bwm
STRUCTURAL AND CIVIL CONSULTING ENGINEERS

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Project: 61 to 65 Charlotte street, London W1T 4PF	Project No: 4610
Client: Holbud investments	Engineer: C.A. Reynolds
Architect: Harper Downie	Date: 18th February 2015

Basement Impact Assessment

For the Basement works at

61 to 65 Charlotte street
London W1T 4PF

Contents

1.0 Introduction

A proposed part-alteration and part-redevelopment within the boundary of an existing row of 3 adjoining properties is being submitted for planning by our client. This scheme includes the lowering of an existing lower ground floor within the rear areas of 2 of the properties by approximately 1.57m. Additionally, the one storey basement in the remainder of the site is proposed to be lowered by 0.66m.

2.0 Relevant Planning policy

The London Borough of Camden development policy DP27 relates to basements and lightwells and requires developers to demonstrate that with methodologies appropriate to the site that schemes maintain the structural stability of the building and neighbouring properties; avoid adversely affecting drainage and run-off or causing other damage to the water environment; and avoid cumulative impact upon structural stability or water environment in the local area.

This basement impact assessment will enable the Council to assess whether the proposed development meets these requirements.

This assessment includes the following stages which have been adopted from the Camden planning guidance document CPG 4 'Basements and Lightwells' and with reference to the Camden 'Geological, Hydrogeological and Hydrological study'.

1 Screening to identify any matters of concern and determine if a full BIA is required or not.

2 Scoping to identify potential impacts

3 Site investigation and study to gain an understanding of the site and immediate surroundings

4 Impact Assessment to evaluate any direct and/or indirect implications of the proposed development

The report will review existing site data and provide preliminary assessment of the issues identified by the aforementioned screening process.

3.0 Details of the proposed development

This scheme is a residential refurbishment and vertical extension to 3 adjoined terrace properties along with a refurbishment of the underlying ground floor retail space.

The basement floor office space is to be lowered by approximately 0.66m to provide better head height for the modern high quality office space proposed.

The aforementioned basement occupies most of the site but, to the rear of 2 of the terraces, a slightly higher lower ground floor sits between basement and ground level.

For the purposes of this assessment the most relevant portion of the works is the lowering of this 162sqm (approximately 30% of the footprint) of the existing lower ground floor to the rear of numbers 63 and 65 by approximately 1.57m to match the remainder of the site.

The most relevant Architectural drawings are included in Appendix A along with some pages from the pre-application Design and Access statement (produced by Harper Downie in September 2014) which provides all information relating to the site location and its surroundings.

4.0 Initial desktop research and walkover survey findings

- The basement works would be considered modest in accordance with the guidance in DP27 in that it is not more than one storey or 3m in depth and does not extend beyond the footprint of the buildings.

- According to the Environmental Agency, the area is in flood Zone 1 i.e. not at risk of flooding from watercourses and suchlike. Record boreholes and maps suggest a water table lower than our lowest basement level with no significant history of flooding.

- The few significant flood events in the area were investigated and concluded that it was the inadequate capacity of the main sewer line to deal with the sudden and intense rainfall event that was the problem. The sewer reached full capacity quickly therefore allowing no more discharge from roads and other hard surface run-off areas. The works proposed would have no impact on such a scenario.

- The proposal would not increase the amount of surface water run-off as the whole site is currently of hard impermeable surfaces that drain to the sewer. Nor would it increase the amount of infiltrated water into the sub-surfaces as, currently no such SUDS measures are proposed.

- The location of the site is in a busy commercial part of the borough where most nearby premises would appear to contain basements with lightwells either open or covered over.

- Records up until 2010 show that, despite being one of the areas not affected by previous flooding, this area of the borough had significantly fewer basement applications than elsewhere. This is most likely due to the widespread existence of current basements.

5.0 Details of neighbouring properties

The adjoining buildings on all sides of the site have basements and, insofar as was possible to ascertain from the surveys carried out in occupied and live environments, these extend to the full perimeter of our boundary.

