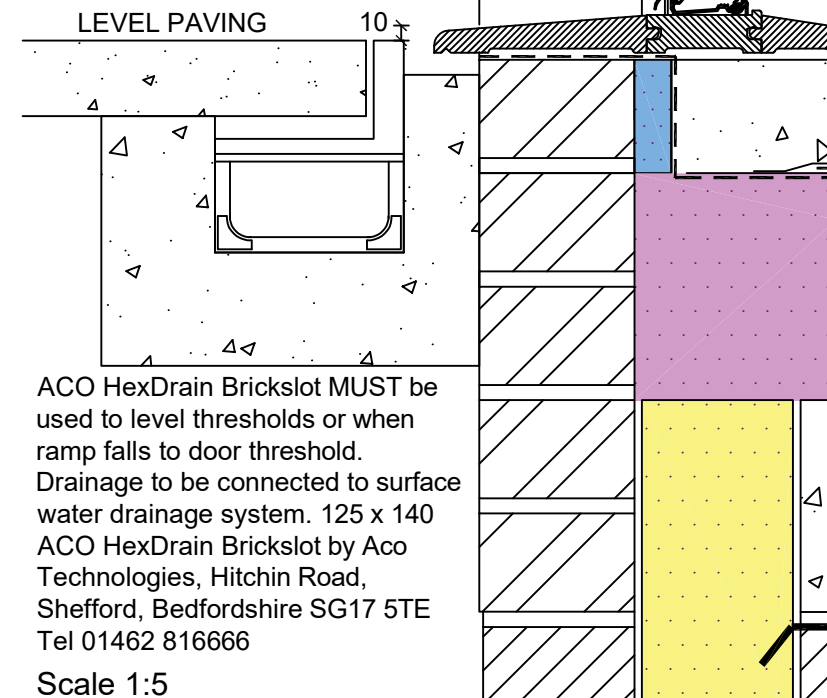
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.

All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.

ACO HexDrain BrickSlot to be laid on concrete bed and surround

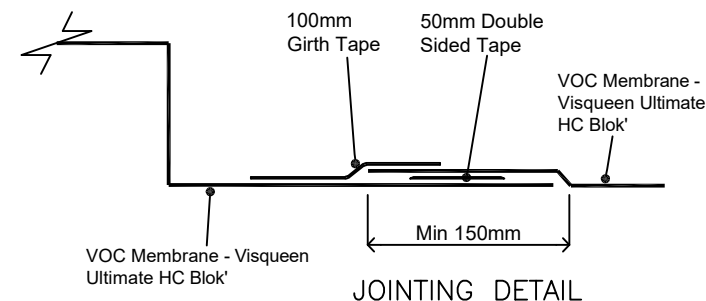
10mm cill upstand to arrest water flow during heavy rain

LEVEL PAVING

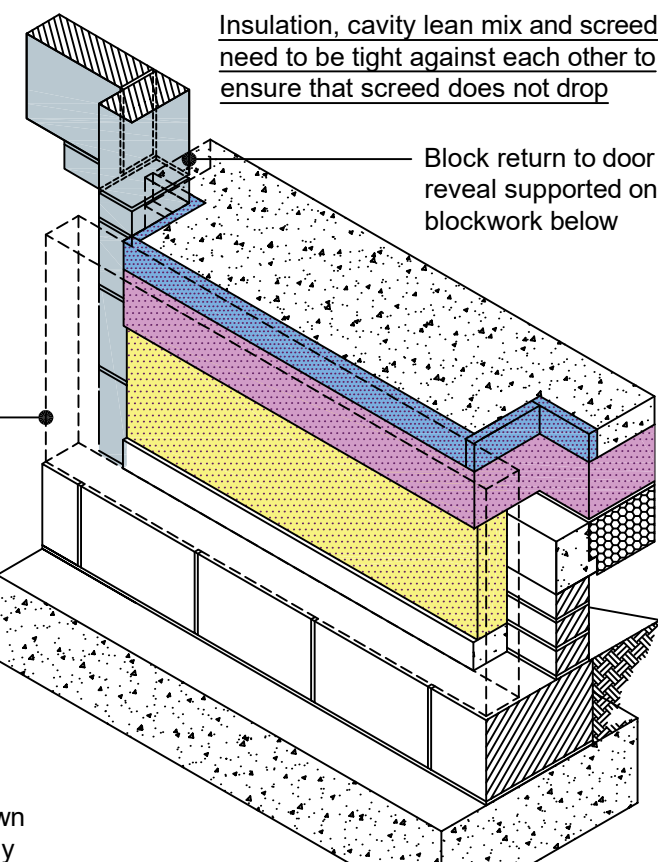


ACO HexDrain Brickslot MUST be used to level thresholds or when ramp falls to door threshold. Drainage to be connected to surface water drainage system. 125 x 140 ACO HexDrain Brickslot by Aco Technologies, Hitchin Road, Shefford, Bedfordshire SG17 5TE Tel 01462 816666

Scale 1:5



**JOINTING DETAIL**



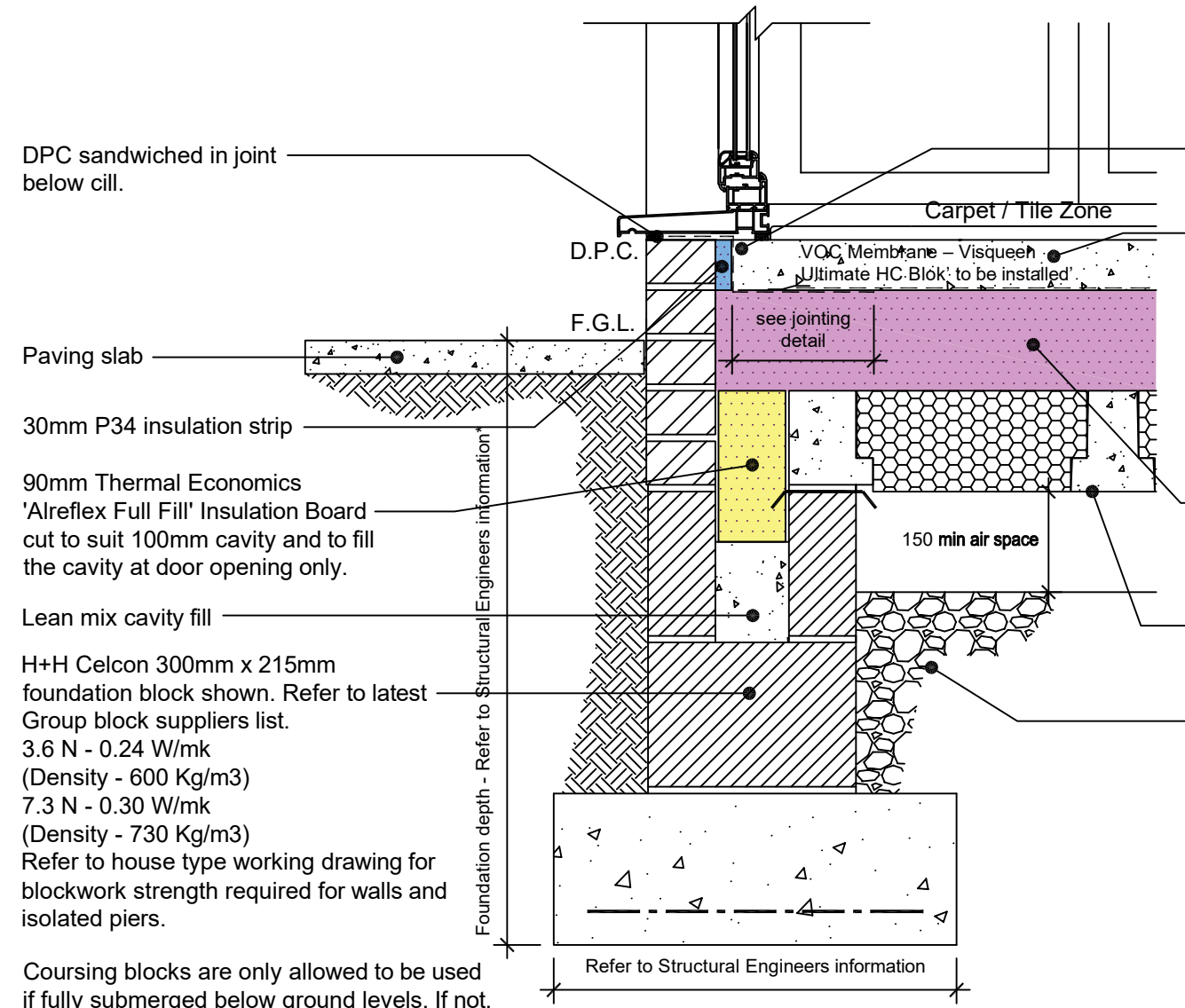
Brick outer leaf shown dashed for clarity

Scale 1:20  
Isometric

Colours shown for clarity only

EXTERNAL REFERENCE :

|                                                                                                                                                                                                                                        |  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|                                                                                                                                                                                                                                        |  |
| <b>BARRATT</b><br>MANCHESTER DIVISION                                                                                                                                                                                                  |  |
| Date: 28.01.25<br>13.05.25                                                                                                                                                                                                             |  |
| Description: BLOCK RETURN & HYLOAD DPM ADDED AT DOOR THRESHOLD<br>GAS MEMBRANE SPEC ADDED                                                                                                                                              |  |
| Rev: A B                                                                                                                                                                                                                               |  |
| <b>Brand: BARRATT - WALDMERS WOOD</b><br><b>Range: 2016</b><br><b>Title: JET FLOOR FRONT DOOR GAS MEMBRANE</b><br><b>Detail No: BM-GM05-207</b><br><b>Drawn: SAH</b> <b>Checked: SAH</b> <b>Scale: 1:5, 10, 20</b> <b>Date: Jan 24</b> |  |



VOC Membrane - Visqueen Ultimate HC Blok' taken up back of insulation and lapped under DPC.

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC Membrane - Visqueen Ultimate HC Blok'

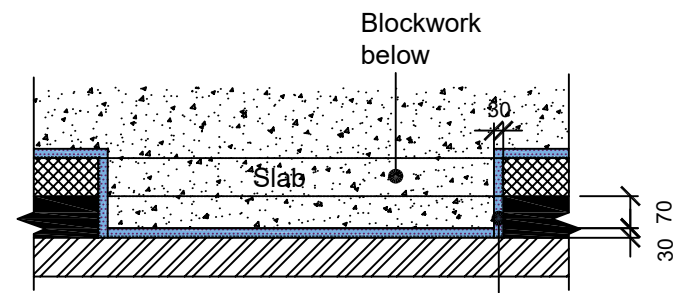
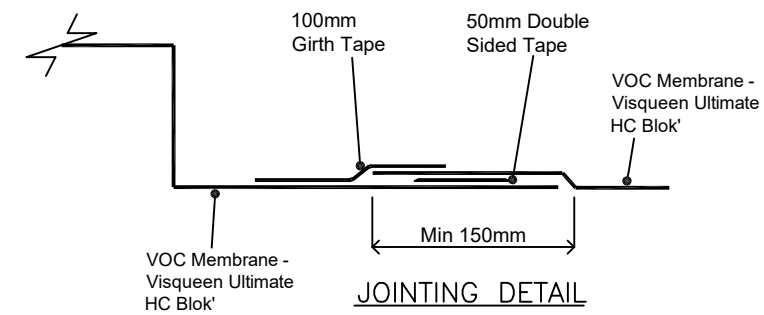
"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

NOTE\*

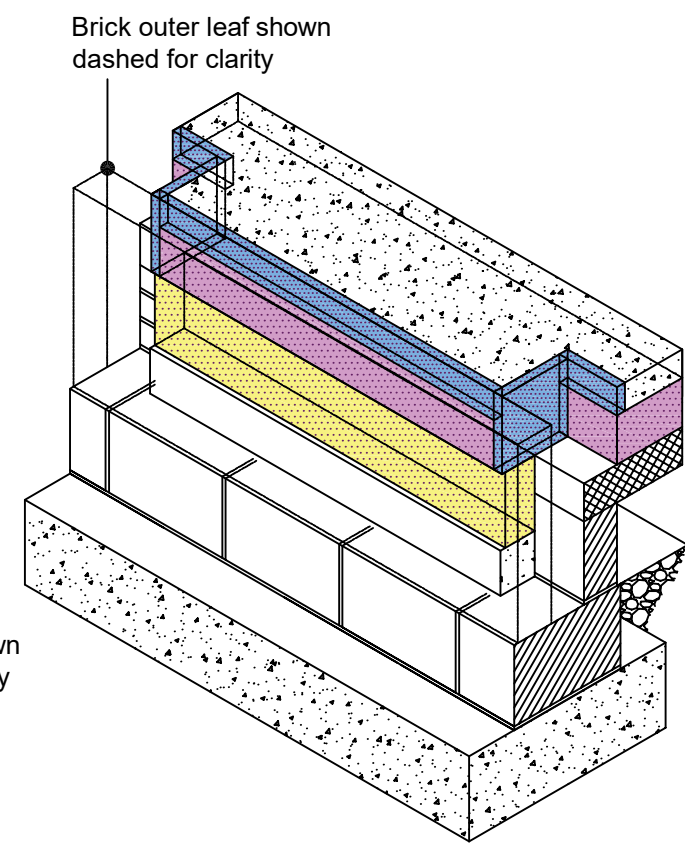
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.

All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.

