

FINAL

11-12 Grenville Street Ltd.

Remedial Method Statement

11-12 Grenville Street

London

WC1N 1LZ

Report No: 22-01-03

January 2021







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DOCUMENT RECORD

Report Title	Remedial Method Statement
Project Address	11-12 Grenville Street, London, WC1N 1LZ
Project Number	22-01-03
Client Company Name	11-12 Grenville Street Ltd.

Issue No Date	Status	Prepared by	Checked by
1 January 2022	Draft report	Lee Ashworth B.Sc. M.Sc. F.G.S Engineering Geologist	Murray Bateman, M.Sc. DIC C.Geol Pg. Cert. Director
		SIGNATURE 	SIGNATURE 
2 January 2022	Final report	Lee Ashworth B.Sc. M.Sc. F.G.S Engineering Geologist	Murray Bateman, M.Sc. DIC C.Geol Pg. Cert. Director
		SIGNATURE 	SIGNATURE 





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-  Site Location Plan
-  Cross Section Of Cover System
-  Basement and Ground Floor Plans
-  Email from the Land Contamination Team of Camden

EXECUTIVE SUMMARY

Site Location	11-12 Grenville Street, London, WC1N 1LZ
OS Grid Reference	TQ 30368 82163
Objectives	<ul style="list-style-type: none">  Briefly summarise the previous site investigation and Phase I desk study work undertaken.  To describe all works to be undertaken.  To describe the proposed remediation objectives and remediation criteria.  To set out the timetable of works and site management procedures.
Ground Conditions of the site	The site and laboratory test work revealed that the general succession of strata can be represented in general by Made Ground down to a maximum depth of 1.80m bgl, overlying the Lynch Hill Gravel Member down to a depth of 3.60m bgl, overlying the London Clay Formation down to the base of the exploratory hole in excess of 6.00m bgl.
Remediation Required	<ul style="list-style-type: none">  To break the exposure pathways to site users, it is considered that two cover system options are applicable for the development. The choice of the two options will depend on whether the land-use will include the growing of vegetables. (See section 2.1)  Protection of workers and public during construction phase
Further Work	A photographic record of the nature of the formation level soils must be taken when the basement is excavated. Furthermore, at least two samples should be taken from the formation level soils and specifically tested for TPH and VOC's.
Items to Remember	
Soil Cover Layer	<ul style="list-style-type: none">  Fig 1 and 2 shows a x-section of the two types of cover layer.  Photographic evidence and spot levels before placing soil.  Ensure soil is tested before placing, (chemical suite and threshold values included in report).
Protection of workers and public during construction phase	<p>The developer/land owner to ensure that suitable welfare facilities are included and to ensure all ground workers have included/incorporated the risk from dermal contact of Impacted soils within their RAMS.</p> <p>We recommend a watching brief should be undertaken during the construction phase, and if during development any previously undiscovered contamination (including visual or olfactory evidence) is found then site management should be immediately informed and inspection by a suitably qualified person should be undertaken.</p>

This executive summary must be read in conjunction with this report.

REMEDIAL SCHEME REPORT

1 FACTUAL

1.1 INTRODUCTION

Geo-Integrity Ltd were commissioned by 11-12 Grenville Street Ltd. via an email instruction, to produce a remedial method statement for 11-12 Grenville Street, London, WC1N 1LZ.





Previously a Phase I Desk Study was undertaken by Geo-Integrity report No. 21-08-12, dated January 2021. In addition, a basement impact risk assessment was undertaken by Risk Management Ltd. (ref. RML 6065) dated July 2016 which included chemical testing. Both reports identified that there may be a risk to Human Health and construction workers at the site, due to elevated Lead identified within the Made Ground at the site. In addition, it was agreed with the land contamination team of Camden that there may also be a risk of TPH and VOC's from previous use as a domestic garage which should be included within the Remedial Method Statement, please see email from Paul Adams of the Contaminated Land Team of Camden in the Appendices.

This remedial method statement describes the work required to bring the site to a condition suitable for the intended use by removing unacceptable risks to human health, buildings (and other property) and the natural and historical environment.

The site is located at National Grid Reference TQ 30368 82163.

The report is likely to be reviewed by Camden Council with reference to the NPPF. Once the development is completed, and as a minimum, land must not be capable of being determined as 'contaminated land' under the terms of Part IIA of the Environmental Protection Act 1990.

The objectives of this remedial scheme report are:-

-  Briefly summarise the previous site investigation and desk study work undertaken.
-  To describe all works to be undertaken.
-  To describe the proposed remediation objectives and remediation criteria.
-  To set out the timetable of works and site management procedures.

The scheme has been designed in accordance with BRE 465, 'Cover Thickness Design for Regeneration' (2004), BS8485:2015, CIRIA C735:2014, HSE Document, "Protection of Workers and the General Public during Development of Contaminated Land" and CLR11.

1.2 DEVELOPMENT PROPOSALS

Geo-Integrity understands the proposal is to redevelop the two existing terraced buildings along Grenville Street into residential dwellings.

1.3 SITE SETTING

The site is located in the West-end of London, within the district of Bloomsbury, positioned along the western side of Grenville Street.

The site consists of two three storey terraced buildings intersected by Colonnade (road) trending east-west which passes through the two buildings, via a cantilevered section on the first floor. A disused fast food takeaway (Cafe Romano) is located at the ground floor level of the northern terraced building facing Grenville Street to the east. Inside the disused takeaway included food storage units and fryers. A domestic garage which had been bricked-up and bin store was located at the rear (western end) of the building. An area of soft landscaping including a tree stump is also situated west of the site however this area is not included within the development area (see development proposal plans in Appendix A). The two buildings also contain basements which were observed during the walkover survey (photographs are shown in Appendix A). The area of the site is approximately 150m².

