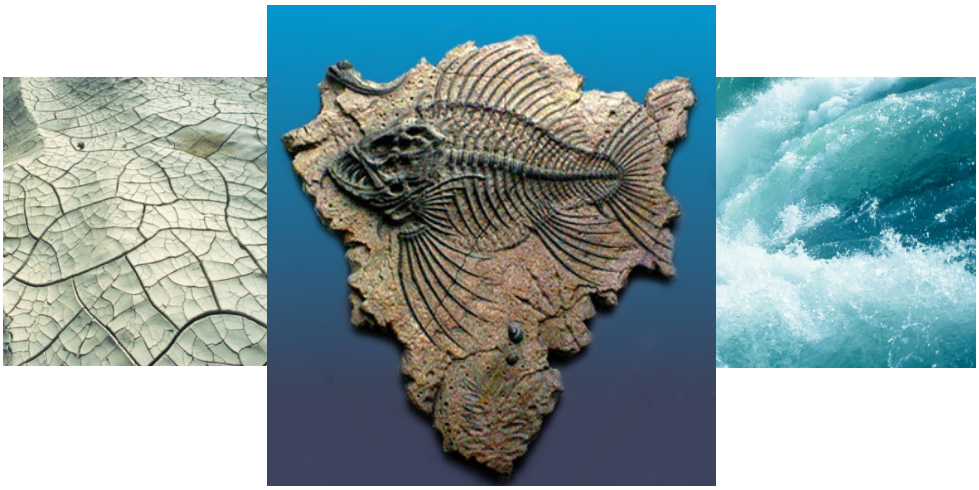
McLorinan Consulting Ltd

Hydrogeological & Environmental Consultants



Report No. P684-1

REMEDIATION STRATEGY

RESIDENTIAL HOUSING DEVELOPMENT
WEST END LANE, WEST HAMPSTEAD
LONDON, UK

April 2014

For
O`Hare and McGovern Ltd

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 Report Brief

McLorinan Consulting Ltd was appointed by O`Hare and McGovern Ltd (OHMG) to undertake a Remediation Strategy for a proposed residential development located on lands at West End Lane, West Hampstead, London.

The site is currently derelict / vacant and is to be developed for mixed use commercial (shops / retail) and residential housing (West End Square), consisting of the development of seven residential tower blocks, with commercial ground floor in a number of the blocks. The site was formally utilised for commercial / industrial use.

This report has been prepared following the guidelines set out in the Environment Agency guidance ('Model Procedures for the Management of Land Contamination – Contaminated Land Report (CLR) 11'). CLR 11 provides the technical framework for structured decision-making about land contamination and builds on previous work carried out under the Contaminated Land Research Programme (of the former Department of the Environment). CLR 11 has been adopted as the standard set of guidance procedures for contaminated land risk assessments in the UK.

1.2 Site Reports

A number of previous site assessments have been undertaken for the site and submitted to Camden Council for review and are now summarised;