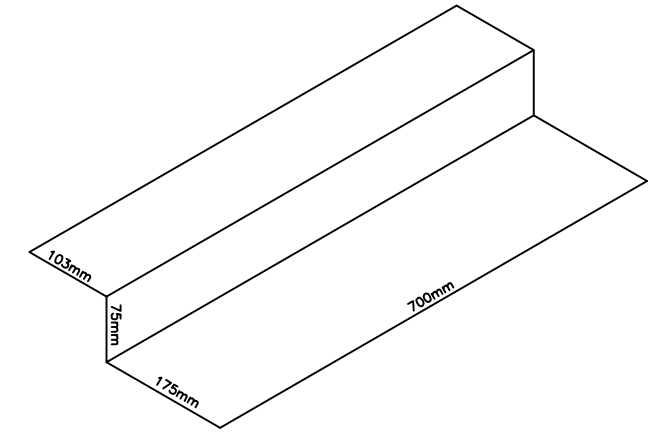


Scale 1:20  
Plan at DPC level  
Colours shown for clarity only

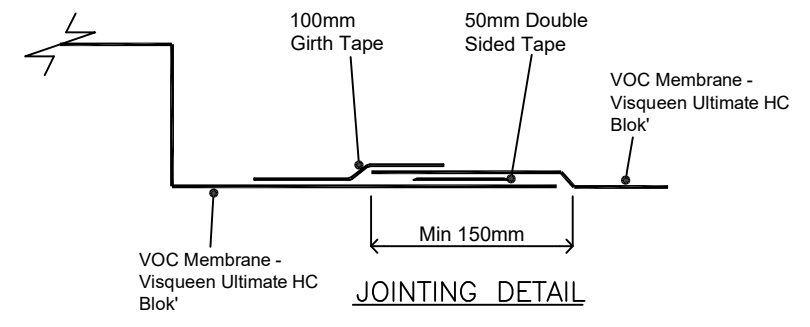
Scale 1:20  
Isometric  
Colours shown for clarity only



EXTERNAL REFERENCE :



Gas Resistant External/Party Wall Cavity Tray  
All Party Wall units are made to Order and should be ordered in sufficient time to allow manufacture.



100mm Party wall roll insulation as Group Agreement (full fill cavity - no gaps remain) - min 225mm below finished floor level.

Type A cavity wall ties @ 900mm c/s horz. & 450mm c/s vert. staggered (typical). First row as per manufacturers instructions.

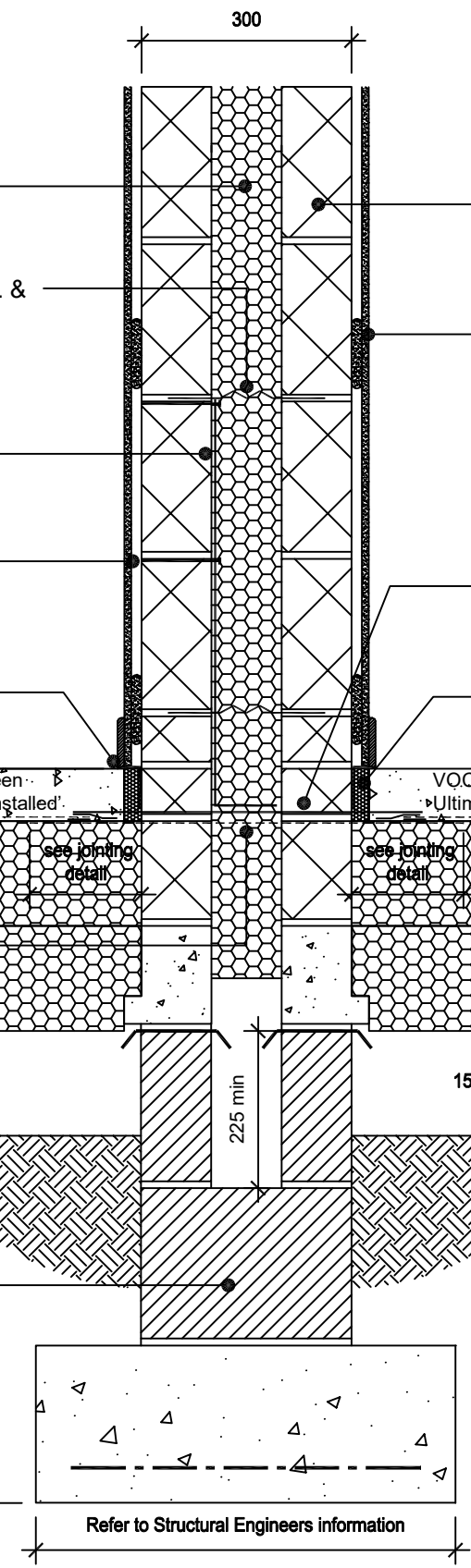
Monarfloor Bridgestop Quilt in two lifts to prevent mortar droppings touching both masonry leaves.

Monarfloor Bridgestop tie to penetrate at max 450mm centres.

Monarfloor 6mm Acoustic Angled Flanking Strip to isolate screed / insulation from party wall.

700mm wide VOC Membrane - Visqueen Ultimate HC Blok'

H+H Celcon 300mm x 215mm foundation block shown. Refer to latest Group block suppliers list.  
3.6 N - 0.24 W/mk (Density - 600 Kg/m3)  
7.3 N - 0.30 W/mk (Density - 730 Kg/m3)  
Refer to house type working drawing for blockwork strength required for walls and isolated piers.



E-WM-22 100mm Light Aggregate blocks - 3.6 N/mm<sup>2</sup>, Density 1350-1600kg/m<sup>3</sup>

15mm Gyproc Wallboard (E-WM-23 density 9.8kg/m<sup>3</sup> / E-WM-22 density 10kg/m<sup>3</sup>) with with 3mm skim finish or taped and jointed on 15mm plaster adhesive dabs on blockwork.

500mm wide MONARFLOOR BRIDGESTOP 3mm HP Acoustic Membrane laid under the party wall over the DPM/Gas membrane - refer to Appendix A2 of the Robust Details.

30mm P34 insulation strip

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC Membrane - Visqueen Ultimate HC Blok'

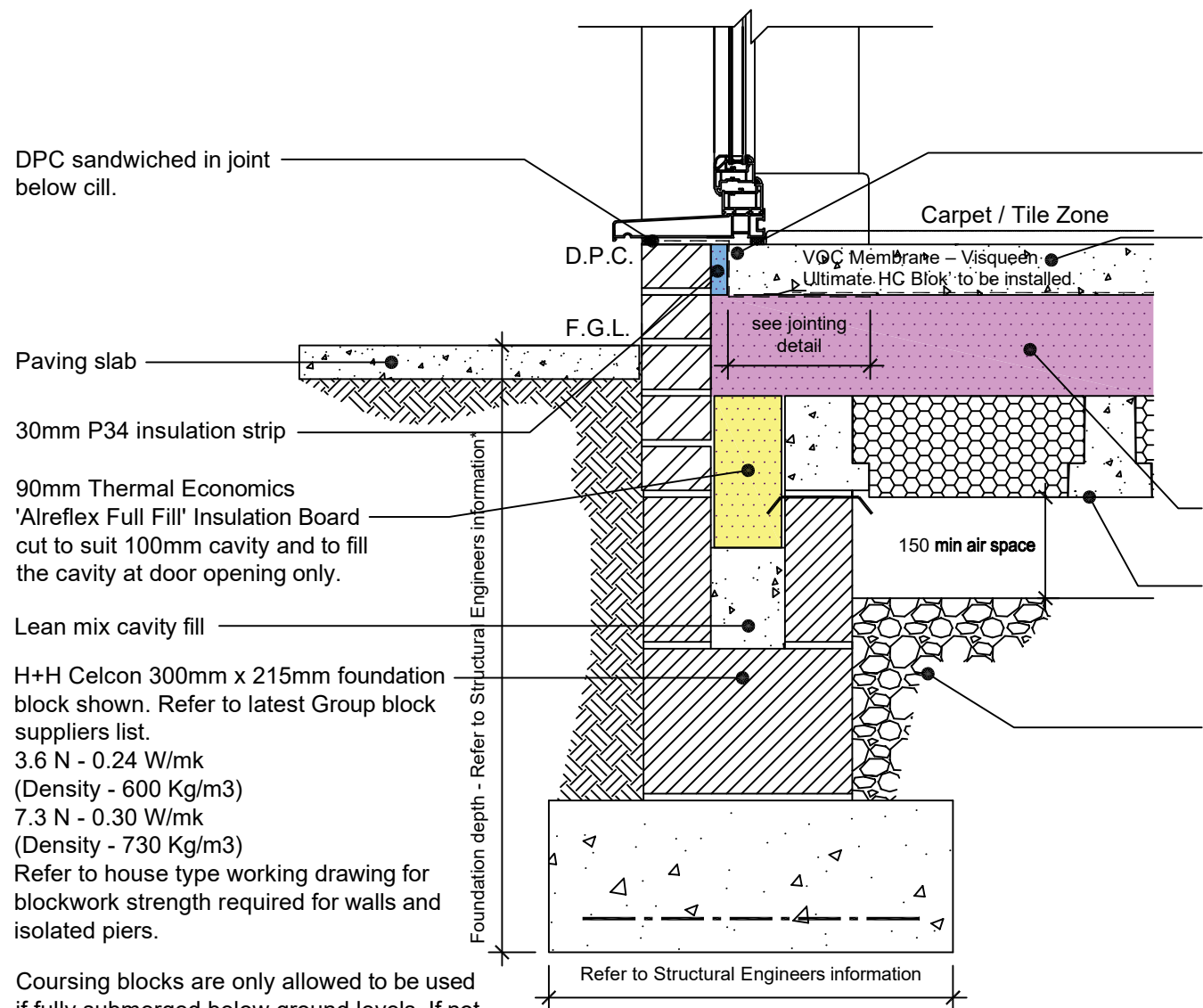
"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

**NOTE\***  
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.  
All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.

## PARTY WALL / GROUND FLOOR JUNCTION (E-WM-22) JET FLOOR SYSTEM

EXTERNAL REFERENCE :



VOC Membrane - Visqueen Ultimate HC Blok' taken up back of insulation and lapped under DPC.

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC Membrane - Visqueen Ultimate HC Blok'

"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

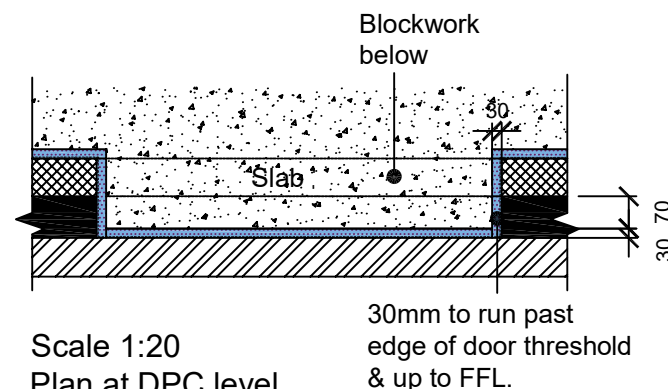
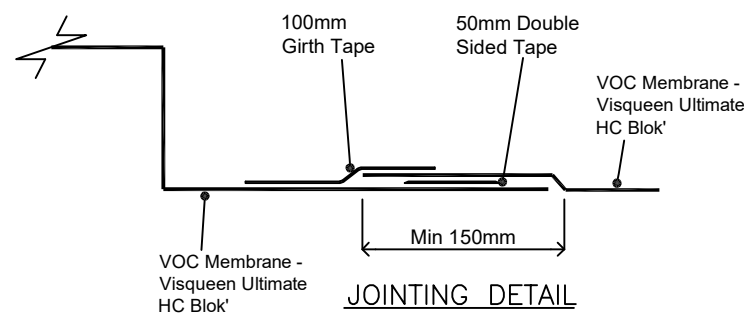
**NOTE\***

Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.

All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.

Scale 1:10

Colours shown for clarity only

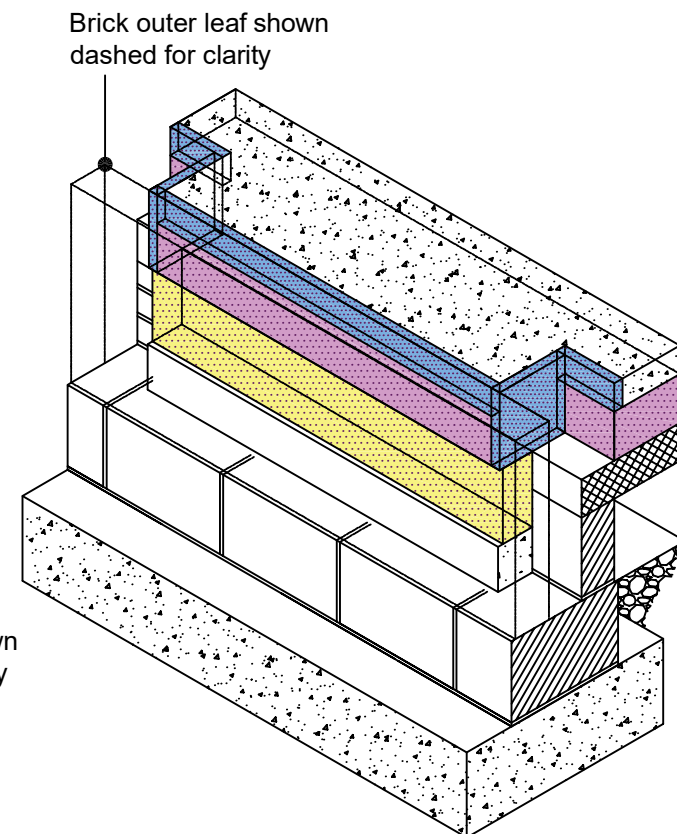


Scale 1:20  
Plan at DPC level

Colours shown for clarity only

Scale 1:20  
Isometric

Colours shown for clarity only



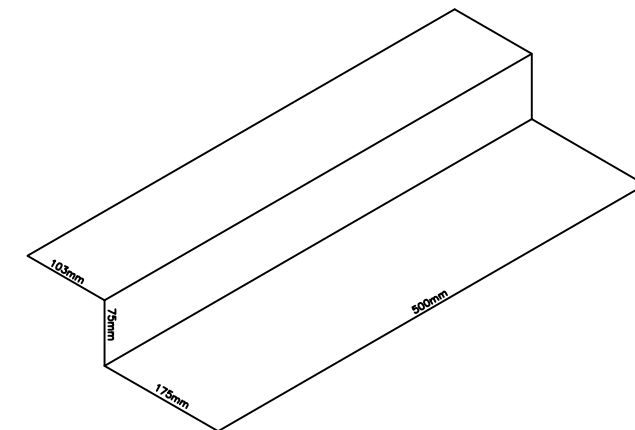


**BARRATT**  
MANCHESTER DIVISION

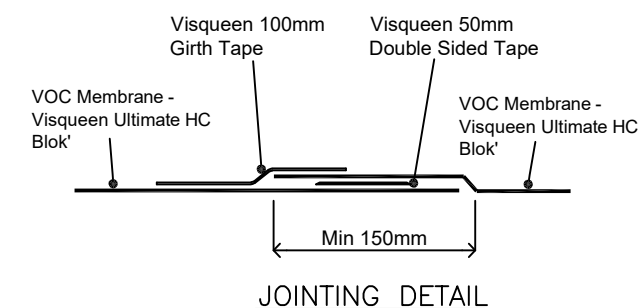
**Description:**  
GAS MEMBRANE SPEC ADDED