1.4 PREVIOUS INVESTIGATION

1.4.1 Ground Conditions

The site and laboratory test work revealed that the general succession of strata can be represented:

Strata	Top Depth (m bgl)	Bottom Depth (m bgl)
Concrete	0.00	0.15
Made Ground	0.15	1.80
Lynch Hill Gravel Member	1.80	3.60
Weathered London Clay Formation	3.60	>6.00

Made Ground soils have been proven to a depth of 1.80m bgl by the previous investigation undertaken by Risk Management Ltd, reference RML 6065, dated July 2016.

Groundwater was not encountered during the intrusive works down to the base of the exploratory hole in excess of 6.00m bgl. Subsequent gas/groundwater monitoring also recorded no groundwater. However, it is stated perched water may occur at the base of the Lynch Hill Gravel Member during wetter periods. Additional groundwater monitoring was undertaken in April and May 2017 which encountered groundwater at 3.70m bgl which is stated to be at least 1m below the new basement level.

1.4.2 Geo-Environmental Conditions

1.4.2.1 Soil Conditions

The previous investigation undertook a preliminary contamination assessment using the source-pathway-protection-receptor approach. Two samples of Made Ground were collected from BH1 at depths of 0.15m and 1.00m bgl. The samples were tested for a range of contaminants including heavy metals, total petroleum hydrocarbons, PAH's and BTEX and compared against limiting values for a residential without plant uptake land-use scenario. Both samples recorded single exceedances of lead. Lead was recorded at 1340mg/kg and 1380mg/kg with the relevant GAC for lead being 310mg/kg for a residential without plant uptake land-use scenario.


1.4.3 Asbestos

None of the soil samples collected during the previous investigation contained asbestos containing material (ACM).

1.4.4 Risk To Controlled Waters

The previous report concluded the results show marginally elevated levels of lead. However, the site is not located within 500m of a surface water course, there are no surface water abstraction licenses, the nearest ground water abstraction license is recorded 575m south-west of the site and the site is not recorded to be within a source protection zone. Additionally, the site is underlain by a Secondary A Aquifer associated with the Lynch Hill Gravel Member overlying an unproductive aquifer associated with the London Clay Formation.

It is considered the elevated levels of lead will not impact on the underlying Secondary A aquifer due to the fact that:

-  The proposed development will incorporate the same area of hardstanding as the existing building which includes 39m² hardstanding and no soft landscaping. The previous investigation indicated the 39m² area of hardstanding run-off from the site discharges into

the public sewer system therefore no additional surface water will interact with the Made Ground soil.

- The groundwater level was recorded at 3.70m bgl during the previous investigation therefore it is unlikely the groundwater will come into contact with the Made Ground soil

The Environment Agency is the regulatory body charged with protection of controlled waters and may be a consultee in the planning process. We recommend that the conclusions of this report are agreed with the relevant Local Authority at the earliest stage, to reduce potential delays to the development.

1.4.5 Proposed Works for the New Basement Installation

Please refer to the Basement Impact Assessment appended to this report ref.8108.2_FS_GB, dated 16th June 2017.

2 REMEDIAL MEASURES REQUIRED

2.1 SOIL COVER LAYER

2.1.1 Objectives

Elevated lead has been encountered within the Made Ground soils and it has been established that there is a significant risk to both end users of the site, and the construction workers involved in the development of the site from the Made Ground. The main pathway of concern for these contaminants has been shown to be direct soil ingestion and dermal contact.

To break these primary exposure pathways to end site users, it is considered that two cover system options are applicable for the development. This may be achieved by the placement of a suitably designed cover system. This cover system is not required in areas of hard-standing, as this will break the pathway between impacted soils and site users. Give the proposed development will not include any soft landscaping areas this remedial method is currently not required. However, should the development change to include soft landscaping remediation in line with the above should be undertaken.

2.1.2 Imported Clean Cover System Criteria

In areas where vegetables will be grown a cover system would require a 600mm layer of clean cover, consisting of at least 300mm of topsoil and the remainder being made up of clean subsoil. If the Made Ground is more than 600mm then only 600mm of that Made Ground requires replacing. If the Made Ground is less than 600mm then only that amount of Made Ground needs replacing, a surcharge is not required. Fig. 1 in the Appendices is a cross section of what the construction of cover

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system should be. Imported soils should be tested before being delivered on site for the suite of chemicals set out below.

The threshold values that must be achieved are indicated besides the determinants.

DETERMINANT	THRESHOLD VALUE (mg/kg)
Arsenic	37
Cadmium	11
Chromium	910
Copper	2400
Mercury	40
Nickel	180
Lead	200
Selenium	250
Zinc	3700
Chromium (Hexavalent)	6
Asbestos	None Present
Total TPH >C5-C35	27
Naphthalene	2.3
Acenaphthylene	170
Acenaphthene	210
Fluorene	170
Phenanthrene	95
Anthracene	2400
Fluoranthene	280
Pyrene	620
Benzo[a]anthracene	7.2
Chrysene	15
Benzo[b]fluoranthene	2.6
Benzo[k]fluoranthene	77
Benzo[a]pyrene	2.2
Indeno(1,2,3-c,d)Pyrene	27
Dibenz(a,h)Anthracene	0.24
Benzo[g,h,i]perylene	320

Photographs should be taken before the installation of the cover system and a series of spot heights to ensure that the formation surface is at least 600mm below the proposed finished ground level.

2.1.3 Imported Clean Cover with Hard to Dig Layer Criteria

In areas where there will be no growing of vegetables a minimum of 300mm of certified clean topsoil underlain by a deter-to-dig geotextile underlain by a 100mm 'hard dig' layer'. [If the hard dig layer comprises a recycled material; it must be demonstrated to be free from asbestos]

2.1.4 Management

2.1.4.1 Implementation

The implementation of either option will be installed by a suitably qualified groundworkers appointed by the landowner/developer.