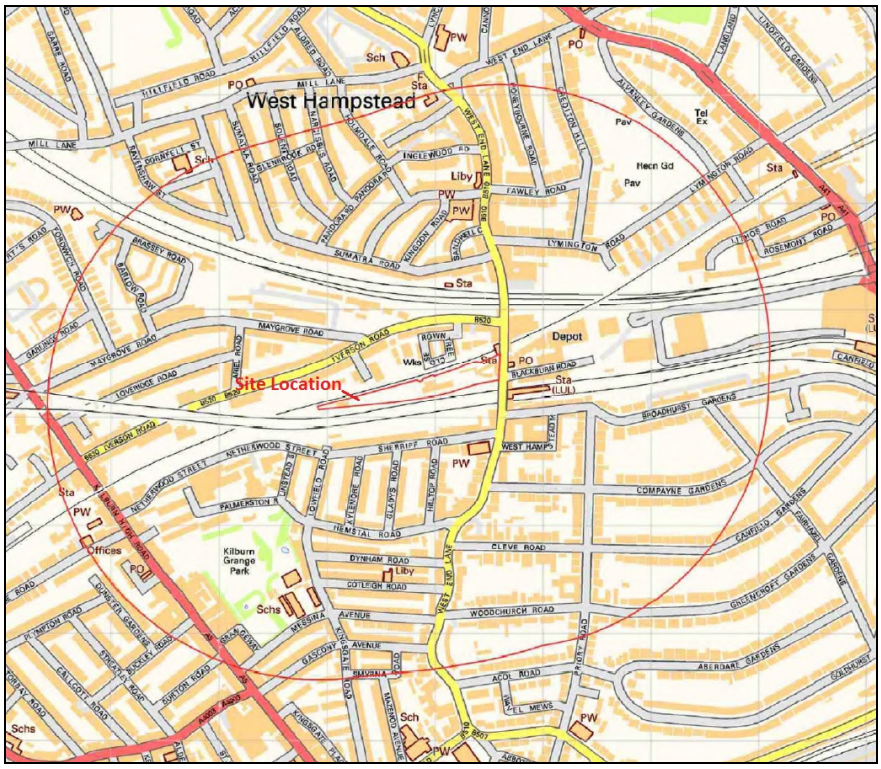
- Ramboll, Project No. 19189, West End Square, West Hampstead, Contaminated Land Interpretative Report, April 2012;
- Ground Engineering Ltd, Project No. C12934, Site Investigation Report, West Hampstead Square, West End Lane, August 2013.

The information contained within these reports has been reviewed and used in the Remediation Strategy presented in this report.

2.0 SITE DESCRIPTION

The site area is located at NGR 525462(E) 184660(N) and is situated in northwest London. A site location map is presented as Figure 1;

Figure 1: Site Location Map, West End Lane, London



The site has an overall surface area of ~1ha, with surface covering of concrete, vegetation and demolition type material. The site is bounded on the northern and southern boundary by railway lines. The site is accessed from West End Lane, on the eastern boundary of the site. A site plan is presented at the end of this report as Figure 2;

3.0 REVIEW OF PREVIOUS ASSESSMENTS

3.1 Ramboll April 2012

As previously mentioned a contaminated land interpretative report was undertaken at the site by Ramboll in April 2012. The investigation consisted of the following scope of works;

- Completion of a ground investigation with assessment of soil, groundwater, and ground gas condition, plus associated chemical sampling and analysis;
- Interpretation of the results of the ground investigation using generic assessment criteria (GAC) and production of a risk assessment based on the findings;
- Recommendations for further assessment, investigation and remediation options if necessary as well as outline of implications for the design and construction of the proposed development.

The intrusive site investigation consisted of the drilling of three cable percussive boreholes, drilling of six window sampling boreholes and excavation of seven trial pits within the boundary of the site. A number of the investigation points were installed for groundwater and gas monitoring purposes. Groundwater and soil samples were collected from all the monitoring locations and sent for analytical testing.

The ground conditions encountered at the site consisted of a sequence of made-ground overlying London Clay. The made-ground is described in the report as consisting of sandy gravel, above a soft to firm, slightly sandy, slightly gravelly clay. The made-ground also comprised ash, brick, flint, concrete, coal and glass.

Soil results were compared against the relevant Soil Guidance Values (SGV`s) equivalent to residential end-use. The soil results have indicated exceedances for a number of metals (lead and nickel), hydrocarbons and PAH`s (various), across the entire site. Groundwater results also indicated the presence of compounds at concentrations above the assessment criteria (UK Drinking Water Standards and Environmental Quality Standards) with exceedance compounds consisting of PAH`s (various), metal (various) and hydrocarbons.

A ground gas risk assessment was undertaken at the site and consisted of six rounds of ground gas monitoring from the available gas monitoring boreholes. Gas results were then assessed in accordance with CIRIA C665. The gas risk assessment concluded that the site was classified as Characterisation Situation 2 (CS2).