Brand: **BARRATT - WALDMERS WOOD**  
 Range: **2016**  
 Title: **Jet Floor Internal Wall with Gas Membrane**  
 Detail No: **BG-GM05-236**  
 Drawn: **SAH**      Checked: **SAH**      Scale: **1:10**      Date: **Jan 24**

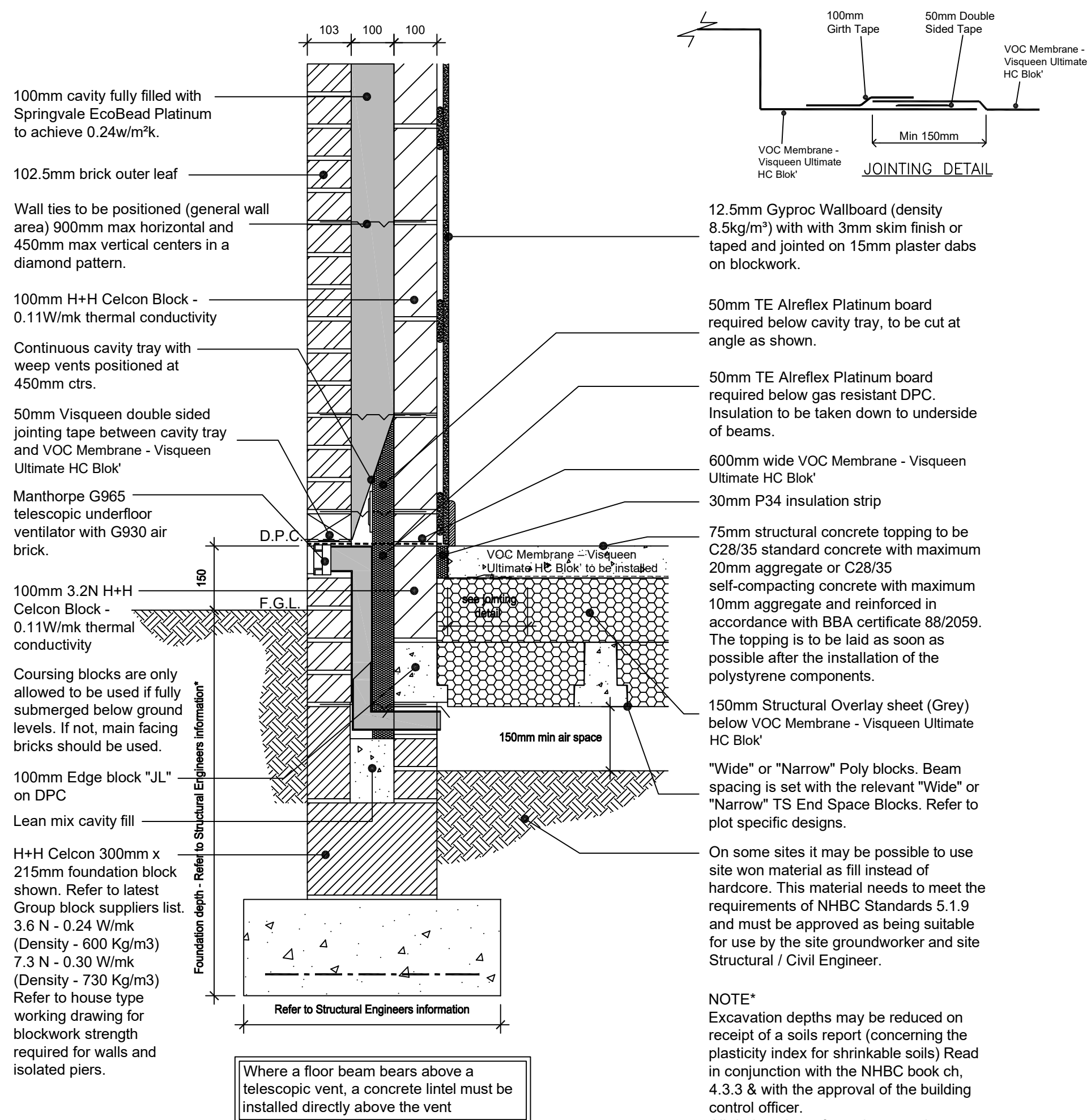
EXTERNAL REFERENCE :



Gas Resistant External/Internal Wall Cavity Tray  
All Party Wall units are made to Order and should be ordered in sufficient time to allow manufacture.

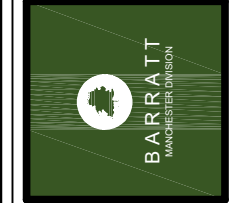


**NOTE\***  
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.  
All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.



## EXTERNAL WALL/GROUND FLOOR JUNCTION JET FLOOR BEAMS PARALLEL

Part L  
100mm Cavity  
"X" Drawings



Date: 13.05.25

Description: GAS MEMBRANE SPEC ADDED

Rev: A

Brand: **BARRATT - WALDMERS WOOD**  
 Range: **2016**  
 Title: **Jet Floor - Parallel Beams Gas Membrane**  
 Detail No: **BM-GM05-245**  
 Drawn: **SAH** Checked: **SAH** Scale: **1:10** Date: **Jan 24**

EXTERNAL REFERENCE :

100mm cavity fully filled with Springvale EcoBead Platinum to achieve 0.24w/m²k.

102.5mm brick outer leaf

Wall ties to be positioned (general wall area) 900mm max horizontal and 450mm max vertical centers in a diamond pattern.

100mm H+H Celcon Block - 0.11W/mk thermal conductivity

Continuous cavity tray with weep vents positioned at 450mm ctrs.

50mm Visqueen double sided jointing tape between cavity tray and VOC Membrane - Visqueen Ultimate HC Blok'

Manthorpe G965 telescopic underfloor ventilator with G930 air brick.

100mm 3.2N H+H Celcon Block - 0.11W/mk thermal conductivity

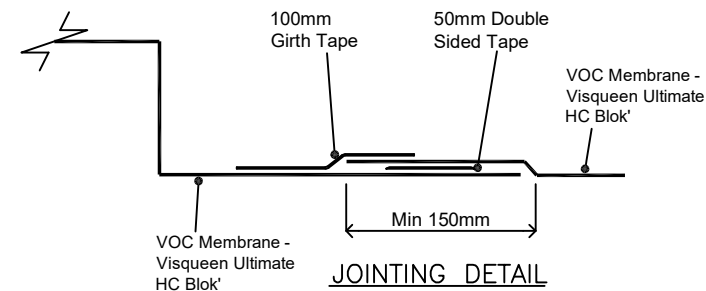
Coursing blocks are only allowed to be used if fully submerged below ground levels. If not, main facing bricks should be used.

Lean mix cavity fill

H+H Celcon 300mm x 215mm foundation block shown. Refer to latest Group block suppliers list.  
3.6 N - 0.24 W/mk (Density - 600 Kg/m³)  
7.3 N - 0.30 W/mk (Density - 730 Kg/m³)  
Refer to house type working drawing for blockwork strength required for walls and isolated piers.

Foundation depth - Refer to Structural Engineers information\*

Where a floor beam bears above a telescopic vent, a concrete lintel must be installed directly above the vent



12.5mm Gyproc Wallboard (density 8.5kg/m³) with 3mm skim finish or taped and jointed on 15mm plaster dabs on blockwork.

50mm TE Alreflex Platinum board required below cavity tray, to be cut at angle as shown.

50mm TE Alreflex Platinum board required below gas resistant DPC. Insulation to be taken down to underside of beams.

600mm wide VOC Membrane - Visqueen Ultimate HC Blok'

30mm P34 insulation strip

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC Membrane - Visqueen Ultimate HC Blok'

"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

**NOTE\***  
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.  
All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.

Part L  
100mm Cavity  
"X" Drawings



Date: 13.05.25

Description: GAS MEMBRANE SPEC ADDED

Rev: A

EXTERNAL REFERENCE :

Brand: **BARRATT - WALDMERS WOOD**

Range: **2016**

Title: **Jet Floor - Perpendicular Beams Gas Membrane**

Detail No: **BM-GM05-246**

Drawn: **SAH** Checked: **SAH** Scale: **1:10** Date: **Jan 24**

100mm Party wall roll insulation  
as Group Agreement (full fill  
cavity - no gaps remain) - min  
225mm below finished floor level.

E-WM-22 100mm Light Aggregate  
blocks - 3.6 N/mm<sup>2</sup>, Density  
1350-1600kg/m<sup>3</sup>

Type A cavity wall ties @ 900mm c/s horz. &  
450mm c/s vert. staggered (typical). First  
row as per manufacturers instructions.

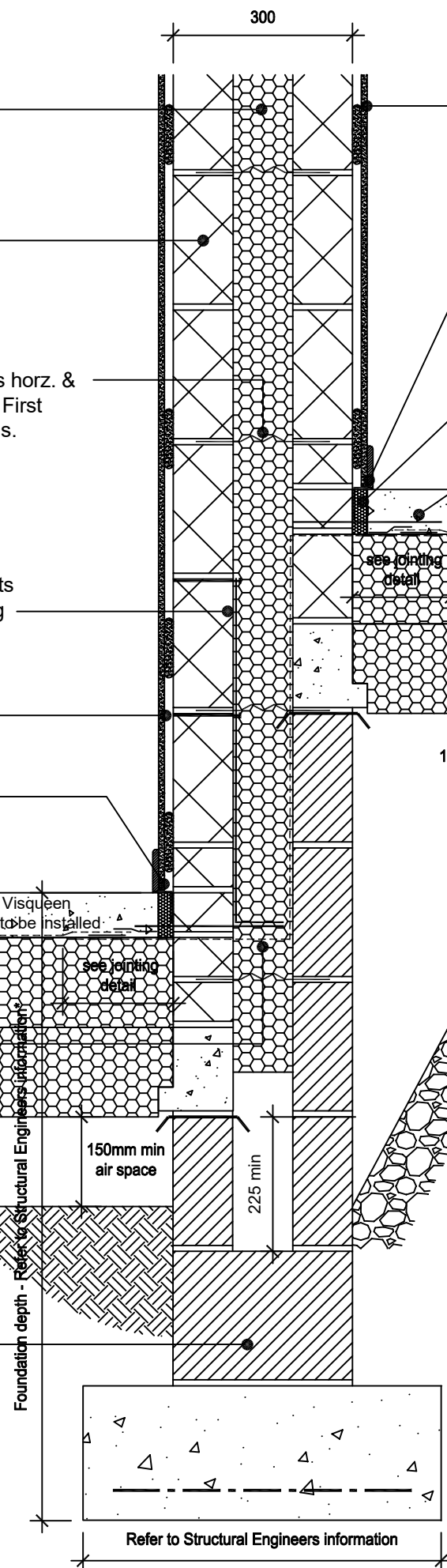
Monarfloor Bridgestop Quilt in two lifts  
to prevent mortar droppings touching  
both masonry leaves.

Monarfloor Bridgestop tie to  
penetrate at max 450mm centres.

Monarfloor 6mm Acoustic Angled  
Flanking Strip to isolate screed /  
insulation from party wall.

1375mm wide VOC  
Membrane -  
Visqueen Ultimate  
HC Blok' (for  
675mm step  
shown).

H+H Celcon 300mm x 215mm  
foundation block shown. Refer  
to latest Group block suppliers  
list.  
3.6 N - 0.24 W/mk  
(Density - 600 Kg/m<sup>3</sup>)  
7.3 N - 0.30 W/mk  
(Density - 730 Kg/m<sup>3</sup>)  
Refer to house type working  
drawing for blockwork strength  
required for walls and isolated  
piers.



15mm Gyproc Wallboard (E-WM-23  
density 9.8kg/m<sup>3</sup> / E-WM-22 density  
10kg/m<sup>3</sup>) with with 3mm skim finish or  
taped and jointed on 15mm plaster  
adhesive dabs on blockwork.

Monarfloor 6mm Acoustic Angled  
Flanking Strip

30mm P34 insulation strip

250mm wide MONARFLOOR  
BRIDGESTOP 3mm HP Acoustic  
Membrane laid under the party wall over  
Gas membrane - refer to Appendix A2 of  
the Robust Details.

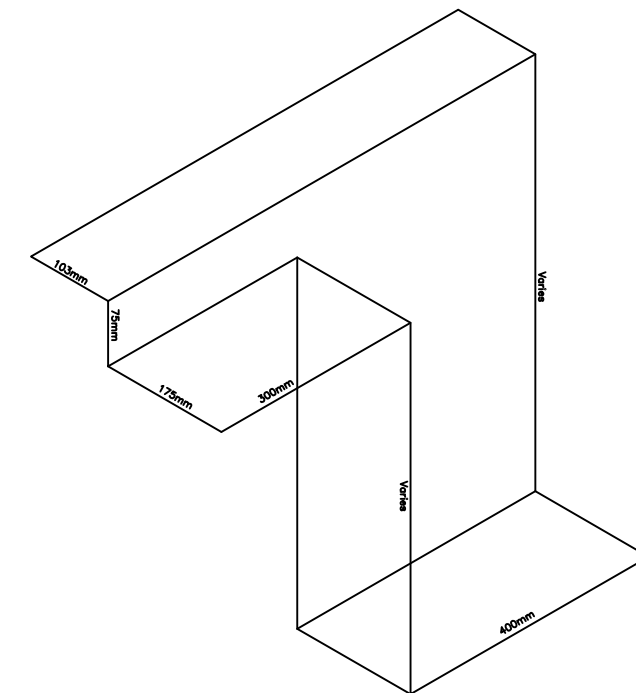
75mm structural concrete topping to be  
C28/35 standard concrete with maximum  
20mm aggregate or C28/35  
self-compacting concrete with maximum  
10mm aggregate and reinforced in  
accordance with BBA certificate 88/2059.  
The topping is to be laid as soon as  
possible after the installation of the  
polystyrene components.