2.1.4.2 Validation

This process should be valid by a suitably qualified person upon completion of the soft landscaping. This will be undertaken by the excavation of a suitable number of investigatory holes across the soft landscaped areas. Evidential logs and photographs should be presented in a validation report, along with confirmatory chemical testing. After completion of the validation report, as the scheme either removes the source or is a physical barrier, there is no need for maintenance or monitoring of this part of the project.

2.2 PROTECTION OF WORKERS AND PUBLIC DURING CONSTRUCTION PHASE

2.2.1 Objectives

To reduce the risk to as low as reasonably practicable for the construction workers and surrounding public.

2.2.2 Criteria

It is recommended that, high standards of personal hygiene should be maintained amongst the site personnel at all times. All personnel coming into contact with the soil, ground workers in particular, should be instructed to use gloves when on site to avoid dermal contact and restrict inadvertent hand-to-mouth ingestion. Washing facilities should be provided for the site staff to use, and should be used prior to eating or smoking.

Reference should be made to CDM 2015, which requires the provision of suitable welfare facilities on site, and the HSE Document, "Protection of Workers and the General Public during Development of Contaminated Land".

2.2.3 Management

2.2.3.1 Implementation

The Developer/landowner is responsible for the Construction Phase Plan for the project, for ensuring that the groundworkers RAMS includes potential risks associated with dermal contact of Made Ground on site and its mitigating measures (outlined above) and provision of suitable welfare facilities.

2.2.3.2 Validation

The Developer/landowner will ensure that their groundwork sub-contractors put their RAMS into operation throughout their time on site. Again, there is no need for maintenance or monitoring of this part of the project.

2.3 FURTHER TESTING OF THE FORMATION SOILS

From discussions with the Land Contamination Team of Camden, please see email from Paul Adams in the Appendices, it is required when excavating the basement a photographic record of the nature of the formation level soils must be taken. Furthermore, at least two samples should be taken from the formation level soils and specifically tested for TPH and VOC's. This is required due to a potential risk of vapour given the previous land-use as a domestic garage. The recorded values should be compared against the relevant GAC for residential without home-grown produce.

Should the values exceed the relevant GAC for residential without home-grown produce further remediation will be required. The remediation method should include the installation of a hydrocarbon barrier such as the Visqueen Ultimate Flexi Hydrocarbon Barrier CE Mark to EN 13967. This should be installed by a suitably qualified person.

It will also be necessary to undertake a verification of the installed hydrocarbon barrier. This should also be undertaken by a suitably qualified person. The verification process should include both a visual inspection and mechanical point stress test.

3 REQUIREMENT FOR MONITORING AND MAINTENCE OF REMEDIAL SCHEME

As the remedial schemes put forward create a physical barrier, there is no need for maintenance or monitoring of this after or during the construction phase. As such, it is recommended that this report be referred to and agreed by the Local Authority at the earliest convenience during the Planning stages.

4 RECOMMENDATIONS

We recommend a watching brief should be undertaken during the construction phase, and if during development any previously undiscovered contamination (including visual or olfactory evidence) is found then site management should be immediately informed and inspection by a suitably qualified person should be undertaken.

5 REFERENCES

National House Building Council (NHBC) Standards, Chapter 4.2 Building Near Trees. 2011.

National House Building Council (NHBC) Standards, Chapter 4.1 Land Quality – Managing Ground Conditions. 2011.

Environment Agency, 'The Model Procedures for the Management of Land Contamination', CLR 11, 2004

Health and Safety Executive (HSE), "Protection of Workers and the General Public during Development of Contaminated Land" HS(G) 66. HMSO London 1991.

Environment Agency, 'Human Health Toxicological Assessment of Contaminants in Soil', August 2008

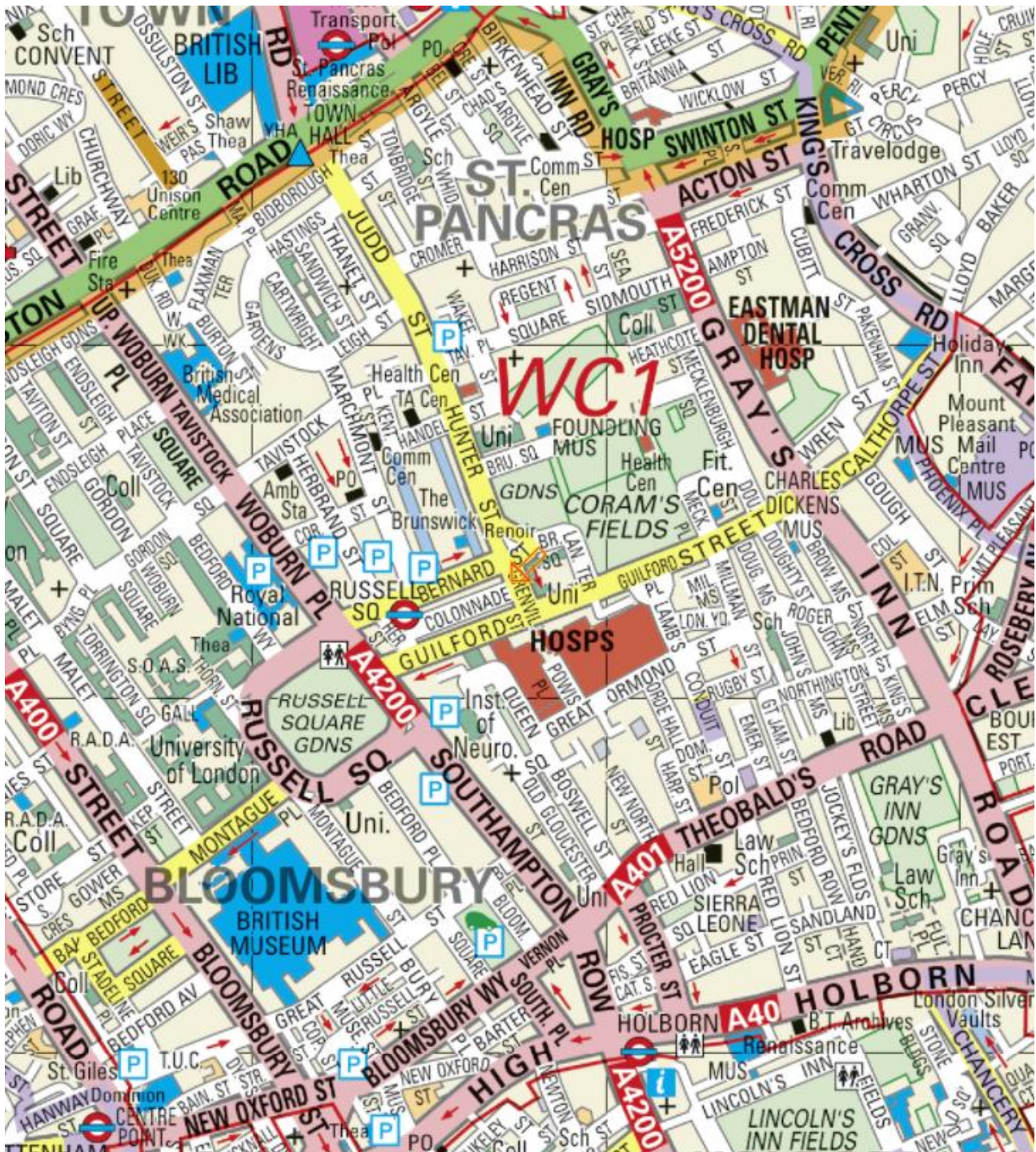
BS 1377 : 1990 : Methods of test for soils for civil engineering purposes. British Standards Institution.