Based on the assessment of the results obtained during the intrusive investigation a Conceptual Site Model (CSM) was developed in the report and is presented in Table 1;

Table 1: Summary of CSM, West End Lane, London

Source	Contaminant	Receptor	Discussion of Results	Risk Classifcation
Made Ground	Metals and PAH`s	Groundwater	Impact to groundwater is of mild to minor consequence owing to the site's location and that it is sited over geology classified in terms of aquifer status as being non-productive strata	**Low Risk**
		Vegetation which roots in made ground	Concentrations of metals are significantly elevated above MAFF threshold values, and therefore pose a high likelihood of affecting plant growth if plants root in the made ground	**Moderate /Low Risk**
		Future site users in soft landscaped areas at ground level	Concentrations of metals and PAHs (in particular lead and benzo(a)pyrene) are elevated above GAC site wide, and could pose a risk to end users in soft landscaped areas	**Moderate Risk**
Existing above ground diesel tank and associated pump	TPH	Future site users and visitors	Concentrations of TPH in soil and groundwater pose a potential risk to end users via contact and vapour pathways	**Very High Risk**
		Groundwater	TPH is present in groundwater at concentrations which pose a potential risk to drinking water and/or surface water. However, the assessment is over conservative owing to the site being over an area of non-productive strata and absence of nearby surface water bodies. Therefore the consequence of groundwater impact is mild. Further assessment may be required.	**Moderate /Low Risk**
Ground gas and vapours	Carbon dioxide and volatile vapours	Future site users and visitors	Ground gas and vapours could pose a risk via migration into buildings, and for volatiles via outdoor inhalation pathways. Risks are likely to require remediation	**High Risk**

The CSM identified significant risk (moderate to high) relating to ground gas (inhalation of vapors by future site occupants) and the reduced quality soils (direct contact with contaminated soil by future site users) and as such the following remedial measures were proposed;

- For buildings at ground level, typical protection measures would include a minimum 2000g damp proof membrane (DPM) for reinforced concrete cast in situ floor slabs, or 2000g DPM / reinforced gas membrane for beam and block pre-cast concrete slab. Under floor venting or pressurisation would also be required for residential buildings at ground level, and may also be required for the commercial building;

- Due to the possibility of vapours arising from contaminants in soils and groundwater, the DPM would also need to be selected to be resistant to vapour ingress. The type of materials used in construction, in particular for the DPM would need to be resistant to the

hydrocarbon contaminants identified in the ground;

- Contact with made-ground would need to be prevented in soft landscaped areas. This could be achieved by incorporation of a clean soil cover system, with a geotextile marker layer separating the clean soil from made-ground beneath. The thickness of cover should be specified as part of the remediation scheme for the site, but would typically be in the region of 300mm to 600mm.

3.2 Ground Engineering Ltd August 2013

As previously mentioned Ground Engineering Ltd produced a Site Investigation Report for the site in August 2013. This assessment involved a combined Phase 1 Preliminary Risk Assessment (PRA) and Phase 2 Generic Quantitative Risk Assessment (GQRA).

The intrusive site investigation involved the drilling of five investigation boreholes by cable percussive technique and the drilling of twelve boreholes using window sampling technique. Selected samples were obtained during drilling operation and sent for chemical and geotechnical testing.

The ground conditions encountered were similar to that in the previous assessment, and consisted of a sequence of made-ground over London Clay. It is noted that obvious oil staining was observed in a number of the investigation boreholes, within the made-ground.

Shallow groundwater was encountered in a number of the investigation points, within the made – ground and London Clay. A number of the boreholes were subsequently installed for groundwater monitoring purposes.

Soil results were compared against the relevant Soil Guidance Values (SGV`s) equivalent to residential end-use. The results indicated a number of exceedances of the SGV`s within the made-ground and relate to arsenic, lead, mercury, and benzo(a)pyrene (BAP). Asbestos was not observed in any of the soil samples. Hydrocarbons were detected in the soil samples but below the SGV`s.

Groundwater analytical results were compared against the “The Water Supply (Water Quality) Regulations”. The results have indicated a number of exceedances across the site including metals (various) and hydrocarbons.