150mm Structural Overlay sheet (Grey)  
below VOC Membrane - Visqueen Ultimate  
HC Blok'

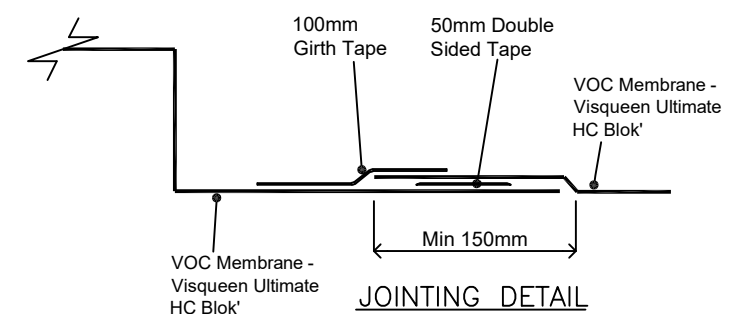
"Wide" or "Narrow" Poly blocks. Beam  
spacing is set with the relevant "Wide" or  
"Narrow" TS End Space Blocks. Refer to  
plot specific designs.

Ground battered back on higher FFL side  
as shown. On some sites it may be  
possible to use site won material as fill  
instead of hardcore. This material needs  
to meet the requirements of NHBC  
Standards 5.1.9 and must be approved as  
being suitable for use by the site  
groundworker and site Structural / Civil  
Engineer.

NOTE\*  
Excavation depths may be reduced on  
receipt of a soils report (concerning the  
plasticity index for shrinkable soils) Read  
in conjunction with the NHBC book ch,  
4.3.3 & with the approval of the building  
control officer.  
All drains, ducts & services passing  
through the foundation to be sealed &/or  
provided with a lintel over as necessary.



Gas Resistant External/Stepped Party Wall Cavity Tray  
All Party Wall units are made to Order and  
should be ordered in sufficient time to allow  
manufacture.

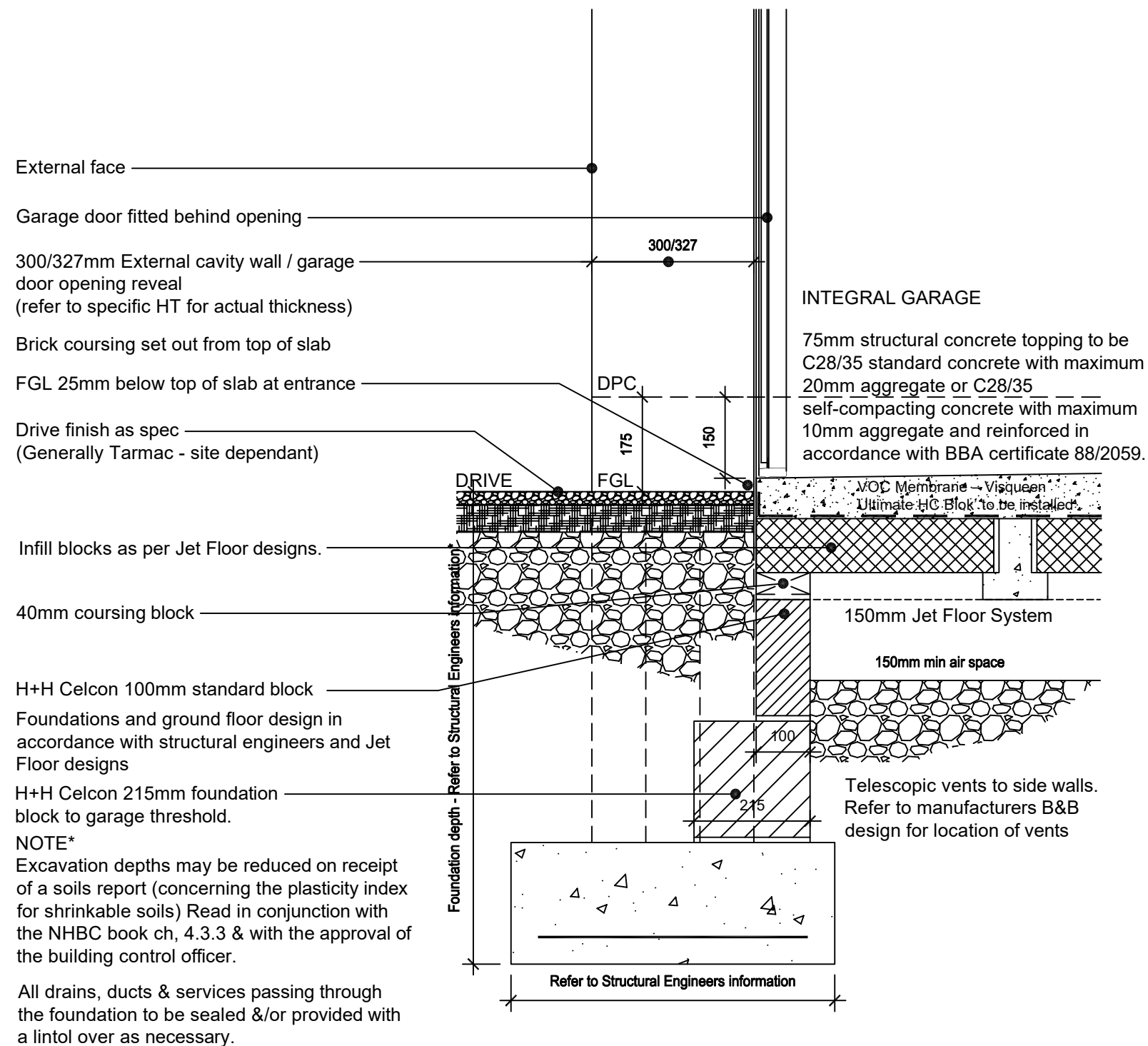


Part L  
100mm Cavity  
"X" Drawings

EXTERNAL REFERENCE : 22/029/PW01 ( $\psi = 0.086$  W/mK)

|                                                                                                                              |        |                |
|------------------------------------------------------------------------------------------------------------------------------|--------|----------------|
| <br><b>BARRATT</b><br>MANCHESTER DIVISION |        | Date: 13.05.25 |
| Description: GAS MEMBRANE SPEC ADDED                                                                                         | Rev: A |                |
| Brand: <b>BARRATT - WALDMERS WOOD</b>                                                                                        |        | Date: Jan 24   |
| Range: <b>2016</b>                                                                                                           |        | Scale: 1:10    |
| Title: <b>Jet Floor Stepped Party Wall with Gas Membrane</b>                                                                 |        | Checked: SAH   |
| Detail No: <b>BM-GM05-500</b>                                                                                                |        | Drawn: SAH     |

## PARTY WALL / GROUND FLOOR JUNCTION (E-WM-22) JET FLOOR SYSTEM



Section showing integral garage door thresh - door fitted behind opening  
(Refer to details DB SD06-213, DB SD06-214 & DB SD06-215)

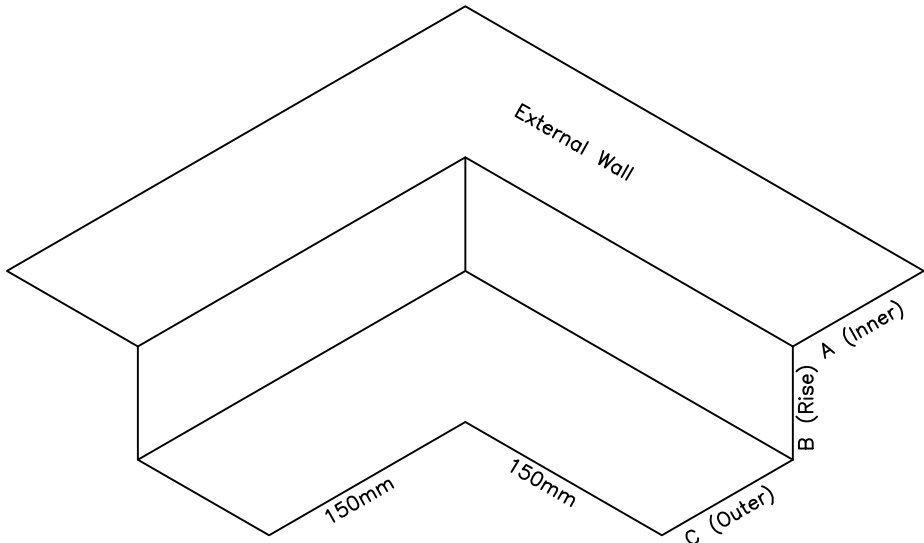
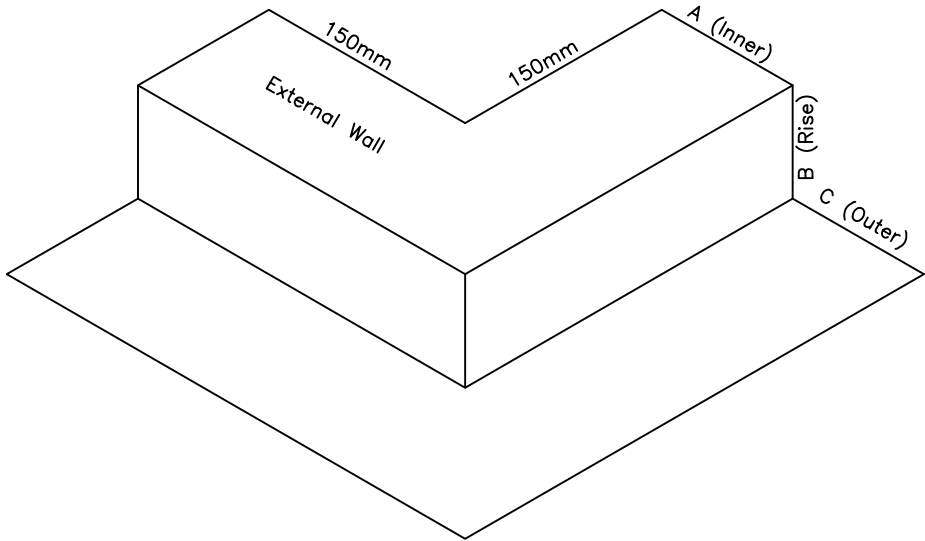
EXTERNAL REFERENCE :

Brand: **BARRATT - WALDMERS WOOD**  
Range: **2016**  
Title: **Jet Floor Int Garage door behind reveal gas membrane**  
Detail No: **BM-GM05-600**  
Drawn: **SAH** Checked: **SAH** Scale: **1:10** Date: **Jan 24**

Rev: **A**  
Description: **GAS MEMBRANE SPEC ADDED**

Date: **13.05.25**

| External Corner Cloak |  |
|-----------------------|--|
| A (Inner)             |  |
| B (Rise)              |  |
| C (Outer)             |  |



| Internal Corner Cloak |  |
|-----------------------|--|
| A (Inner)             |  |
| B (Rise)              |  |
| C (Outer)             |  |

Gas Resistant Preformed Corner Cloaks (ZX-16)

These are required where a step is required in the cavity due to use of non standard brickwork sizes. Dimensions to be provided to manufacturer for fabrication.

REV. A - SITE NAME ADDED. 13.05.25

Composite front door with weather bar and compression weather strip.

Standard mobility threshold.

DPC level min. 150mm above ramp.

I.G / Ian Firth 2 part synthetic cill with 30mm overhang

Gas resistant DPC sandwiched in joint below sill & turned up against edge of floor slab

Gradient 1 in 20. Paving slab.

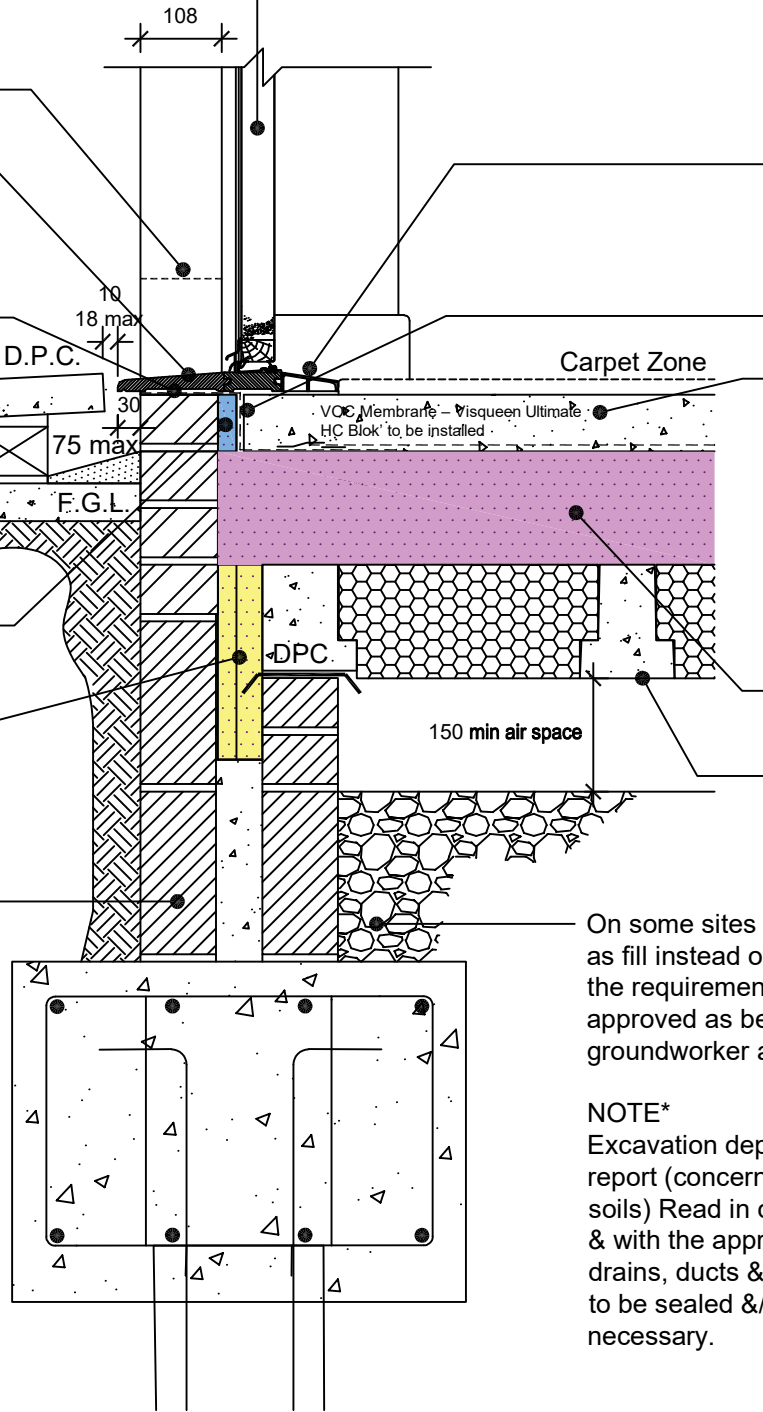
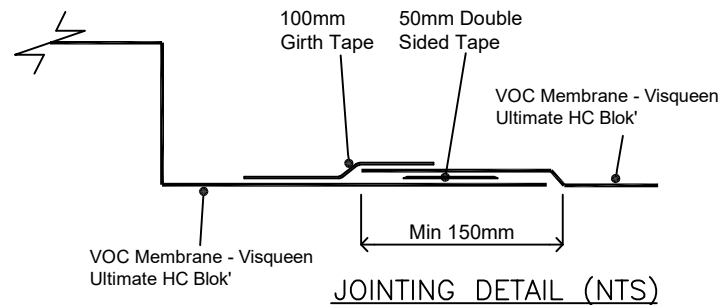
Perpends to be left open to facilitate drainage.