The survey at basement level together with sketches of the most relevant changes proposed and sketched sections across the site are included in Appendix B. These demonstrate the scale and relationship of our building's basement to the neighbouring properties.

6.0 Screening

The screening process is one that aims to determine what issues may of concern with the development and hence which need further investigation.

The flow charts provided within CPG 4 have been used to highlight these issues and the completed chart has been included here in tabular format.

Subterranean (groundwater) questions	**Site and project specific response**
1a. Is the site located directly above an aquifer?	Yes a Secondary Aquifer
1b. Will the proposed basement extend beneath the water table surface?	No, the surrounding open lightwells and un 'tanked' basements support the desktop findings that suggest the water table is below our lowest dig level
2. Is the site within 100 m of a watercourse, well (used/ disused) or potential spring line?	No known spring or well within 100 m of the site
3. Is the site within the catchment of the pond chains on Hampstead Heath?	No
4. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No
5. As part of the site drainage, will more surface water (e.g. rainfall and run-off) than at present be discharged to the ground (e.g. via soakaways and/or SUDS)?	No
6. Is the lowest point of the proposed excavation (allowing for any drainage and foundation space under the basement floor) close to or lower than, the mean water level in any local pond or spring line?	No

Slope stability questions	Site and project specific response
1. Does the existing site include slopes, natural or manmade, greater than 7°?	No
2. Will the proposed re-profiling of landscaping at the site change slopes at the property boundary to more than 7°?	No
3. Does the development neighbour land, including railway cuttings and the like, with a slope greater than 7°?	No
4. Is the site within a wider hillside setting in which the general slope is greater than 7°?	No
5. Is the London Clay the shallowest strata at the site?	No
6. Will any trees be felled as part of the proposed development and / or are any works proposed within any tree protection zones where trees are to be retained?	No and no tree protection zones are known
7. Is there a history of seasonal shrink-swell subsidence in the local area and / or evidence of such effects at the site?	No
8. Is the site within 100 m of a watercourse or potential spring line?	No
9. Is the site within an area of previously worked ground?	No
10. Is the site within an aquifer?	Yes a Secondary 'A' Aquifer
11. Is the site within 50 m of Hampstead Heath ponds?	No
12. Is the site within 5 m of a highway or pedestrian right of way?	Yes the site is bound on one side by Charlotte street.
13. Will the proposed basement significantly increase the differential depth of foundations relative to neighbouring properties?	No, refer to site trial holes in Appendix C and basement sections in Appendix B
14. Is the site over (or within the exclusion zone of) any tunnels, eg railway lines?	No

Surface flow and flooding questions	Site and project specific response
1. Is the site within the catchment of the pond chains on Hampstead Heath?	No
2. As part of the proposed site drainage, will surface water flows (e.g. volume of rainfall and peak run-off) be materially changed from the existing route?	No.
3. Will the proposed basement development result in a change in the proportion of hard surfaced / paved areas?	No, the area and permeability type of surfaces will remain the same.
4. Will the proposed basement development result in changes to the profile of the inflows (instantaneous and long term) of surface water being received by adjacent properties or downstream watercourses?	No, all nearby properties will experience no change to the current situation
5. Will the proposed basement result in changes to the quantity of surface water being received by adjacent properties or downstream watercourses?	No, all nearby properties will experience no change to the current situation
6. Is the site in an area known to be at risk from surface water flooding such as South Hampstead, West Hampstead, Gospel Oak and Kings Cross, or is it at risk of flooding because the proposed basement is below the static water level of a nearby surface water feature?	No, it is neither a primary or secondary street identified as being at risk of surface water flooding

Therefore this results in the following issues requiring scoping for further investigation:

a.) The site is underlain by a secondary aquifer
b.) The site is adjacent to a public highway

7.0 Scoping

The scoping process is required to assess in more detail the factors to be investigated in the impact assessment. Potential consequences are assessed for each of the identified potential impact factors highlighted by the previous screening. The issued highlighted have been tabulated below to show the potential impacts and consequences they may have.