A total of nine number rounds of ground gas monitoring were undertaken at the site as part of this assessment. The gas risk assessment classified the site as Characterisation Situation 1 (CS1 CIRIA C665) and GREEN (NHBC Traffic Light System). The gas risk classifications determined for the site as part of this assessment would indicated that no specific gas protection measures would be required for the development.

Based on the assessment of the results obtained during the intrusive investigation a Conceptual Site Model (CSM) was developed in the report and is presented in Table 2;

Table 2: Summary of CSM, West End Lane, London

Receptor	Pathway	Estimated Potential for Linkage with Contaminant Sources						
		Drainage/ Buildings	Soil Beneath Site	Tanks Drums	Historical Uses	Current / Recent Uses	Soil Gas	Contamination Outside Site Boundary
Human Health Ground Workers	Ingestion and inhalation of contaminated soil, dust and vapour.	Moderate	Moderate	Moderate	Moderate	Moderate	Low	Very Low
Human Health Site Users	Ingestion and inhalation of contaminated soil, dust and vapour.	N/A	Moderate	N/A	Moderate	Moderate	Very Low	Very Low
Water Environment	Migration through ground into surface water and groundwater	N/A	Moderate	Moderate	Low	Moderate	Very Low	Very Low
Flora	Vegetation onsite growing on contaminated soil	N/A	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low
Building Materials	Contact with contaminated soil	N/A	Very Low	Very Low	Very Low	Very Low	Very Low	Very Low

Following development of the CSM, as detailed above, the following remedial measures were proposed in this assessment:

- For all areas of landscaping or communal gardens as identified by the redevelopment plan, it would be recommended that the underlying natural ground be exposed, or in deeper areas the made-ground should be removed to a minimum depth of 0.60m and replaced with an equivalent thickness of clean inert soil. This thickness of clean inert soil would be considered sufficient to break the pathway between the end users (target) and the contaminants (source)

contained within the made-ground;

- In the unlikely event that private gardens are envisaged, an increased depth of removal and thickness of imported subsoil and topsoil of 1.0m would need to be adopted or a 'no dig' barrier could be used below a 0.60m thick layer of imported subsoil and topsoil. Where the made-ground is less than 1.0m thick then the natural ground should be exposed and an imported topsoil/subsoil layer of the same thickness placed;

- Imported 'clean' natural soil/topsoil should be supported by verification certificates and re-tested to provide proof of its suitability. Documentation relating to the source of 'clean' natural soil should be available to the Local Planning Authority for approval prior to infilling.

3.3 Summary of Previous Assessments

Reviewing the CSM`s developed in both previous assessments, the main issues of concern relate to reduced quality made-ground across the surface of the site detected in both assessments and slightly elevated gas concentrations with the site classified as CS2 (in the Ramboll 2012 report only).

The significant receptor for this contamination has been considered to be human health in both reports, with future site users identified as the main receptors. Both reports considered that there was no significant environmental risk associated with contamination detected.

4.0 REMEDIATION STRATEGY

4.1 Soil Contamination

The risk posed to site users from direct contact with underlying soil is considered to be low given that majority of the site consists of hardstanding (roads and building). There are no gardens proposed on the ground floor of the development and therefore this potential pathway is not considered a significant risk. It is however noted that some small areas of the site, at ground level, are proposed for landscaping, and at these areas potential for direct contact with the underlying soils would be considered possible.

It is considered that emplacement of clean soils in landscaped areas of the development would act as a cover system and effectively break the source-receptor pathway, thereby negating any risk to future site users. The aim of the cover system is to create an engineered horizontal layer of “uncontaminated” material on site to sever the pollutant linkage and prevent direct contact between receptors, i.e. human

health, and the contaminated soil.

It is therefore recommended that the cover system on site incorporates a minimum thickness of 600mm of clean topsoil in all ground level landscaped areas. The aim of the cover system is to prevent direct human contact with contaminated soil and allow for planting of landscaping vegetation on site.