30mm P34 insulation strip

25mm Thermal Economics Platinum Ground Floor Edge Strip, with 35mm Platinum Board behind to fill 60mm cavity. Refer to plan at DPC level & Isometric.

H&H Celcon blockwork - refer to latest Group block suppliers list.  
3.6N - 0.24W/mK (Density - 600KG/m<sup>3</sup>)  
7.3N - 0.30W/mK (Density - 730KG/m<sup>3</sup>)  
Refer to house type working drawing for blockwork strength required for walls and isolated piers.

Scale 1:10  
NOTE - Refer to Door Jamb Detail  
Colours shown for clarity only



Aluminium internal transition ramp from Ian Firth, Ref - STO844INRAMP (844mm or STO920INRAMP (920mm long). Longer lengths are available if level access is required to rear french doors. Sealed with mastic along each edge and secured to floor with 3 no screws for standard lengths referenced above.

600mm wide VOC Membrane - Visqueen Ultimate HC Blok'

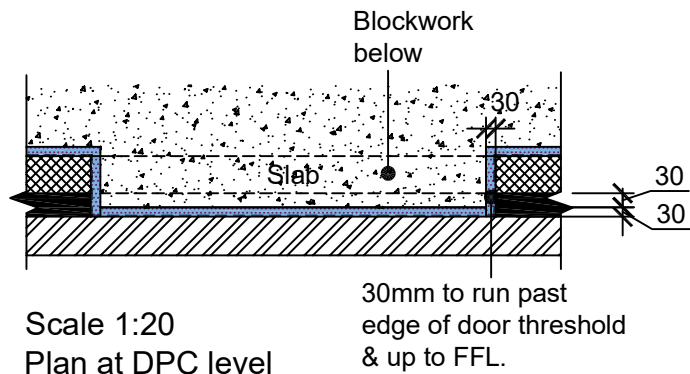
75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC membrane.

"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

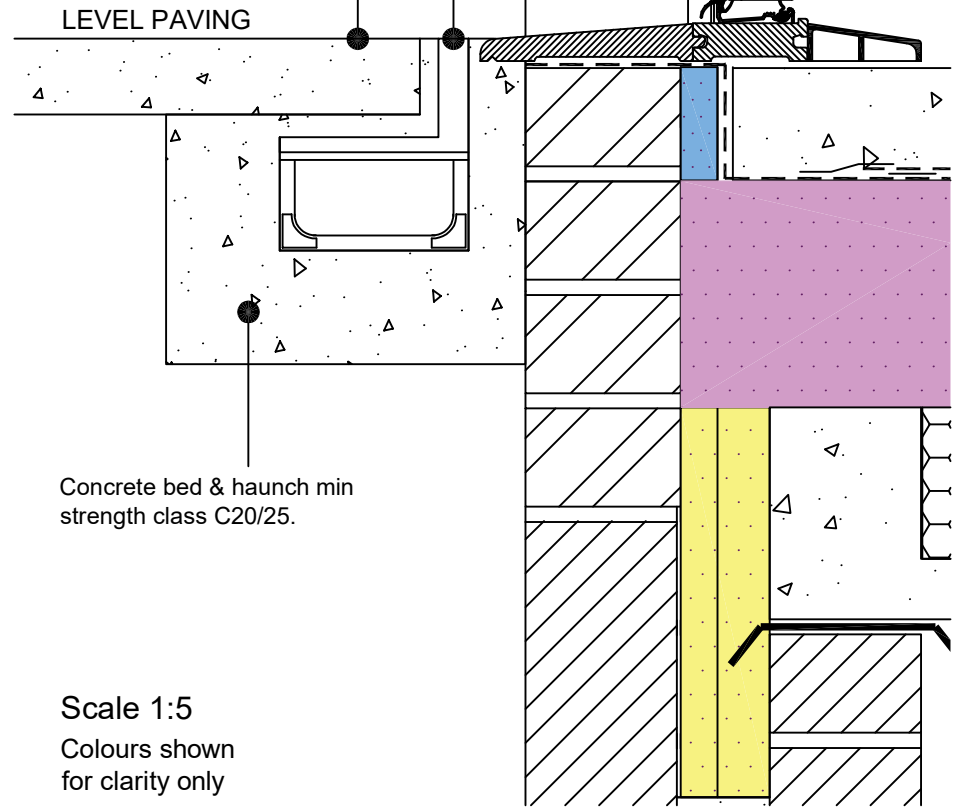
NOTE\*  
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer. All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.



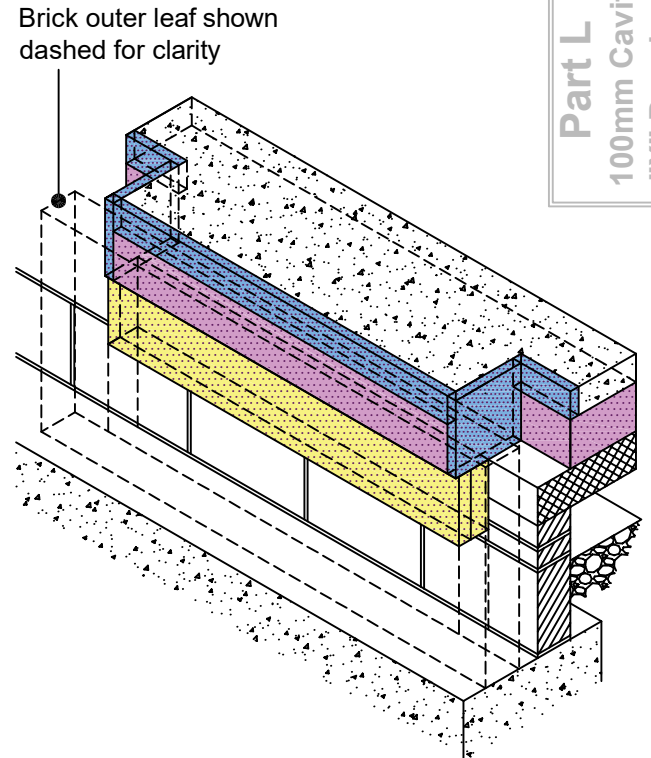
Scale 1:20  
Plan at DPC level

Colours shown for clarity only

125 x 140mm ACO HexDrain Brickslot MUST be used to level thresholds or when ramp falls towards door. Drainage to be connected to surface water drainage system. Paving slab to provide level access to door cill to ensure a mobility threshold is achieved (Part M).



Scale 1:5  
Colours shown for clarity only



Scale 1:20  
Isometric

Colours shown for clarity only

REV. A - MEMBRANE DETAILS ADDED. 16.05.25

## FRONT DOOR THRESHOLD - TIMBER FRAME GAS MEMBRANE

|              |          |          |     |            |     |          |   |       |                       |
|--------------|----------|----------|-----|------------|-----|----------|---|-------|-----------------------|
| Date         | MARCH 25 | Drawn by | SAH | Checked by | SAH | Revision | A | Scale | 1:5, 1:10 & 1:20 @ A3 |
| JF-TF21-GM04 |          |          |     |            |     |          |   |       |                       |

## Jet Floor - Waldmers Wood

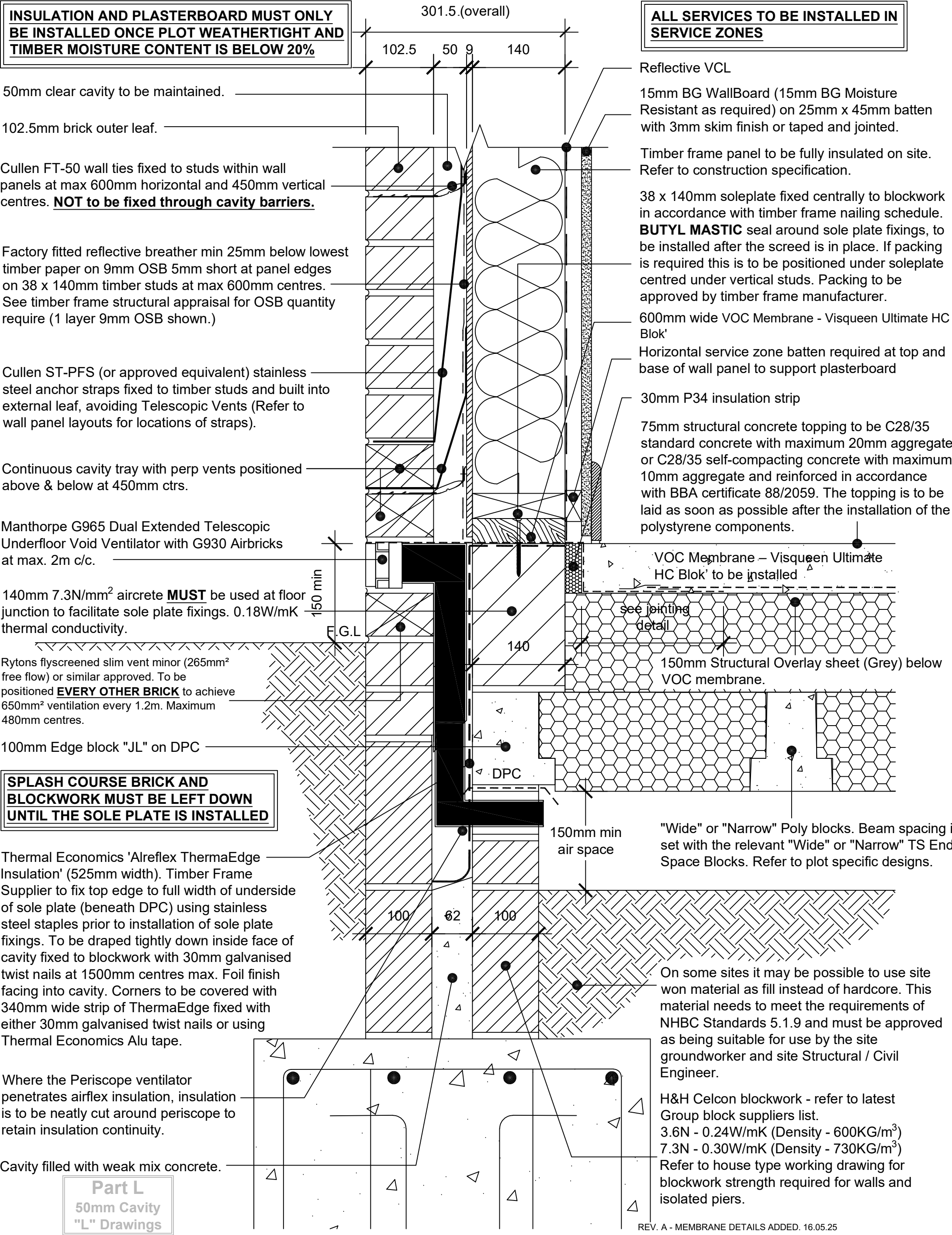
**WARNING TO HOUSE-PURCHASERS. Property Misdescriptions Act 1991**  
Buyers are warned that this is a working drawing and the contents of this drawing may be subject to change at any time and alterations and variations can occur during the progress of the build process. As such the layout, form, content and dimensions of the finished construction may differ materially from those shown. Whilst we make every effort to ensure our drawings are up to date there may from time to time be an unavoidable delay in updating these due to changes in regulations and/or re-planning. Purchasers are advised to check with the Sales Adviser whether any alterations have been made to this drawing. The contents of this drawing do not constitute a contract, part of any contract or warranty.