BS 5930 : 2015 : Code of practice for ground investigations. British Standards Institution.

G Card and S Wilson, An Alternative Approach for Ground Gas Risk Assessment, 2011.

BS EN ISO 14688-2:2004+A1 : 2013 : Geotechnical investigation and testing - Identification and classification of soil - Part 2 Principles for a classification. British Standards Institution.
Investigation of Potentially Contaminated Sites – Code of Practice, BS10175, 2011

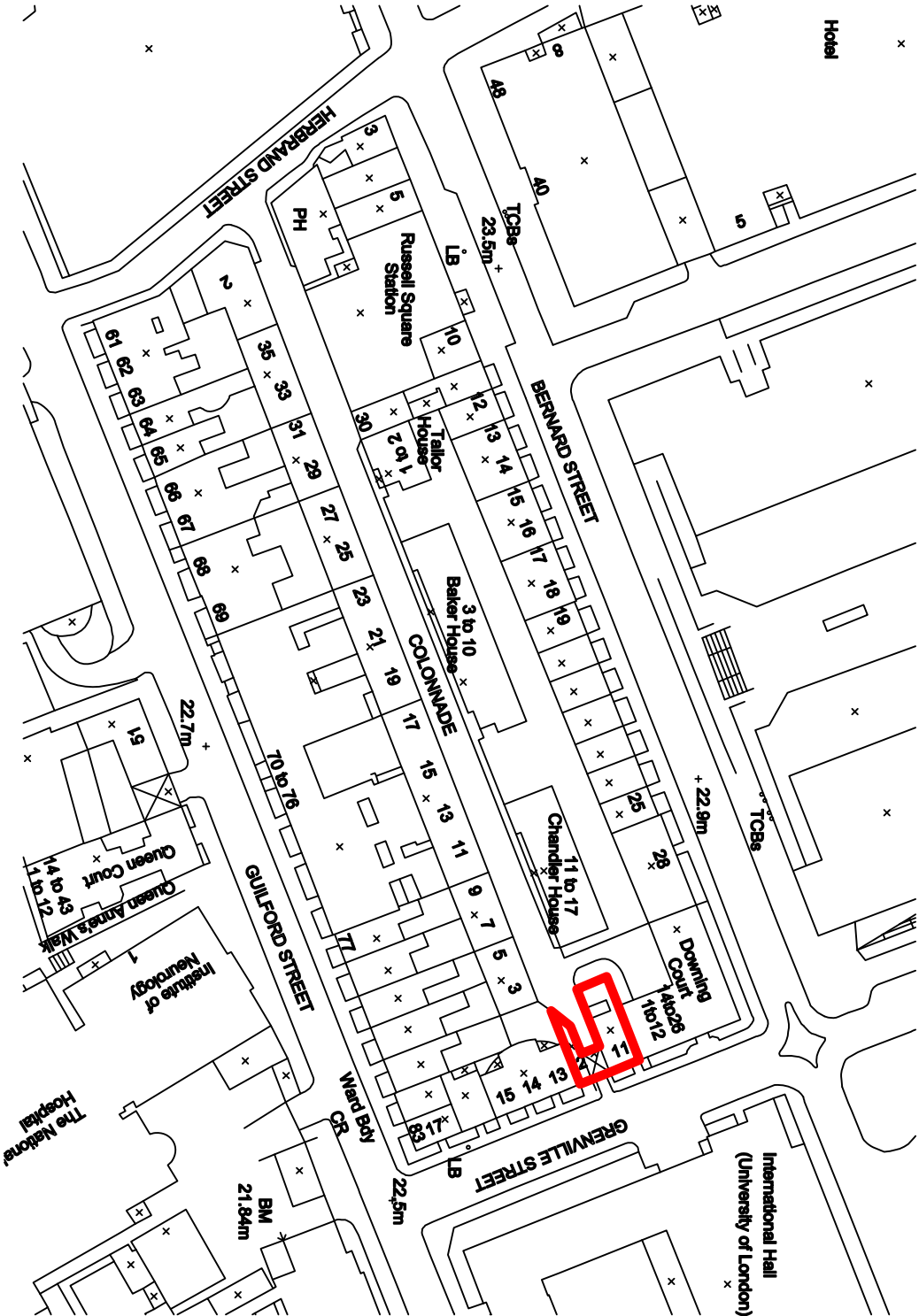
APPENDIX A



January 2022

SITE LOCATION PLAN

Report No:- 22-01-03



01
(01)001

LOCATION PLAN

B 2016.08.03 Initial Issues	
A 2014.05.21 Initial Issues	
REV /	ISSUE DATE / REVISION NOTES

GENERAL NOTES

Do not scale. All written dimensions must be checked on site before work commences. Discrepancies between dimensions and drawings must be reported to the Architect immediately. Where identified, must be reported to the Architect immediately.