4.2 Gas Protection Measures

4.2.1 Proposed Gas Protection

The gas risk assessment carried out at the site in the Ramboll Assessment (April 2012) has classified the gas regime as a maximum of Characteristic Situation 2 Low Risk (Modified Wilson and Card Classification). In line with the guidance (CIRA C665) the following gas protection measures will be incorporated into the final building design;

- Buildings with commercial ground floor will be constructed of either a reinforced concrete cast in-situ floor slab (suspended, non-suspended or raft) with a 1200g DPM or block and beam or precast concrete slab with a 2000g DPM / gas resistant membrane;
- For buildings which have a residential ground floor, the floor slab design will be similar to that detailed above however in addition there will also be underfloor venting.

Given that hydrocarbons have been identified in both previous assessments as being present within the made-ground and shallow groundwater which underlies the site, it is recommended that a DPM / gas resistant membrane which is resistant to hydrocarbons and hydrocarbon vapour should be used in the building construction. A specification sheet has been provided with this report, as Appendix A, for a Visqueen GX hydrocarbon resistant gas protection membrane (4000g) and it is recommended that this product, or similar, should be used in the final building construction.

Cross sectional design drawings, detailing the proposed floor slab designs to be utilised at the site, including incorporation of gas protection measures, are presented as Appendix B.

4.2.2 Instructions for Contractors

Before installing a membrane the membrane manufacturer should be informed of the site conditions so that a suitable membrane specific to the site conditions can be provided. Before installation of the membrane the manufactures installation instructions should be consulted and made available to all

relevant site workers.

It is important that sections of the gas resistant membrane are joined together in the correct manner, so as not to allow any gas leakage between the joints in the membrane. Details of how this can be achieved is presented with the installation details for Visqueen GX in Appendix A, and also now summarised:

The following installation guidelines should be followed when installing the gas-resistant membrane:

- If possible, lay the membrane flat, avoid steps and corners, and use propriety components at these locations.
- Loose lay the membrane on to a clean surface that is free of any projection or sharp objects.
- All laps and joints should be in accordance with the manufacturers recommendations and ideally joint sealed with double-sided, self-adhesive tape rolled to provide a positive seal. Alternatively the flaps could be site-welded. If the joints are overlapped and site-welded, take care to avoid damaging the membrane during the welding operation.
- The adhesive tape can be used together with a patch of equivalent membrane to repair and punctures or tears in the membrane.
- High quality propriety tape suitable for carbon dioxide should be used, with a wide of minimum width of 75mm (one strip).
- Tape will not adhere to wet or damp surfaces. If surfaces are wet they must be dried with a warm air dryer.
- The gas-resistant membrane should be continued across cavity walls and internal walls.
- The membrane should be covered with the overlying construction (screed) as soon as possible.
- An alternative to double-sided tape is butyl bonding strips, which can be more damp tolerant than double-sided tape.

5.0 RISK TO CONSTRUCTION WORKERS

Potential pathways to construction workers may also exist but risks to site workers are considered low due to short term exposure and any risk will be reduced / managed through appropriate health and safety procedures employed by the contractor and as required by Construction Design and Management (CDM). This should include as a minimum, the use of Personal Protective Equipment (PPE).

6.0 REMEDIAL VERIFICATION REPORTING

6.1 Validating Imported / Reuse Material

In order to construct the clean cover system it may be necessary to import material onto the site or reuse material obtained during the site redevelopment (i.e. foundation excavations, services trench excavation etc). It is vital for the integrity of the clean cover system that this material is confirmed as uncontaminated and confirmation of this should be demonstrated in the validation process.

Imported or reused material should be sampled and tested for a suite of analytical parameters to include as a minimum the following compound list;

- Detailed hydrocarbon suite including BTEX compounds and MTBE (TPH-CGW);
- Heavy metals suite to include as a minimum: arsenic, cadmium, chromium (iii and iv), copper, lead, zinc, boron, zinc, selenium and mercury;
- Speciated PAH suite (PAH16);
- Asbestos ID;
- Soil organic matter;
- Total phenols;
- Free and total cyanide, pH, sulphate, and moisture content.

Results should be compared against the relevant Soil Guidance Values (SGV`s) equivalent to residential end-use. It is recommended that sampling of reused material occurs prior to emplacement, potentially from stockpiled material and / or from the source.