Barratt Homes (Manchester Division)  
Adamson House  
Towers Business Park  
Didsbury  
Manchester  
M20 2YY

Tel: 0161 447 5800

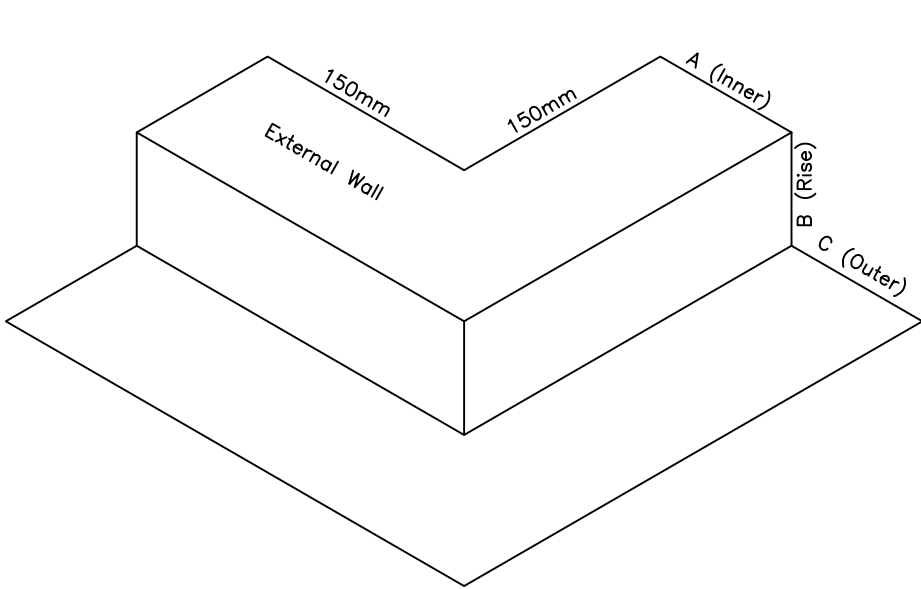


**BARRATT**  
MANCHESTER DIVISION

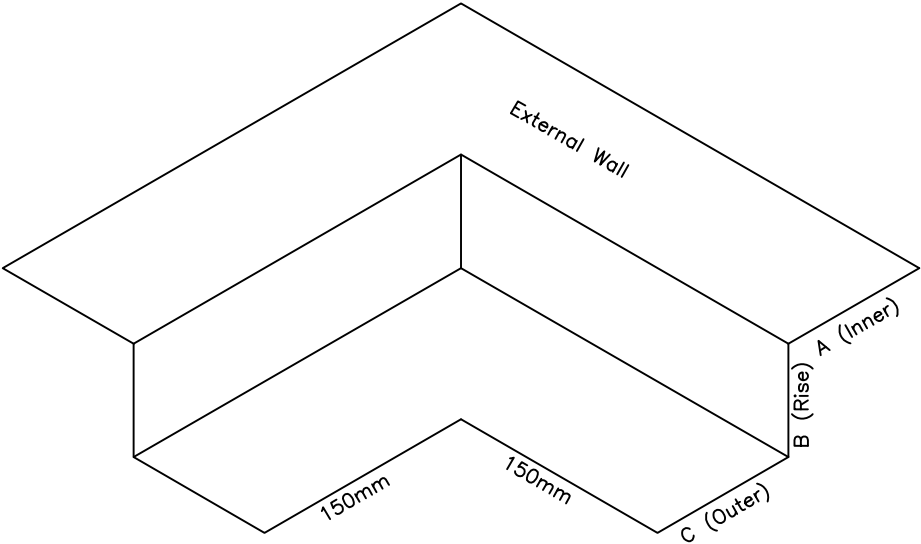


Part L  
50mm Cavity  
"L" Drawings

| External Corner Cloak |  |
|-----------------------|--|
| A (Inner)             |  |
| B (Rise)              |  |
| C (Outer)             |  |



Gas Resistant Preformed Corner Cloak  
 Dimensions to be provided to manufacturer for fabrication.



| Internal Corner Cloak |  |
|-----------------------|--|
| A (Inner)             |  |
| B (Rise)              |  |
| C (Outer)             |  |

REV. A - MEMBRANE DETAILS ADDED. 16.05.25

| GAS RESISTANT PREFORMED CLOAKS -<br>TIMBER FRAME |          |                   |
|--------------------------------------------------|----------|-------------------|
| Date                                             | MARCH 25 | JF-TF21-GM05      |
| Drawn by                                         | SAH      |                   |
| Checked by                                       | SAH      |                   |
| Revision                                         | A        | Scale<br>1:5 @ A3 |

**Jet Floor - Waldmers Wood**

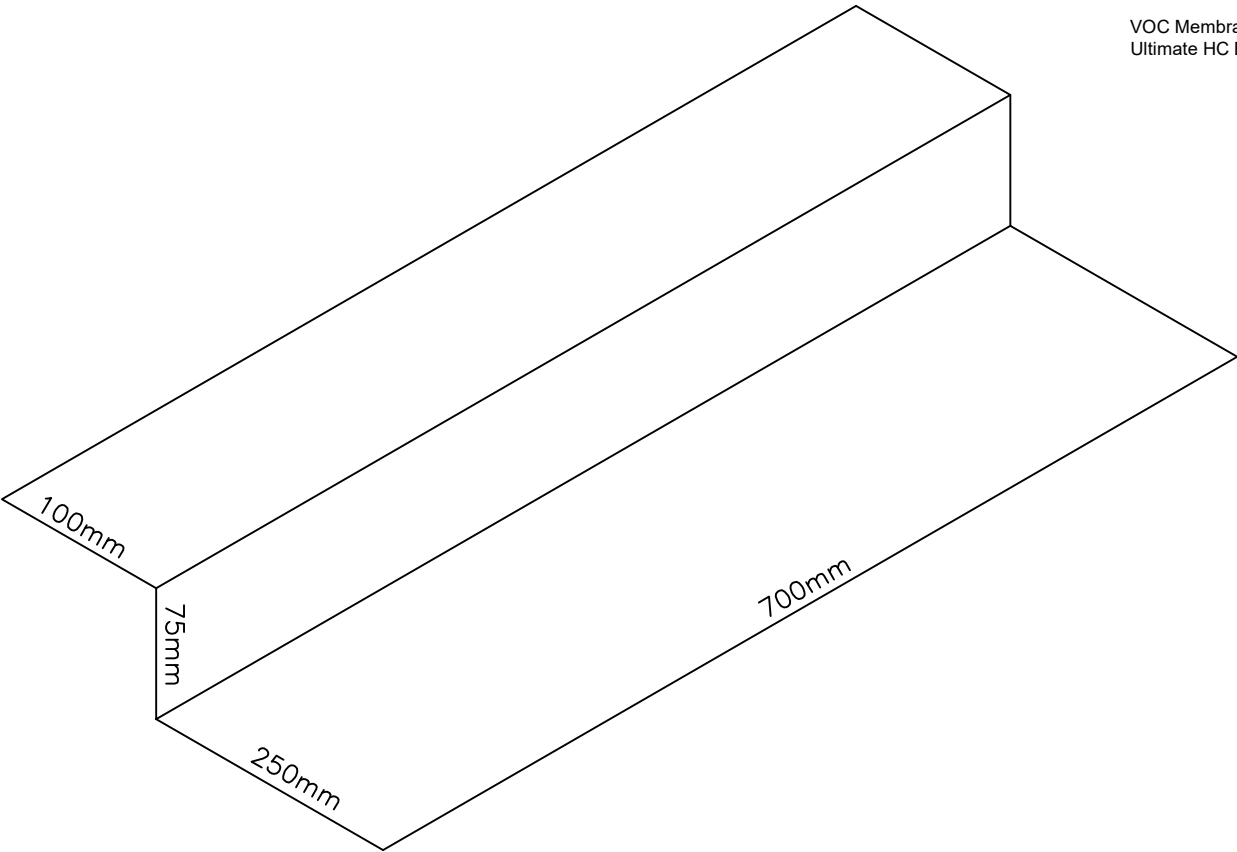
**WARNING TO HOUSE-PURCHASERS. Property Misdescriptions Act 1991**  
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 Adamson House  
 Towers Business Park  
 Didsbury  
 Manchester  
 M20 2YY  
 Tel: 0161 447 5800

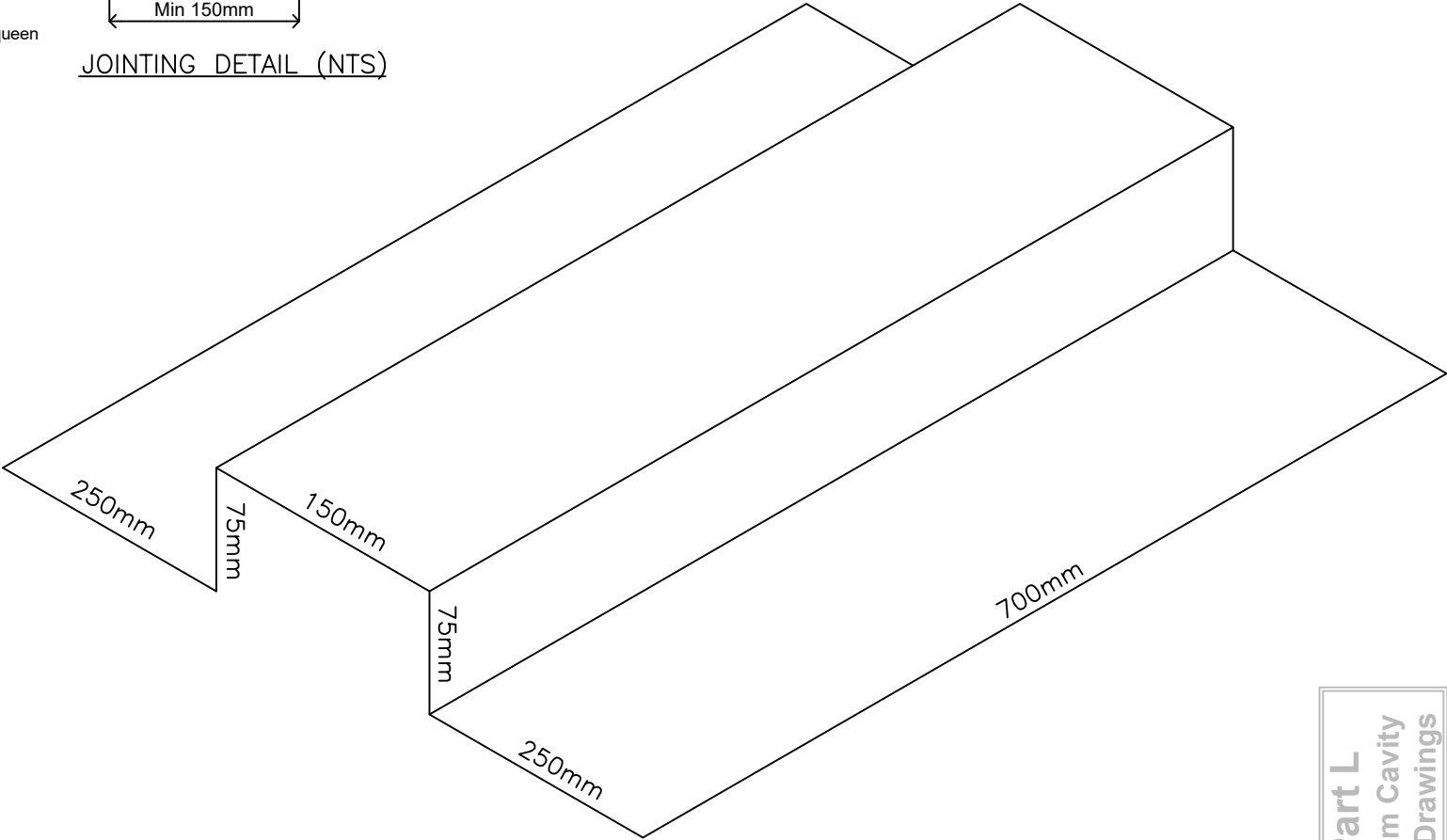


**BARRATT**

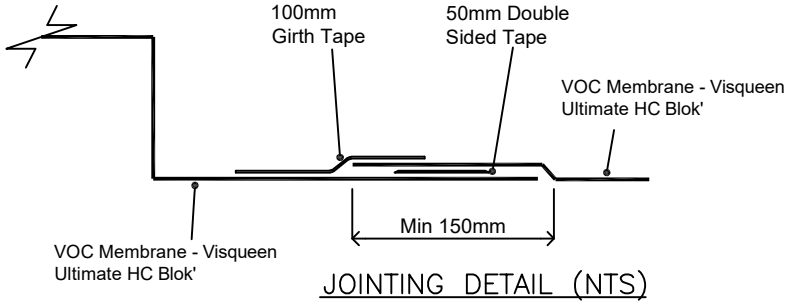
MANCHESTER DIVISION



Gas Resistant External Wall & Party Wall Cavity Tray  
 All Party Wall units are made to Order and should be ordered in sufficient time to allow manufacture.



Gas Resistant Internal Wall Cavity Tray  
 All Party Wall units are made to Order and should be ordered in sufficient time to allow manufacture.



**Part L**  
 50mm Cavity  
 "L" Drawings

**INSULATION AND PLASTERBOARD MUST ONLY BE INSTALLED ONCE PLOT WEATHERTIGHT AND TIMBER MOISTURE CONTENT IS BELOW 20%**

**SITE SPECIFIC ASSESSMENT OF THE WATER TABLE AND DRAINAGE LEVEL SHOULD BE REVIEWED FOR THE SUITABILITY OF THE USE OF THE INSULATED PRECAST CONCRETE UNITS.**

Studs to be fully filled with mineral wool batts or quilt (density 10 - 60 kg/m<sup>3</sup>) in accordance with Robust Detail E-WT-2.

OSB sheathing. Location & quantity as required by Structural Appraisal for housetype & site. To be confirmed by timber frame supplier.

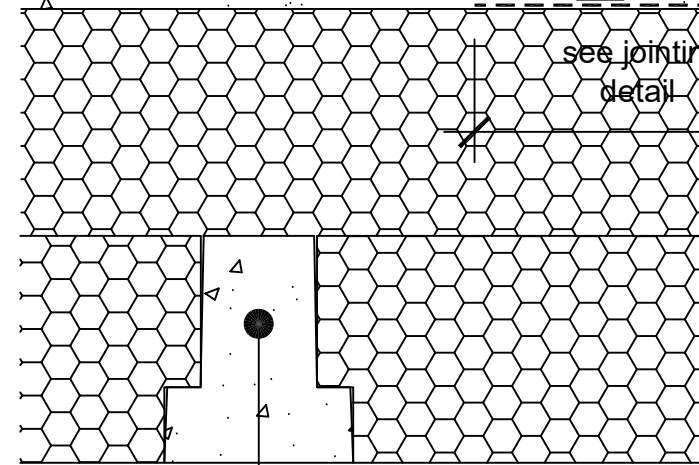
Cavity between timber frame leaves to be filled with 60mm mineral wool (TC 0.036 W/mK). Timber frame supplier MUST install party wall cavity insulation where cavity is fully OSB sheathed both sides

38 x 89mm soleplate fixed to 7.3N blockwork in accordance with timber frame nailing schedule. If packing is required this is to be positioned under soleplate centred under vertical studs. Packing to be approved by timber frame manufacturer.