Issues highlighted by screening	Possible consequences
The site is within an aquifer	Any potential dewatering to aid dry construction works can cause ground settlement which could extend beyond a site boundary and affect neighbouring structures. Similarly, an increase in water levels can have a detrimental effect on stability
Site within 5 m of a highway or pedestrian right of way	Excavation of a basement may result in structural damage to the road or footway.

8.0 Site investigation

In order to better understand the site and the impact the basement works will have on ground and adjoining structures, several exploratory trial holes were undertaken within the properties. The locations and findings are sketches and included within Appendix C.

Our initial desktop and walkover survey in section 4.0 above allowed us to have confidence that, given the modest depths involved and the surrounding similar basement depth and extents, such a limited investigation was adequate.

The greatest outcome of the explorations which is clear from the sketches was the conclusion that the primary walls to the boundary of the site extend to a depth at least comparable to the proposed depth. This was as expected given the surrounding basements but it helpfully shows that the walls do not rely on the current basement slab for stability or bearing capacity.

This means that, apart from *potential* shallow 200-400mm of underpinning in some areas, the excavations will not cause any instability or loss of bearing capacity of adjoining structural walls.

It is believed that the area at lower ground floor that is proposed to be lowered was originally an external courtyard with less structurally significant walls having been build off a 'yard slab'. The basement retaining walls to the adjoining property were found to be either deeper 'party walls' or separate walls beyond the less significant ones.

Furthermore, all trial holes showed completely vertically stable and dry excavations for their full depth. This would allow us to be confident that the excavations will require no complex temporary works such as sheet piling or dewatering and thus remove the impact risk associated with same.

9.0 Basement Impact Assessment

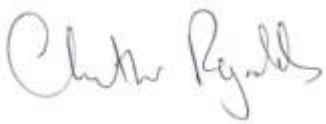
The screening highlighted two potential impacts. The desk study, walk over and ground investigation information has been used below to review the potential impacts, to assess the likelihood of them occurring and the scope for reasonable engineering mitigation.

Possible impact	**Investigation conclusions**
The site is underlain by an aquifer	The investigations showed that, despite the site being underlain by a secondary aquifer, dewatering or other works that would extend to this level, will not be required to complete the works.
The site is adjacent to a public highway	The proposals are for minimal lowering of the existing basement adjacent to the highway. The distance from the highway is more than 3m yet the excavated depth will be less than 1m. Therefore, this is not considered a significant risk.