Sampling frequency will be dependent on the source of the material. It is considered that a minimum sampling frequency would be one sample per 50m^3 of material sourced from within the site and one sample per 250m^3 from offsite soil with a minimum of three samples from an individual source. Details on the material source and analysis undertaken should be included in the validation report.

6.2 Validation of Thickness of Cover

Validation of the thickness of the clean cover system, once emplaced, must also be carried out. This usually takes the form of a hand dug inspection pit within the clean cover system, at a selected number of points. The following proof of depth should be obtained and included in the Validation Report:

- Proof of the depth of inert cover (e.g. photographs of test pit with use of measuring staff / tape to confirm thickness);
- Visual evidence of the quality of the material used as inert cover (along with laboratory analytical certificates);
- Proof of the method of emplacement and different layers if appropriate;
- Proof of the completed ground conditions;
- Inclusion of geographic background features which will aid locating the photographic record, along with maps.

6.3 Removal of Waste Material from Site

If waste soil arising's, originating from reduced digs in the landscaped areas (or from any other activity onsite), are to be removed from site for disposal, this material should be suitably disposed of in line with the waste classifications determined in the Waste Classifcation Assessment undertaken at the site (McLorinan Consulting P678 February 2014). Further testing and refinement of the classifications presented in this report can be undertaken if required and where necessary.

With regards to the removal of waste arising's from the site, the following information should be obtained for inclusion in the validation report:

- Waste carrier documentation from the waste haulage company;
- Volumes of material removed;
- Details on end destination of material and copy of waste management licenses and / or PPC Permits for receiving site.

6.4 Validation of Gas Protection Measures

Validation of the gas protection measures should be carried out by an independent consultant and should be in addition to any CQA undertaken by the contractor during installation. Important aspects of the gas protection measures that require validation are as follows:

- Confirmation of membrane type and suitability;
- Membrane installation and integrity;
- Floor slab construction.

Guidance on the validation and verification of ground gas protection measures has been published by the NHBC and Environment Agency.

7.0 CONCLUSION

A summary of the proposed remediation measures (clean cover system) and the remediation outcomes is presented in Table 1 below;

Table 2: Summary of Remediation Measures and Outcomes

Contamination Risk	Remediation Target	Remediation Measure	Remediation Outcome
Direct contact with reduced quality soils by future site users	Break the pollutant linkage	Implementation of a 600mm clean cover system in gardens and landscaped areas to prevent direct contact with contaminated ground.	Pathway broken.
Ground Gas (CS2)	Break the pollutant linkage	Incorporation of gas protection measures in line with Characterisation Situation 2, as detailed in Section 2.2.	Pathway broken

All remedial measures proposed within this remediation report are subject to agreement with the local council (Camden Council). As previously mentioned all remedial measures must be fully validated and a Remedial Validation Report produced and submitted to Camden Council prior to the occupancy of the buildings.

Report Prepared By:-

Frank Macfarlane BSc MSc
Senior Environmental Scientist

Reviewed by:-

Peter McConvey BSc MSc
Senior Hydrogeologist

Appendix A

Specification Sheet for Visqueen GX

Technical Support: 0845 302 4758
LAST UPDATED: 7.2.2012

Visqueen GX Hydrocarbon Damp Proof Course

- **Suitable for use on hydrocarbon contaminated sites.**
- **Independantly tested against harmful gases, industrial chemicals and hydrocarbons.**
- **High puncture and tear resistance.**

Description

Visqueen GX DPC is a blend of ethylene co-polymers suitable for use on brownfield sites that require protection from dangerous contaminants such as hydrocarbons and methane, together with excellent damp proofing properties. GX DPC is available in 30m lengths and in two widths, 600mm or 850mm.

Application

Visqueen GX DPC has a proven track record as a barrier membrane on gas contaminated and hydrocarbon contaminated brownfield sites. Visqueen GX DPC combines high strength with flexibility.