Any areas indicated on this drawing are for guidance purposes only. No responsibility is taken for their accuracy.

All work must be carried out in accordance with the Building Regulations and to the satisfaction of the Local Authority.

PLANNING

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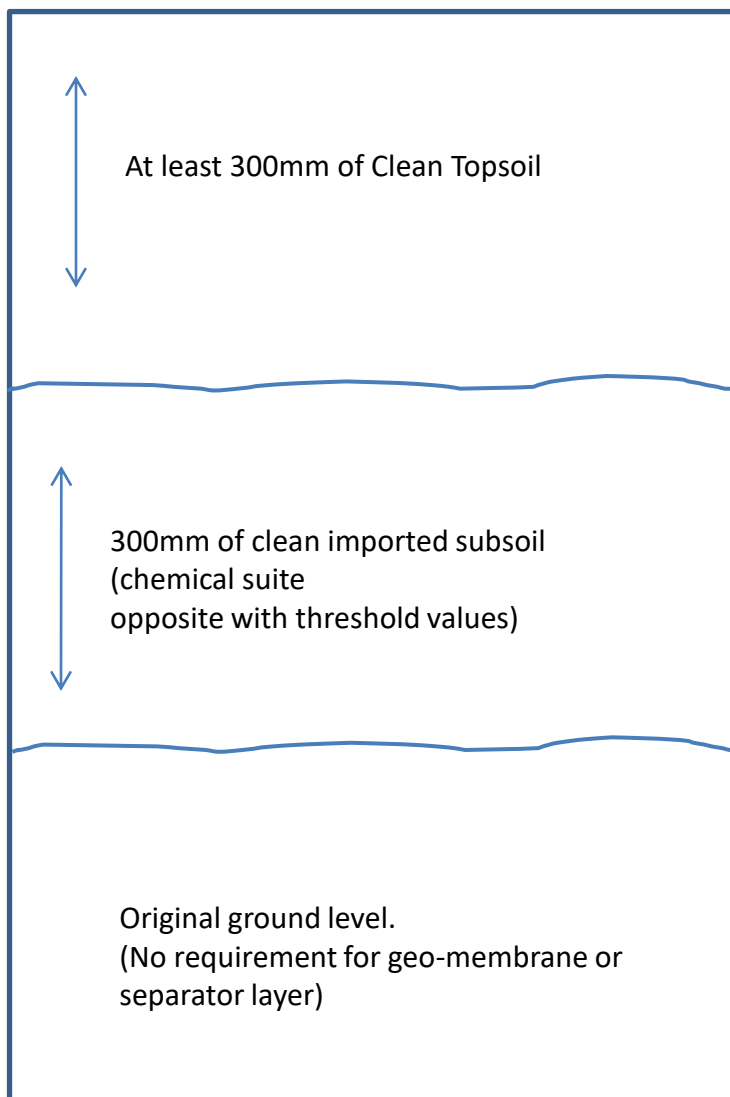
**GARNETT
+PARTNERS**

CLIENT
Calabar Properties Ltd

PRODUCT
11-12 Grenville Street, WC1

DRAWING TITLE
Site Location Plan

SCALE 1:1250@A3	DATE April 14
JOB NO. 790	FORM NO. (01)001
	REV. B



DETERMINANT	THRESHOLD VALUE (mg/kg)
Arsenic	37
Cadmium	11
Chromium	910
Copper	2400
Mercury	40
Nickel	180
Lead	200
Selenium	250
Zinc	3700
Chromium (Hexavalent)	6
Asbestos	None Present
Total TPH >C5-C35	27
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Acenaphthene	210
Fluorene	170
Phenanthrene	95
Anthracene	2400
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Benzo[k]fluoranthene	77
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Indeno(1,2,3-c,d)Pyrene	27
Dibenz(a,h)Anthracene	0.24
Benzo[g,h,i]perylene	320