10.0 Conclusion

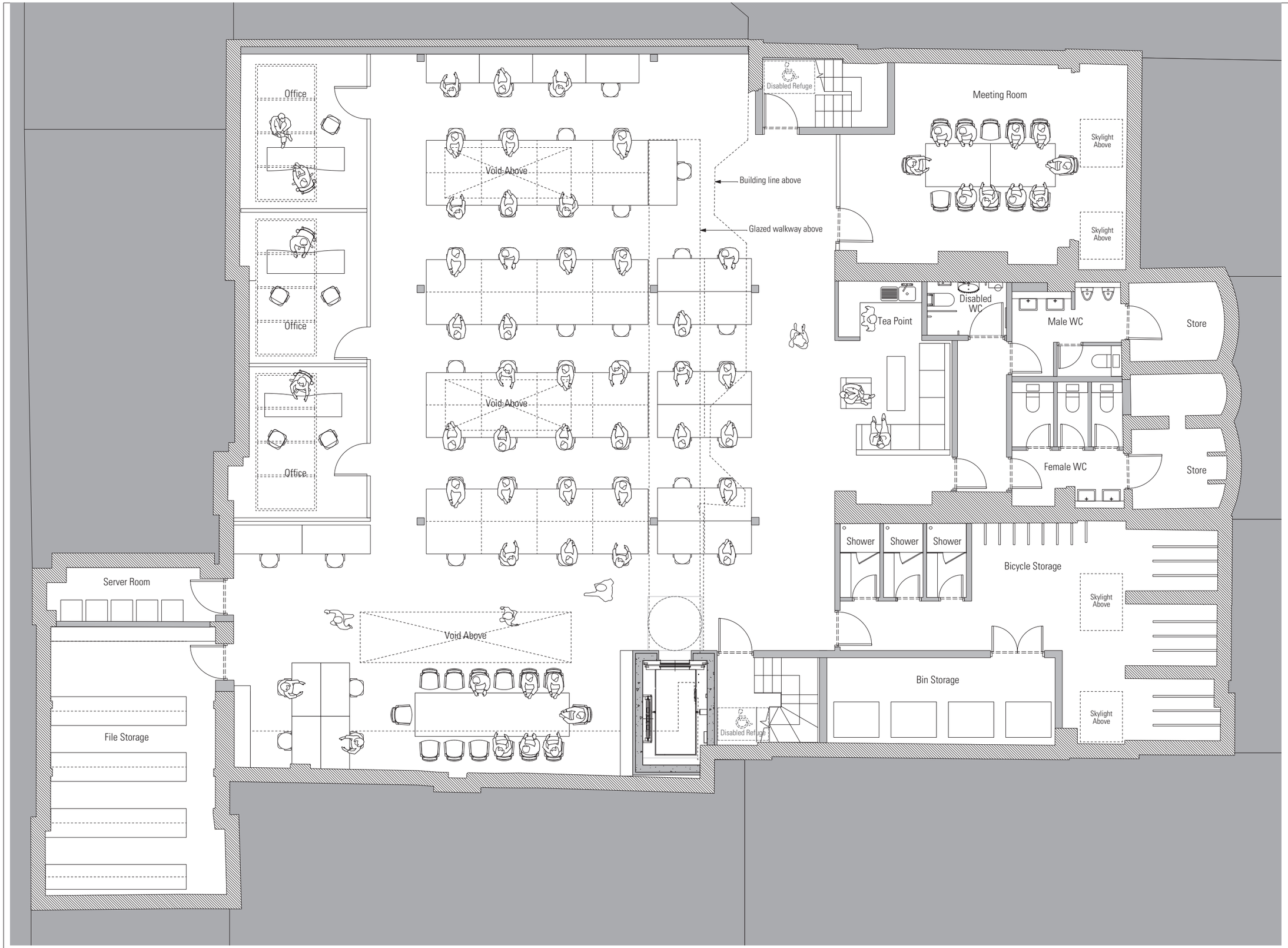
Based on the comments received following the Planning pre-application meeting for the works proposed at 61-65 Charlotte Street, London, an appropriated scaled Basement Impact Assessment has been carried out to assess any potential impacts from the scheme.

As a result of said assessment, it is considered that the proposals are unlikely to have any detrimental impact on the land or slope stability, the hydrogeology and hydrology of the site nor the adjacent and adjoining structures.



Christopher Reynolds
MEng (hons) CEng MIStructE

Appendix A Architectural General arrangement drawings



LG-A Lower Ground Floor Plan - Option A
Scale 1:50@A1, 1:100@A3

Notes

P1 12/2/15 Issued for Planning Application

Revisions

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Client
Holbud Investments

Project
61-65 Charlotte Street

Drawing Title
General Arrangement
Proposed Lower Ground Floor Plan
Option A - Open Plan

Status	Drawn	Checked
Planning	COD	NM

Scale	Date
1:50 @A1/ 1:100 @A3	Feb 2015

Drwg. No. & Revision
696-GALG-OptA-P1

Notes

Skylights to lower ground floor

WC

WC

Void

Void

Void

Glass Walkway

Tea Point

Painted timber shopfront with traditional detailing. See drawing GE01

Retail Unit

Dummy door to maintain rhythm of facade

Retail Unit

65 Charlotte Street

63 Charlotte Street

Residential Lobby

New glazed rooflight

61 Charlotte Street

Shower

WC

WC

WC

Tea Point

Skylight Above

Void

Reception

Stairs

Disabled W.C

Meeting Room

Void

Void

New cast iron railings painted black to match adjacent existing

0m 1m 2m 5m 10m

00-A Ground Floor Plan - Option A
Scale 1:50@A1, 1:100@A3

P1 12/2/15 Issued for Planning Application

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Client
Holbud Investments

Project
61-65 Charlotte Street

Drawing Title
General Arrangement
Proposed Ground Floor Plan
Option A - Open Plan