Testing for Chemical Resistance (EN 14414 and EN 14415)

The membrane has been tested against various harmful gases and dangerous contaminants such as hydrocarbons. In addition to this, GX DPC has been subjected to accelerated life immersion tests. EN 14414 and EN 14415 - Chemical resistance to leachates and aggressive chemicals - are designed to stress the membrane at a higher level of chemical concentration and temperature than it would experience in normal use. Changes in weight, volume, tensile strength and visual degradation are recorded to obtain the membrane's suitability to the challenge chemical.

These results are published below and assist designers and engineers in the suitability of GX DPC in various applications.

System Components:

- Visqueen GX Geomembrane
- Visqueen Gas Resistant Lap Tape
- Visqueen Surface DPC Fixing System
- Visqueen GX Double Sided Bonding Tape

Visqueen GX Hydrocarbon Damp Proof Course

Installation

All joints in lengths of DPC must be a minimum of 100mm lapped and sealed with Visqueen GX Jointing Tape. Visqueen GX DPC should be installed in accordance with BS 8215: 1991, BS 8000: Part 3, 2001 and BS 5628: Part 3: 2005. Visqueen GX DPC must be bedded on both sides with fresh mortar and must project through the full width of the wall, including any externally applied rendering, and project 5mm beyond the finished external face.

Storage and Handling

Visqueen GX DPC is classified as nonhazardous when used in accordance with the relevant British Standards. The product is chemically inert and is not affected by acids and alkalis that may be present in the sub-soils.

TYPICAL PROPERTIES

Technical data	
Thickness	1mm
Roll width	600 & 850mm
Roll Length (m)	30m
Methane Permeability (ISO 2782)	0.198 ml/m^2/dy/bar
Tensile strength (ISO 527)	22.8 Mpa
Diesel permeability ISO 6179	0.4 g/m_2h
Petrol Permeability ISO 6179	8.6 g/m_2h
Xylene permeability ISO 6179	14.6 g/m_2h
Toluene permeability ISO 6179	23.0 g/$_2$h
EN 14414	
EN 14414-A (Acids)	Pass
EN 14414-B (Alkalies)	Pass
EN 14414-C (Organic solvents)	Pass
EN 14414 (Visual defects)	No Visual Defects
EN 14415	
EN 14415-A (hot water)	Pass
EN 14415-B (aqueous alkaline liquids)	Pass
EN 14415-C (organic alcohols)	Pass
EN 14415 (Visual Defects)	No Visual Defects

SPECIFICATION SUPPORT

The following items are available to view online or to download from www.visqueenbuilding.co.uk

. Technical Datasheets
. Typical installation CAD details
. Health and Safety data

Register online for access to NBS Clauses and for information about our CPD Seminars

TECHNICAL SUPPORT

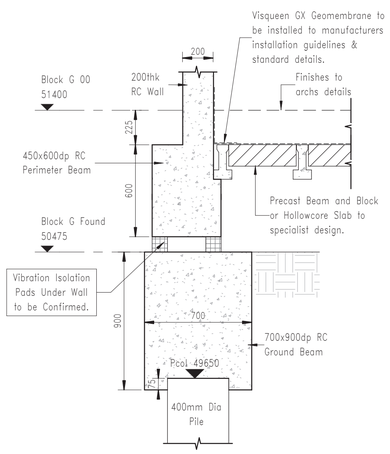
For advice on detailing or installation call Visqueen Building Products Technical Help Line 0845 302 4758. Pricing & Availability may be obtained from our UK Network of merchant stockists. For details of these call our Sales Office on 0845 302 4758.