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Cover System Cross Section

SITE:- Land at 41 – 52
Alexandra Gardens,
Carshalton, SM5 4LJ

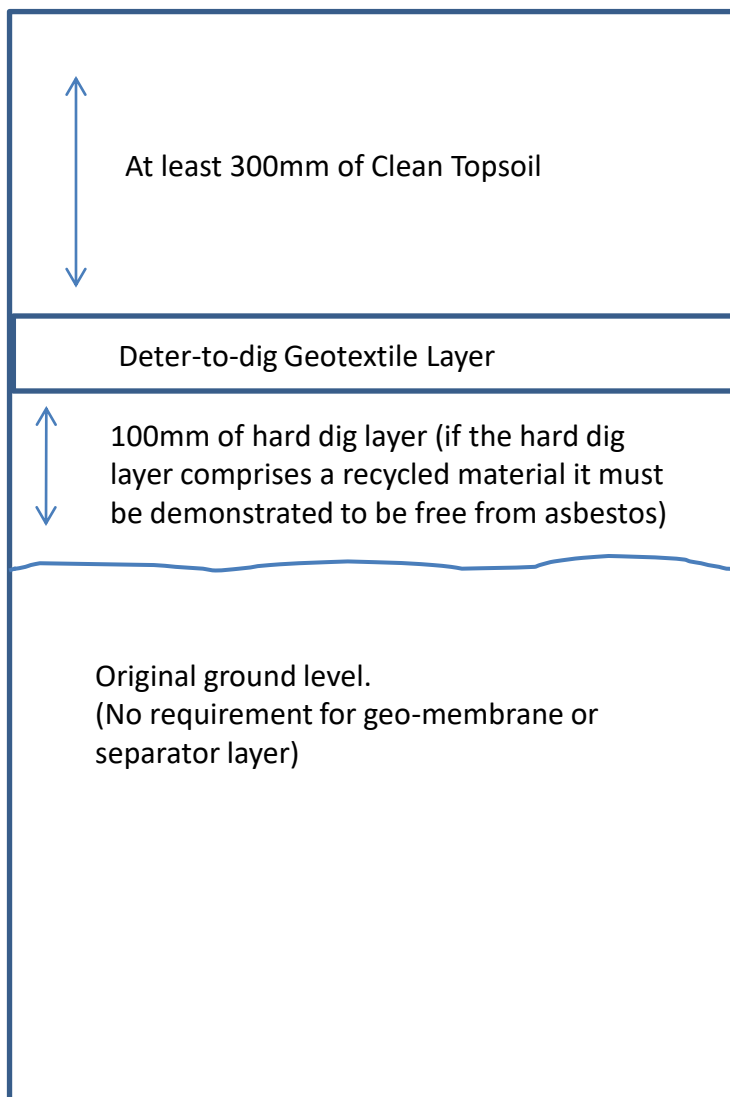
JOB NO.:- 22-01-03

CLIENT:- 11-12 Grenville
Street Ltd.

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LA

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MB

Scale: Not To Scale, for
indicative purposes only



DETERMINANT	THRESHOLD VALUE (mg/kg)
Arsenic	37
Cadmium	11
Chromium	910
Copper	2400
Mercury	40
Nickel	180
Lead	200
Selenium	250
Zinc	3700
Chromium (Hexavalent)	6
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Anthracene	2400
Fluoranthene	280
Pyrene	620
Benzo[a]anthracene	7.2
Chrysene	15
Benzo[b]fluoranthene	2.6
Benzo[k]fluoranthene	77
Benzo[a]pyrene	2.2
Indeno(1,2,3-c,d)Pyrene	27
Dibenz(a,h)Anthracene	0.24
Benzo[g,h,i]perylene	320



4 Church Street
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Cover System Cross Section

SITE:- Land at 41 – 52
Alexandra Gardens,
Carshalton, SM5 4LJ

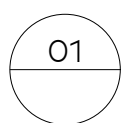
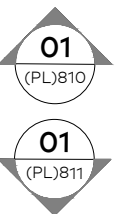
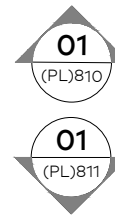
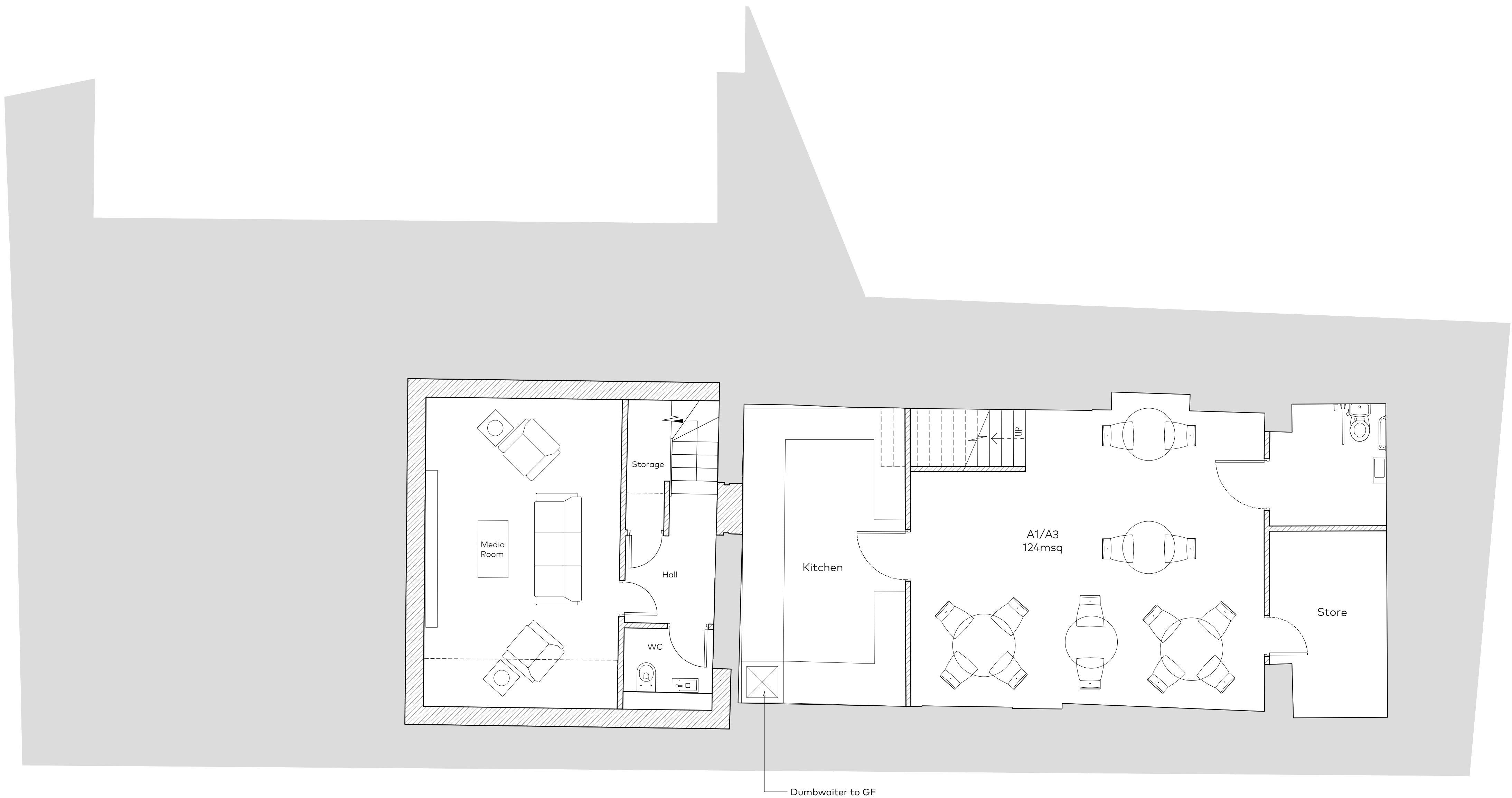
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CLIENT:- 11-12 Grenville
Street Ltd.