Status
Planning

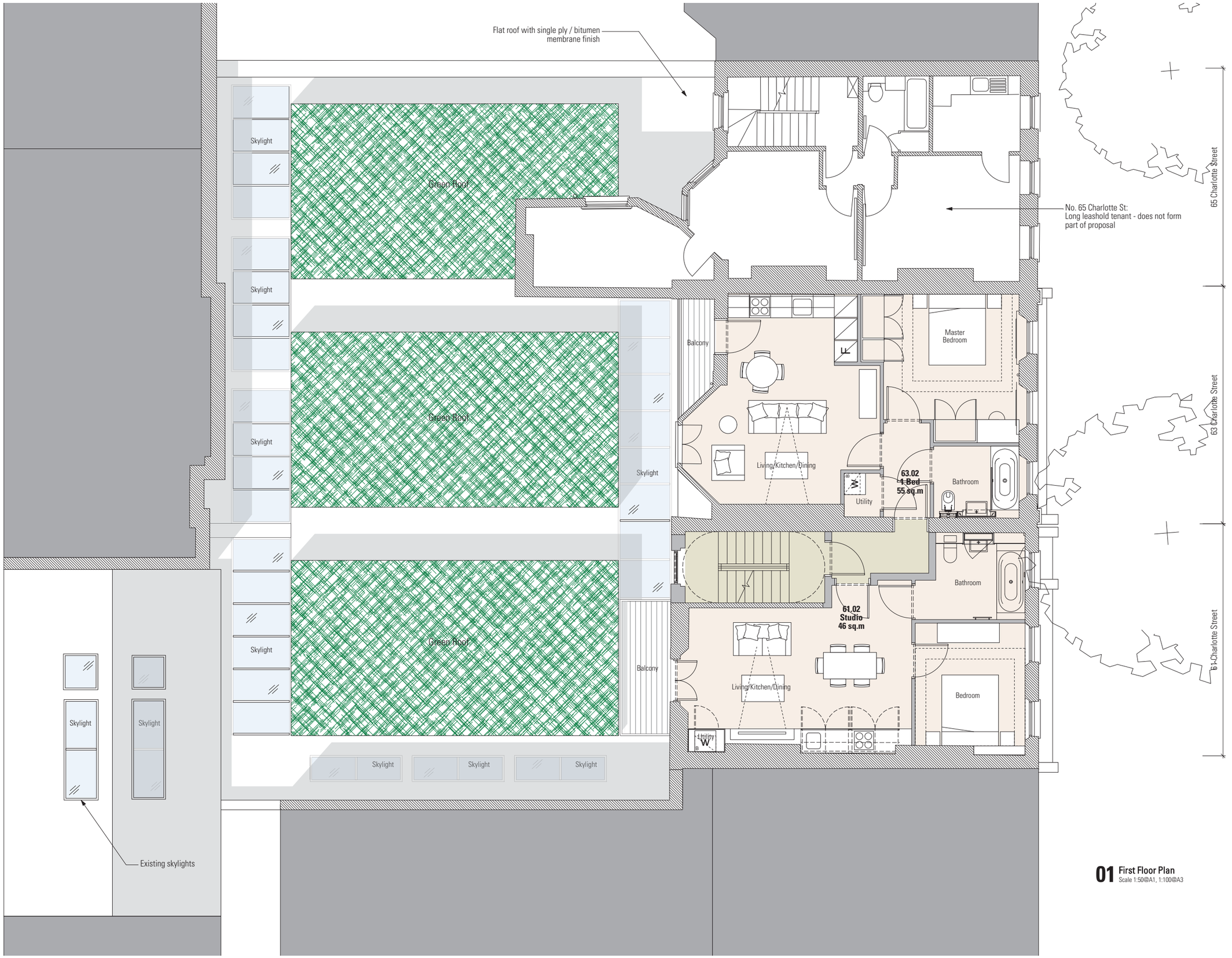
Drawn
COD

Checked
NM

Scale
1:50 @A1/ 1:100 @A3

Date
Feb 2015

Drwg. No. & Revision
696-GA00-OptA-P1



0m 1m 2m 5m 10m

01 First Floor Plan
Scale 1:50@A1, 1:100@A3

Notes

P1 12/2/15 Issued for Planning Application

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Client
Holbud Investments

Project
61-65 Charlotte Street

Drawing Title
General Arrangement
Proposed First Floor Plan

Status Planning
Drawn
Checked

Scale 1:50 @A1/ 1:100 @A3
Date Feb 2015

Drwg. No. & Revision
696-GA01-P1

Appendix B Basement survey, overview sketches and sections of changes proposed

Rev	Date	By	Amendment

LEGEND

ABBREVIATIONS

B	BOLLARD	MH	MANHOLE
BOE	BRICK ON EDGE	O/H	OVER HEAD
BOX.	BOXING	P	POST
BT	BRITISH TELECOM	P/L	PAVEMENT LIGHT
B/W	BRICK WALL	RAD	RADIATOR
CATV	CABLE TELEVISION	RE	RODDING EYE
CF	CEILING FALL	RS	ROAD SIGN
CL	COVER LEVEL	RSJ	ROLLED STEEL JOIST
CONC	CONCRETE FINISH	RSS	ROLLED STEEL STAWCHION
COU	COVER ORIGIN UNKNOWN	RWP	RAIN WATER PIPE
CPD	CUPBOARD	SC	STOP COCK
DK	DROP KERB	SP	SIGN POST
DL	DERIVED LEVEL	SVP	SOIL VENT PIPE