DPC turned up face of soleplate and panel bottom rail prior to fixing plasterboard.

800mm wide VOC Membrane - Visqueen Ultimate HC Blok'

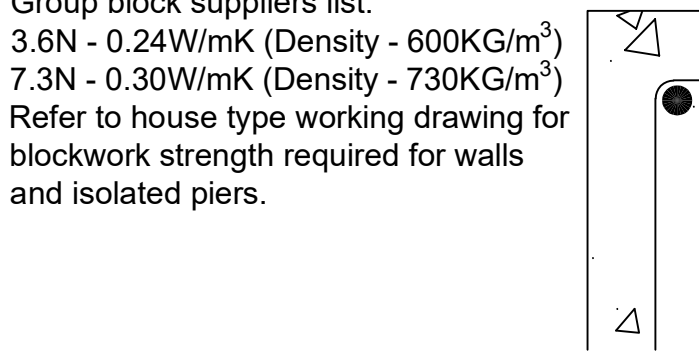
VOC Membrane - Visqueen Ultimate HC Blok' to be installed



"Wide" or "Narrow" Poly blocks. Beam spacing is set with the relevant "Wide" or "Narrow" TS End Space Blocks. Refer to plot specific designs.

Cavity filled with weak mix concrete.

H&H Celcon blockwork - refer to latest Group block suppliers list.  
3.6N - 0.24W/mK (Density - 600KG/m<sup>3</sup>)  
7.3N - 0.30W/mK (Density - 730KG/m<sup>3</sup>)  
Refer to house type working drawing for blockwork strength required for walls and isolated piers.



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**BARRATT**  
MANCHESTER DIVISION

**Jet Floor - Waldmers Wood**

**WARNING TO HOUSE-PURCHASERS. Property Misdescriptions Act 1991**  
Buyers are warned that this is a working drawing and the contents of this drawing may be subject to change at any time and alterations and variations can occur during the progress of the build process. As such the layout, form, content and dimensions of the finished construction may differ materially from those shown. Whilst we make every effort to ensure our drawings are up to date there may from time to time be an unavoidable delay in updating these due to changes in regulations and/or re-planning. Purchasers are advised to check with the Sales Adviser whether any alterations have been made to this drawing. The contents of this drawing do not constitute a contract, part of any contract or warranty.

Service zones where required by house type specific working drawings:

- 25mm zones to be formed using 25 x 45mm battens fixed to timber frame studs at 600mm centres (max).
- 38mm zones to be formed using 38 x 45mm battens fixed to timber frame studs at 600mm centres (max). Refer to working drawings.

12.5mm BG WallBoard (12.5mm BG Moisture Resistant as required) with 3mm skim finish or taped and jointed.

1 layer of 19mm BG Plank horizontally covered with 1 layer 12.5mm BG WallBoard vertically (total nom mass per unit area 22kg/m<sup>2</sup> both sides. Staggered Joints, include BG Moisture Resistant as required.

Butyl mastic seal around sole plate fixings.

30mm P34 insulation strip

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

VOC Membrane - Visqueen Ultimate HC Blok' to be installed

see jointing detail

225 min.

DPC

150mm Structural Overlay sheet (Grey) below VOC membrane.

150mm min air space

100 70 100

**Part L**  
50mm Cavity  
"L" Drawings

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

REV. A - MEMBRANE DETAILS ADDED. 16.05.25

|                                               |          |
|-----------------------------------------------|----------|
| <b>PARTY WALL - TIMBER FRAME GAS MEMBRANE</b> |          |
| Date                                          | MARCH 25 |
| Drawn by                                      | SAH      |
| Checked by                                    | SAH      |
| Revision                                      | A        |

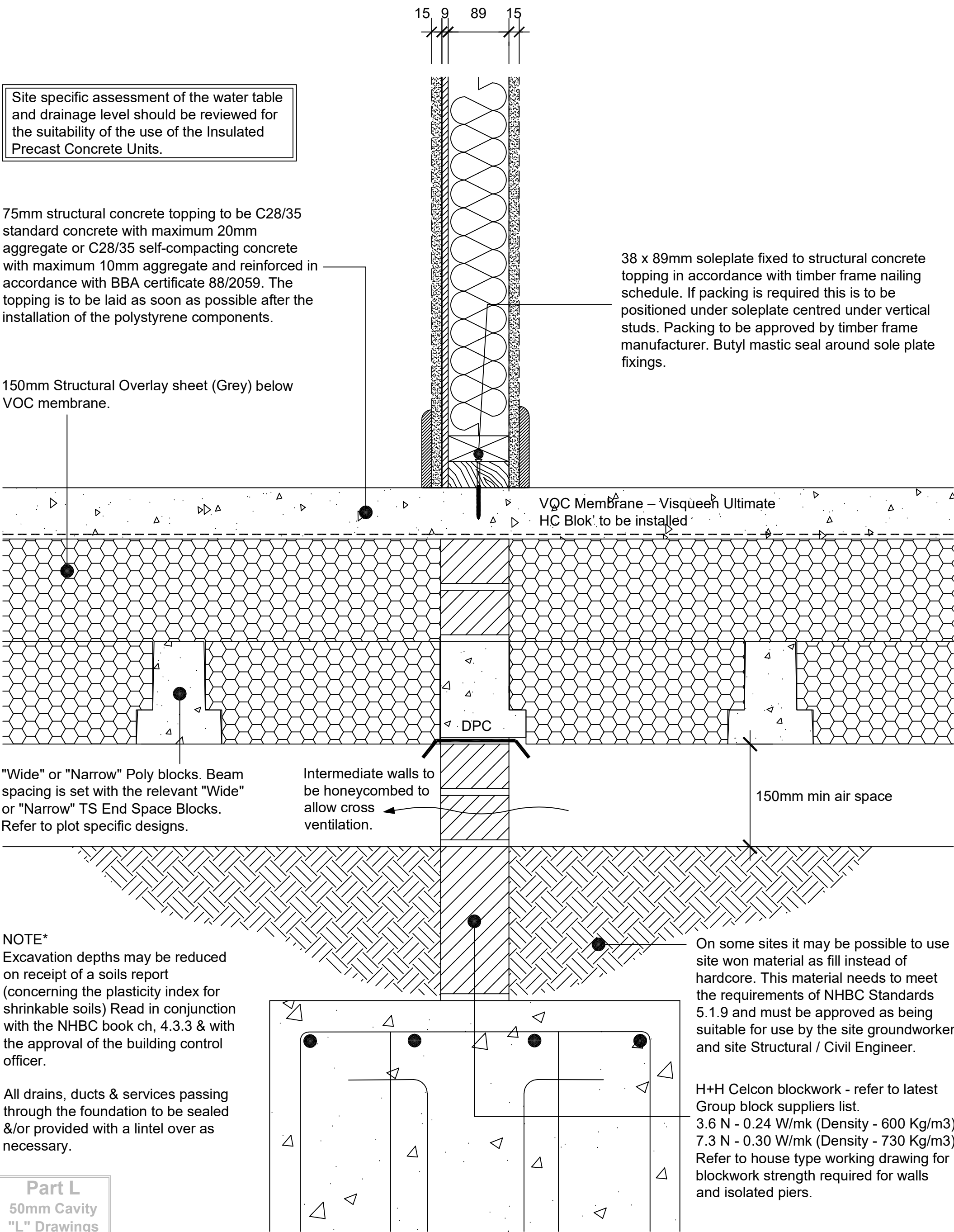
|                     |
|---------------------|
| <b>JF-TF21-GM02</b> |
| Scale               |
| 1:5 @ A3            |

Site specific assessment of the water table and drainage level should be reviewed for the suitability of the use of the Insulated Precast Concrete Units.

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC membrane.

38 x 89mm soleplate fixed to structural concrete topping in accordance with timber frame nailing schedule. If packing is required this is to be positioned under soleplate centred under vertical studs. Packing to be approved by timber frame manufacturer. Butyl mastic seal around sole plate fixings.

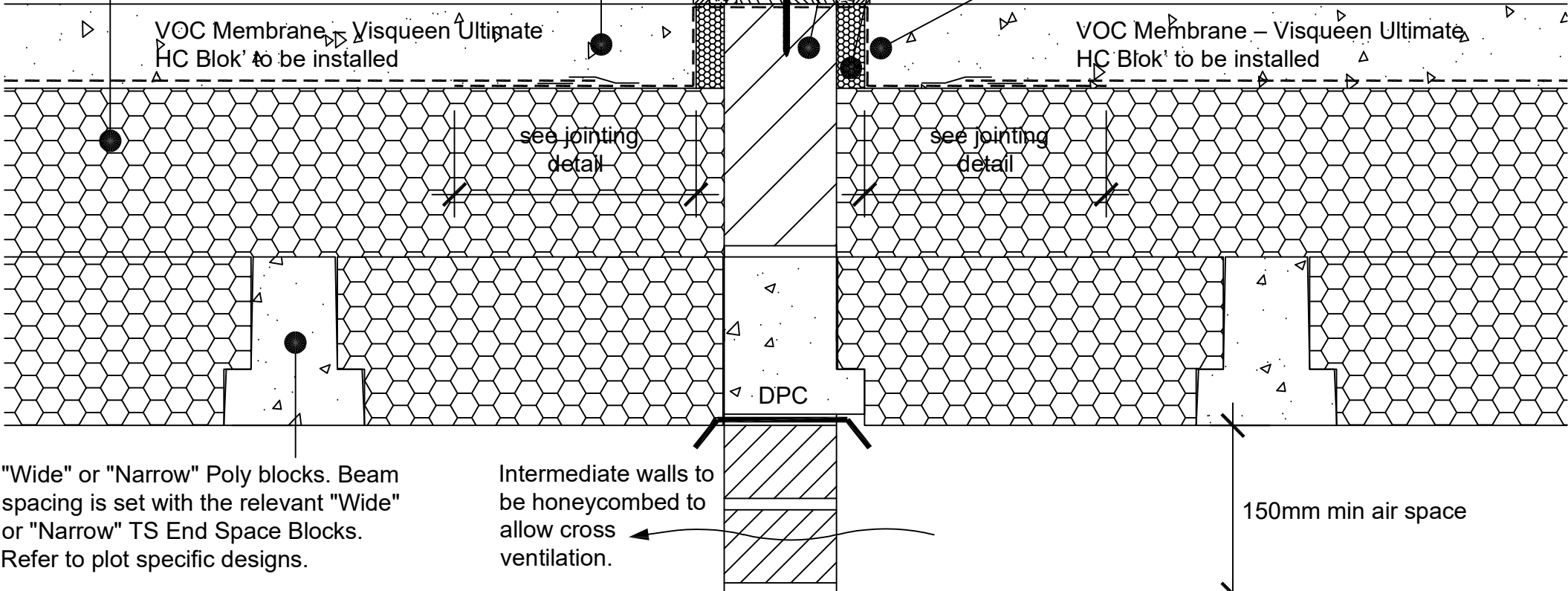


REV. A - MEMBRANE DETAILS ADDED. 16.05.25

Site specific assessment of the water table and drainage level should be reviewed for the suitability of the use of the Insulated Precast Concrete Units.

75mm structural concrete topping to be C28/35 standard concrete with maximum 20mm aggregate or C28/35 self-compacting concrete with maximum 10mm aggregate and reinforced in accordance with BBA certificate 88/2059. The topping is to be laid as soon as possible after the installation of the polystyrene components.

150mm Structural Overlay sheet (Grey) below VOC membrane.



NOTE\*  
Excavation depths may be reduced on receipt of a soils report (concerning the plasticity index for shrinkable soils) Read in conjunction with the NHBC book ch, 4.3.3 & with the approval of the building control officer.

All drains, ducts & services passing through the foundation to be sealed &/or provided with a lintel over as necessary.

On some sites it may be possible to use site won material as fill instead of hardcore. This material needs to meet the requirements of NHBC Standards 5.1.9 and must be approved as being suitable for use by the site groundworker and site Structural / Civil Engineer.

H+H Celcon blockwork - refer to latest Group block suppliers list.  
3.6 N - 0.24 W/mk (Density - 600 Kg/m3)  
7.3 N - 0.30 W/mk (Density - 730 Kg/m3)  
Refer to house type working drawing for blockwork strength required for walls and isolated piers.