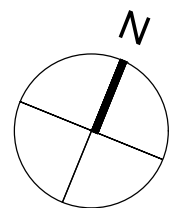
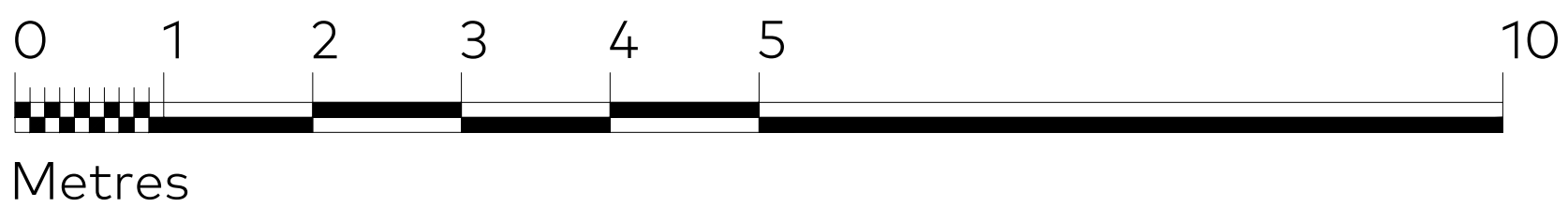
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**Scale: Not To Scale, for
indicative purposes only**



LOWER GROUND FLOOR PLAN
AS PROPOSED



Rev	Issue Date	Revision Notes	Drawn
E	2018.05.03	Issued for Planning	JN
D	2018.04.09	Issued for Planning	JN
C	2018.02.12	Issued for Planning	MT
B	2017.04.26	Issued for Planning	MT
A	2017.03.29	Issued for Comments	JN

General Notes
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Job Number	Drawing Number	Rev	Scale
790	(PL)610	E	1:50@A1 1:100@A3