VISQUEEN BUILDING PRODUCTS

Heanor Gate, Heanor, Derbyshire DE75 7RG
T: 0845 302 4758 F: 0845 017 8663
enquiries@visqueenbuilding.co.uk
www.visqueenbuilding.co.uk

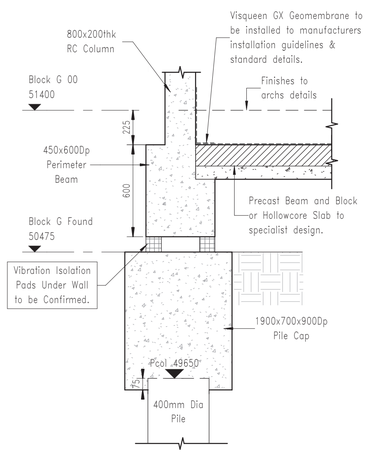
Appendix B

Cross Sectional Drawings



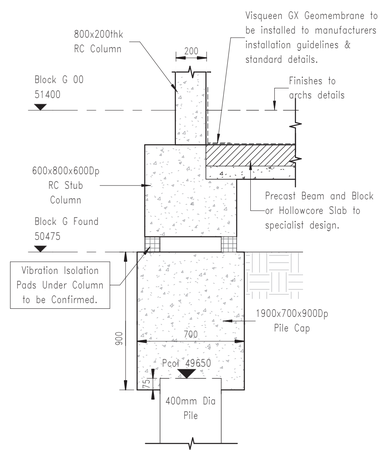
Section 1-1

1 : 20



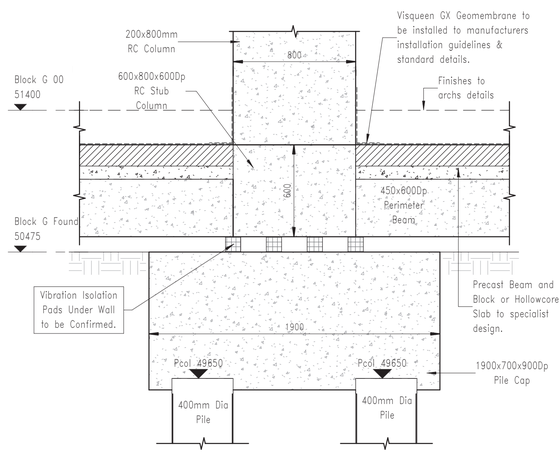
Section 2-2

1 : 20



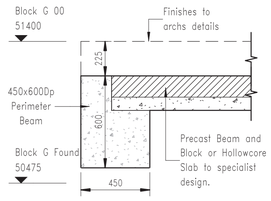
Section 3-3

1 : 20



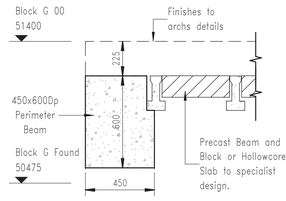
Section 4-4

1 : 20



Section 5-5

1 : 20



Section 6-6

1 : 20

Section 7-7

1 : 20

Section 8-8

1 : 20

Section 9-9

1 : 20

Section 10-10

1 : 20

NOTES

1. For setting out refer to Architect's drawings.
2. This drawing to be read in conjunction with all other Architectural and Engineering drawings and all other relevant drawings and Specifications.
3. DO NOT SCALE THIS DRAWING. Use figured dimensions only.
4. No part of this document may be reproduced or transmitted in any form or stored in any retrieval system of any nature without the written permission of O'Connor Sutton Cronin as copyright holder except as agreed for use on the project for which the document was originally issued.

Rev	Date	Description	Drn by
A	APR 14	Revisions made to suit Architects latest model.	MMcF

Client: BALLYMORE / Network Rail

Project: West End Square, West Hampstead

Title: Block G 00 Sections

Drn by	Chkd by	Aprvd by	Dwg. No.	Revision
MMcF	S. Dunne	M McGrath	B633(L)-720	
Date: June 13	Scale: 1 : 20			

OCSC
Multidisciplinary Consulting Engineers

O'Connor Sutton Cronin & Associates Ltd.
40 Bowling Green Lane,
London, ec1r 0ne, UK

TEL +44 (0)20 74157120
FAX +44 (0)20 74157012
e: ocsc@ocsc.co.uk
w: www.ocsc.co.uk

Office Locations | Dublin (Head Office) |
| London | Cork | Galway | Belfast | Warsaw | Bucharest | Moscow | Libya |

ISO 9001:2008 QUALITY
OHSAS 18001:2007 HEALTH & SAFETY
ISO 14001:2004 ENVIRONMENTAL