Part L  
50mm Cavity  
"L" Drawings

REV. A - MEMBRANE DETAILS ADDED. 16.05.25

## **Appendix B**

### **Gas Membrane Validation Certificate Proforma**

## Gas Protection Validation Record



|                      |  |                       |                  |                           |                  |                               |         |                 |
|----------------------|--|-----------------------|------------------|---------------------------|------------------|-------------------------------|---------|-----------------|
| job number           |  | design source/ref:    |                  | specification source/ref: |                  | documents attached            | ✕       |                 |
| site name / location |  | building use:         | residential      | commercial                | other (describe) |                               |         |                 |
| plot number          |  | building description: | no. of storeys = | 2                         | Detached         | semi-detached                 | terrace | apartment block |
| compiled by:         |  | gas protection type:  | active / passive |                           | foundation type: | block and beam / raft / other |         |                 |

|                                          |                       |  |               |  |               |  |
|------------------------------------------|-----------------------|--|---------------|--|---------------|--|
| <b>Ventilated sub-floor (if present)</b> | inspection date/time: |  | inspected by: |  | photographed: |  |
|------------------------------------------|-----------------------|--|---------------|--|---------------|--|

✓ / ✕ notes (see overleaf)

|                                |  |    |
|--------------------------------|--|----|
| void former type               |  | 1. |
| height of void space           |  | 2. |
| gravel type                    |  | 3. |
| pipe size and spacing          |  | 4. |
| external wall airbricks        |  | 5. |
| internal sleeper walls         |  | 6. |
| external vent trenches / ducts |  | 7. |

|                    |                       |  |               |  |               |  |
|--------------------|-----------------------|--|---------------|--|---------------|--|
| <b>Gas barrier</b> | inspection date/time: |  | inspected by: |  | photographed: |  |
|--------------------|-----------------------|--|---------------|--|---------------|--|

|                           |  |     |
|---------------------------|--|-----|
| membrane type             |  | 8.  |
| extent of coverage        |  | 9.  |
| slab/membrane condition   |  | 10. |
| laps and joints           |  | 11. |
| damp-proof course         |  | 12. |
| service entries and seals |  | 13. |
| Integrity testing         |  | 14. |

**Gas Protection Validation Record**

|            |            |            |
|------------|------------|------------|
| Photograph | Photograph | Photograph |
| Photograph | Photograph | Photograph |

## Gas Protection Validation Record



## Guide notes:

|    |                                |                                                                                                                                                                                                                                                                                                                                                                                                           |
|----|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1  | void former type               | proprietary type - manufacturer and specification, in accordance with design? Installed properly without damage?                                                                                                                                                                                                                                                                                          |
| 2  | height of void space           | height of proprietary former or constructed ventilation space below suspended floor - note any debris on void / obstructions to air flow, note formation surface soil type (e.g. crushed concrete/brick), any evidence of flooding                                                                                                                                                                        |
| 3  | gravel type                    | gravel type, if used (limestone / granite etc.) and any specification (e.g. 6F2), typical particle dimensions (mm), apparent fines content (low/high), compaction (loose/dense), waterlogging / contamination by clay, organic matter, other debris                                                                                                                                                       |
| 4  | pipe size and spacing          | diameter in mm; material type (e.g. PVC); slotted or perforated; positioning and spacing / separation and jointing as on design drawing - if not sketch arrangement - do pipes connect with external (telescopic / swan-neck) vents?                                                                                                                                                                      |
| 5  | external wall airbricks        | check numbers, size and positions as design drawing (if not shown, make sketch; check for blockage, e.g. by mortar, or soil / pavings etc.                                                                                                                                                                                                                                                                |
| 6  | internal sleeper walls         | check for ventilation holes - e.g. honeycombe brickwork or pipe crossings - note size, spacing and location - in accordance with design?                                                                                                                                                                                                                                                                  |
| 7  | external vent trenches / ducts | check whether located and constructed in accordance with design drawings; if open-topped gravel, note gravel type and presence of fines / contamination; if pipe or other vents - check positions and construction for functionality and absence of blockages - vents may be built over                                                                                                                   |
| 8  | membrane type                  | note manufacturer and product specification, including batch / roll numbers if present - in accordance with specification? check stock storage arrangements - protected from dirt and damage?                                                                                                                                                                                                             |
| 9  | extent of coverage             | if membrane is incomplete, further inspection will be required - note areas completed / incomplete - is membrane fully visible or have internal walls been constructed over membrane / screed placed?                                                                                                                                                                                                     |
| 10 | slab/membrane condition        | record presence of debris / rough surfaces, in particular sharp projections, below or above membrane; record locations of all punctures or repairs, note arrangements to protect membrane surface from traffic / tools and equipment / materials, and temporary weighting down of membrane, e.g. use of boards - record evidence of footprints / tracks on membrane surface, creases or water/wind damage |
| 11 | laps and joints                | check the all joints are lapped and sealed in accordance with manufacturer's requirements / specification, particularly where creases/folds are present (usually minimum 150mm laps with double-sided tape between sheets, and single-sided tape on top surface; note size of sheets and frequency of edge seals                                                                                          |
| 12 | damp-proof course              | record DPC manufacturer and product code - usually integrated with the membrane; measure the DPC projection from external wall in mm; check laps and seals between membrane and DPC - note any potential stress points and tension between the two; check for damage to DPC                                                                                                                               |
| 13 | service entries and seals      | note number, position and diameter of service entries - check top hat seal arrangements in accordance with design / specification (laps and seals between top hat and floor membrane, pipe upstand is usually a minimum 150mm) check, with jubilee clips to secure top hat seal to pipe - note presence of clips and tightness of connections                                                             |
| 14 | Integrity testing              | Has integrity testing been undertaken on this plot? If yes, who undertook the testing (company name) and what type of test did they use (air lancing/other test)? Append a copy of the testing certificate to this report.                                                                                                                                                                                |

**Gas Protection Validation Record**



These buildings have PASSED inspection.

An additional inspection IS NOT required for this plot.

SGP Staff:

Signed:

SGP Member:

Signed:

## **Appendix C**

### **Cover System Validation Certificate Proforma**

## Soil Cover Validation Record



|                      |  |                               |        |                                                |           |                                                                                                                                           |   |
|----------------------|--|-------------------------------|--------|------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|---|
| Job number           |  | Depth ref:                    |        | Quality ref:                                   |           | Other documents attached                                                                                                                  | ✓ |
| Date                 |  | Area use:                     | garden | landscaped                                     | stockpile | other                                                                                                                                     |   |
| Site name / location |  | Size area (m):                |        | Approx Area (m <sup>2</sup> ):                 |           | Approx Depth Top (m):                                                                                                                     |   |
| Plot / location:     |  |                               |        | Approx Depth Sub (m):                          |           | Approx Volume Top (m <sup>3</sup> ):                                                                                                      |   |
| Compiled by:         |  |                               |        | Approx Volume Sub (m <sup>3</sup> ):           |           |                                                                                                                                           |   |
|                      |  | Number depth entries required |        | x (at 1 per 3 gardens);<br>x entries provided. |           | Number samples required: x <b>(1 per 250m<sup>3</sup> TS Greenfield Source; minimum of 3 from any one source).</b> x TS samples provided. |   |

|                     |    |                       |  |               |  |               |   |
|---------------------|----|-----------------------|--|---------------|--|---------------|---|
| Quality Validation  |    | inspection date/time: |  | inspected by: |  | photographed: | ✓ |
| notes (see below)   |    | ✓ / ✕                 |  |               |  |               |   |
| Source Topsoil      | 1. | ✓                     |  |               |  |               |   |
| Description Topsoil | 2. | ✓                     |  |               |  |               |   |
| Sample Topsoil      | 3. | ✓                     |  |               |  |               |   |
| Source Subsoil      | 4. | ✕                     |  |               |  |               |   |
| Description Subsoil | 5. | ✕                     |  |               |  |               |   |
| Sample Subsoil      | 6. | ✕                     |  |               |  |               |   |

## Soil Cover Validation Record



## Topsoil Analysis Summary

| contaminant            | soil standard adopted (mg/kg) | concentrations (mg/kg) | compliant? |
|------------------------|-------------------------------|------------------------|------------|
| asbestos Fibres        | NAD                           |                        | Yes        |
| pH                     | -                             |                        | Yes        |
| soil organic matter    | -                             |                        | -          |
| arsenic                | 37                            |                        | Yes        |
| cadmium                | 11                            |                        | Yes        |
| chromium III           | 910                           |                        | Yes        |
| chromium VI            | 6                             |                        | Yes        |
| copper                 | 2,400                         |                        | Yes        |
| lead                   | 200                           |                        | Yes        |
| mercury                | 40                            |                        | Yes        |
| nickel                 | 130                           |                        | Yes        |
| zinc                   | 3,700                         |                        | Yes        |
| naphthalene            | 2.3                           |                        | Yes        |
| acenaphthene           | 210                           |                        | Yes        |
| acenaphthylene         | 170                           |                        | Yes        |
| fluorene               | 170                           |                        | Yes        |
| phenanthrene           | 95                            |                        | Yes        |
| anthracene             | 280                           |                        | Yes        |
| fluoranthene           | 2,400                         |                        | Yes        |
| pyrene                 | 620                           |                        | Yes        |
| benzo(a)anthracene     | 7.2                           |                        | Yes        |
| chrysene               | 15                            |                        | Yes        |
| benzo(b/k)fluoranthene | 2.6                           |                        | Yes        |
| benzo(a)pyrene         | 2.2                           |                        | Yes        |
| indeno(123cd)pyrene    | 27                            |                        | Yes        |

| Contaminant           | Soil standard adopted (mg/kg) | Concentrations (mg/kg) | Compliant? |
|-----------------------|-------------------------------|------------------------|------------|
| dibenzo(ah)anthracene | 0.24                          |                        | Yes        |
| benzo(ghi)perylene    | 320                           |                        | Yes        |
| Aliphatic C5-C6       | 42                            |                        | Yes        |
| Aliphatic C6-C8       | 100                           |                        | Yes        |
| Aliphatic C8-C10      | 27                            |                        | Yes        |
| Aliphatic C10-C12     | 130                           |                        | Yes        |
| Aliphatic C12-C16     | 1,100                         |                        | Yes        |
| Aliphatic C16-C21     | 65,000                        |                        | Yes        |
| Aliphatic C21-C35     | 65,000                        |                        | Yes        |
| Aromatic C6-C7        | 70                            |                        | Yes        |
| Aromatic C7-C8        | 130                           |                        | Yes        |
| Aromatic C8-C10       | 34                            |                        | Yes        |
| Aromatic C10-C12      | 74                            |                        | Yes        |
| Aromatic C12-C16      | 140                           |                        | Yes        |
| Aromatic C16-C21      | 260                           |                        | Yes        |
| Aromatic C21-C35      | 1,100                         |                        | Yes        |

## Soil Cover Validation Record



## Subsoil Analysis Summary

| contaminant            | soil standard adopted (mg/kg) | concentrations (mg/kg) | compliant? |
|------------------------|-------------------------------|------------------------|------------|
| asbestos Fibres        | NAD                           |                        | Yes        |
| pH                     | -                             |                        | Yes        |
| soil organic matter    | -                             |                        | -          |
| arsenic                | 37                            |                        | Yes        |
| cadmium                | 11                            |                        | Yes        |
| chromium III           | 910                           |                        | Yes        |
| chromium VI            | 6                             |                        | Yes        |
| copper                 | 2,400                         |                        | Yes        |
| lead                   | 200                           |                        | Yes        |
| mercury                | 40                            |                        | Yes        |
| nickel                 | 130                           |                        | Yes        |
| zinc                   | 3,700                         |                        | Yes        |
| naphthalene            | 2.3                           |                        | Yes        |
| acenaphthene           | 210                           |                        | Yes        |
| acenaphthylene         | 170                           |                        | Yes        |
| fluorene               | 170                           |                        | Yes        |
| phenanthrene           | 95                            |                        | Yes        |
| anthracene             | 280                           |                        | Yes        |
| fluoranthene           | 2,400                         |                        | Yes        |
| pyrene                 | 620                           |                        | Yes        |
| benzo(a)anthracene     | 7.2                           |                        | Yes        |
| chrysene               | 15                            |                        | Yes        |
| benzo(b/k)fluoranthene | 2.6                           |                        | Yes        |
| benzo(a)pyrene         | 2.2                           |                        | Yes        |
| indeno(123cd)pyrene    | 27                            |                        | Yes        |

| Contaminant           | Soil standard adopted (mg/kg) | Concentrations (mg/kg) | Compliant? |
|-----------------------|-------------------------------|------------------------|------------|
| dibenzo(ah)anthracene | 0.24                          |                        | Yes        |
| benzo(ghi)perylene    | 320                           |                        | Yes        |
| Aliphatic C5-C6       | 42                            |                        | Yes        |
| Aliphatic C6-C8       | 100                           |                        | Yes        |
| Aliphatic C8-C10      | 27                            |                        | Yes        |
| Aliphatic C10-C12     | 130                           |                        | Yes        |
| Aliphatic C12-C16     | 1,100                         |                        | Yes        |
| Aliphatic C16-C21     | 65,000                        |                        | Yes        |
| Aliphatic C21-C35     | 65,000                        |                        | Yes        |
| Aromatic C6-C7        | 70                            |                        | Yes        |
| Aromatic C7-C8        | 130                           |                        | Yes        |
| Aromatic C8-C10       | 34                            |                        | Yes        |
| Aromatic C10-C12      | 74                            |                        | Yes        |
| Aromatic C12-C16      | 140                           |                        | Yes        |
| Aromatic C16-C21      | 260                           |                        | Yes        |
| Aromatic C21-C35      | 1,100                         |                        | Yes        |

## Soil Cover Validation Record



|                            |                       |                        |                     |                       |               |   |
|----------------------------|-----------------------|------------------------|---------------------|-----------------------|---------------|---|
| <b>Depth Validation</b>    | Inspection date/time: |                        | Inspected by:       |                       | Photographed: | ✓ |
| Plot xx                    | Required Depth (mm)   | 600                    | Measured Depth (mm) |                       | PASS          |   |
| Source Topsoil             |                       |                        |                     |                       |               |   |
| Source Subsoil             |                       |                        |                     |                       |               |   |
| Soil profile/description   |                       |                        |                     |                       |               |   |
| Photograph (depth profile) |                       | Photograph (soil type) |                     | Photograph (location) |               |   |

## Soil Cover Validation Record



These plots have PASSED testing for quality and depth

An additional inspection visit IS NOT required.

SGP Staff:

Signed:

SGP Member:

Signed:

**Guide notes:**

|    |                        |                                                                                                                                                                                       |
|----|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. | Source Topsoil         | As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).                              |
| 2. | Description Topsoil    | Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other? |
| 3. | Sample Topsoil         | Date sampled, date submitted, sample reference, laboratory, laboratory job number                                                                                                     |
| 4. | Source Subsoil         | As much information as possible: Date Delivered, volume/weight delivery, supplier, certification, source address (yard), original source address (site).                              |
| 5. | Description Subsoil    | Full Description: Grading (Particle Size: clay, silt, sand, gravel), organic content, colour, odour, minerals, stone, glass, slate, ash, clinker, coal, coke, tarmac, plastic, other? |
| 6. | Sample Subsoil         | Date sampled, date submitted, sample reference, laboratory, laboratory job number                                                                                                     |
| 7. | Material Acceptability | Presence and amount of visible deleterious or otherwise unacceptable materials, e.g. glass, metal, plastic, Knotweed shoots etc.                                                      |