Drawing Title Lower Ground Floor Plans
As Proposed

Project 11-12 Grenville Street

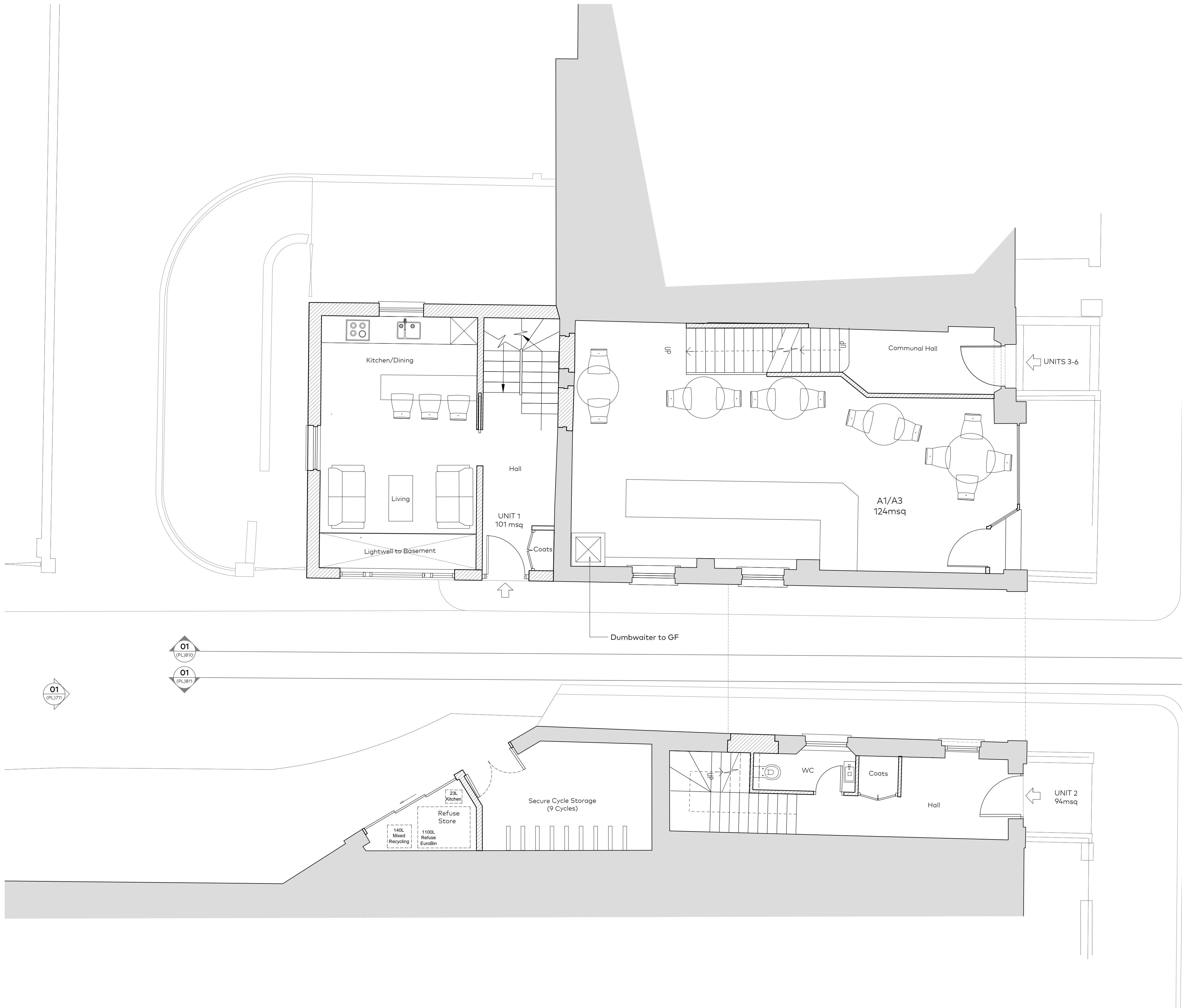
Client Calabar Properties Ltd

Date 24.03.2017 drawn:JN checked:JN

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Rev	Issue Date	Revision Notes	Drawn
G	2018.05.03	Mews layout amended	JN
F	2018.04.06	Mews layout amended	JN
E	2018.02.12	Refuse store doors amended	JN
D	2017.07.24	Annotation amended	JN
C	2017.07.07	Bike storage amended, issued for Planning	JN
B	2017.04.28	Issued for Planning	MT
A	2017.03.29	Issued for Comments	JN

General Notes

Do not scale. All written dimensions must be checked on site before work commences on site or in shop. Figured dimensions take preference over those scaled. Discrepancies, where identified, must be reported to the Architect immediately. Any areas indicated on this drawing are for guidance purposes only. No responsibility is taken for their accuracy. All work must be carried out in accordance with the Building Regulations and to the satisfaction of the Local Authority.

Drawing Status

PLANNING

Job Number	Drawing Number	Rev	Scale
790	(PL)611	G	1:100@A1 1:50@A3

Drawing Title: Ground Floor Plans
As Proposed

Project: 11-12 Grenville Street

Client: Calabar Properties Ltd

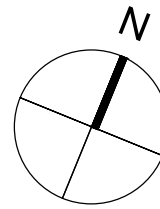
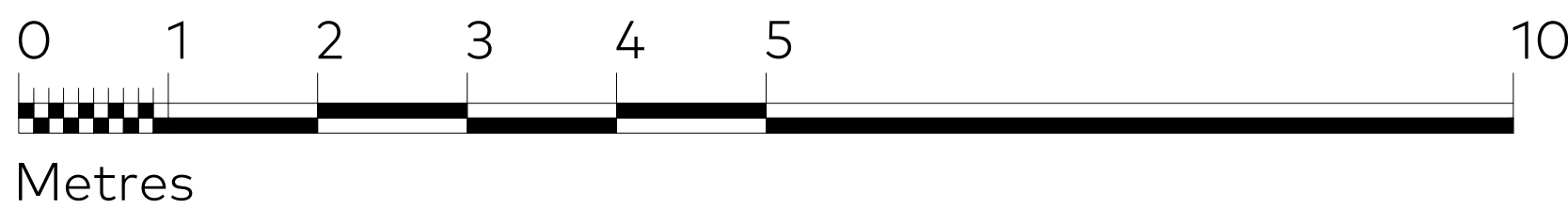
Date: 24.03.2017 drawn: JN checked: JN

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01
GROUND FLOOR PLAN
AS PROPOSED



RE: 11-12 Grenville Street, WC1N 1LZ 2021/4699/P

contaminatedland [contaminatedland@camden.gov.uk]

Sent: Thu 13/01/2022 13:15

To: Lee Ashworth; contaminatedland; Obote Hope

Cc: Tracey Martin; 'Martin Saluzzo'; 'Murray Bateman'

Lee,

I have reviewed the updated Desk Study Report. The addition of the ground investigation information is valuable and provides greater confidence that the risk posed by ground gases is low.

I do have some further comments to make:

- 1) The CSM table still makes no reference to specific contaminants (metals, PAH, TPH, asbestos etc...) as it really should do.
- 2) Reference to the ground gas monitoring work undertaken to date is not consistent throughout the report. Some sections appear to state 3 rounds and others (correctly state) 5.
- 3) Section 4: The 2nd option for a clean cover system is incorrectly stated. This should state 'a minimum of 300mm of certified clean topsoil underlain by a deter-to-dig geotextile underlain by a 100mm 'hard dig' layer'. [If the hard dig layer comprises a recycled material; it must be demonstrated to be free from asbestos]
- 4) We would strongly advise the applicant to action your recommendation to get a UXO risk assessment done prior to undertaking any excavation.

In light of the update to the report, I am willing to recommend discharge of Part A of Condition 18. Part B CANNOT be discharged as it also relates to remediation strategy which can now be commenced. Part B will not be able to be recommended for discharge until the remediation verification report (post construction but pre occupation) is provided and accepted by the LPA.

Remediation Strategy

Please ensure that you include the following:

- 1) Appropriate introduction and background section(s).
- 2) Clean cover system specification as discussed. We will expect both the depth of the cover system and the geochemical quality of the imported soils to be independently verified against the published residential with home-grown produce assessment criteria.
- 3) A discovery strategy for previously undiscovered contamination. We would expect the applicant to cease works in the event of contamination being discovered. Both the consultant and local authority should be contacted and works should not recommence until a solution is agreed with all parties.
- 4) When the basement is excavated a photographic record of the nature of the formation level soils must be taken. Furthermore we will expect at least 2 No. samples to be taken of the formation level soils and tested for TPH and a VOC suite. We are enforcing this testing requirement due to the potential risk of vapour as there will be a basement below what used to be a garage. Previous soil testing identified no elevated concentrations of TPH but we note that 3 different deviation codes appear on the laboratory certificate indicating that the samples were supplied in the wrong containers and scheduled beyond the maximum holding time. Furthermore, there is no VOC or headspace data included with the ground gas monitoring data. We would also like to see details of any waterproofing measures incorporated into the basement presented in the remediation verification report.

Note on response time

We respectfully remind all addressees that we have a statutory 21 days to respond to enquiries and that we are meeting this requirement.

Sincerely,

Dr **Paul** Adams (Acting Contaminated Land Officer, LB Camden).