ELEC.	ELECTRICAL	TL	TRAFFIC LIGHT
ER	EARTHING ROD	TN	TREE NUMBER
F/B	FLOWER BED	TP	TELEPHONE POLE
FAR	FLAT ASPHALT ROOF	UTL	UNABLE TO LIFT
G	GULLY	VP	VENT PIPE
GV	GAS VALVE	VTF	VINYL TILED FLOOR
HLW	HIGH LEVEL WINDOW	WC	WATER CLOSET
IC	INSPECTION COVER	WHB	WASH HAND BASIN
L/L	LOW LEVEL	WV	WATER VALVE
LP	LAMP POST	Ø	DIAMETER

OVERHEAD DETAIL

BARRIER OR FENCE

CHANGE IN SURFACE

GATE

SURVEY STATION

HEIGHTS

C	HEIGHT FROM FLOOR TO CILL
H	HEIGHT FROM CILL TO HEAD
SP	HEIGHT FROM FLOOR TO SPRING OF ARCH
AH	HEIGHT FROM FLOOR TO HEAD OF ARCH
(2820)	HEIGHT TO CEILING, BEAM OR DOOR
S/C	STRUCTURAL CEILING HEIGHT
F/C	FALSE CEILING HEIGHT
DL	DEDUCED LEVEL DERIVED FROM PLUS MEASUREMENTS

TREES

Ø DIAMETER(mm)
S SPREAD(mm) diameter
H HEIGHT(mm)
ALL TREE HEIGHTS SHOWN IN (mm)

LEVELS ARE RELATED TO ORDNANCE SURVEY DATUM BY MEANS OF GPS OBSERVATIONS TO CONTROL POINTS WHERE A MEAN VALUE HAS BEEN OBTAINED

3sixty measurement

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Tel: 020 7837 2930
Fax: 020 7837 2931
E-mail: info@3sixtymeasurement.co.uk
Website:www.3sixtymeasurement.co.uk

Client: MERCHANT LAND INVESTMENTS LIMITED

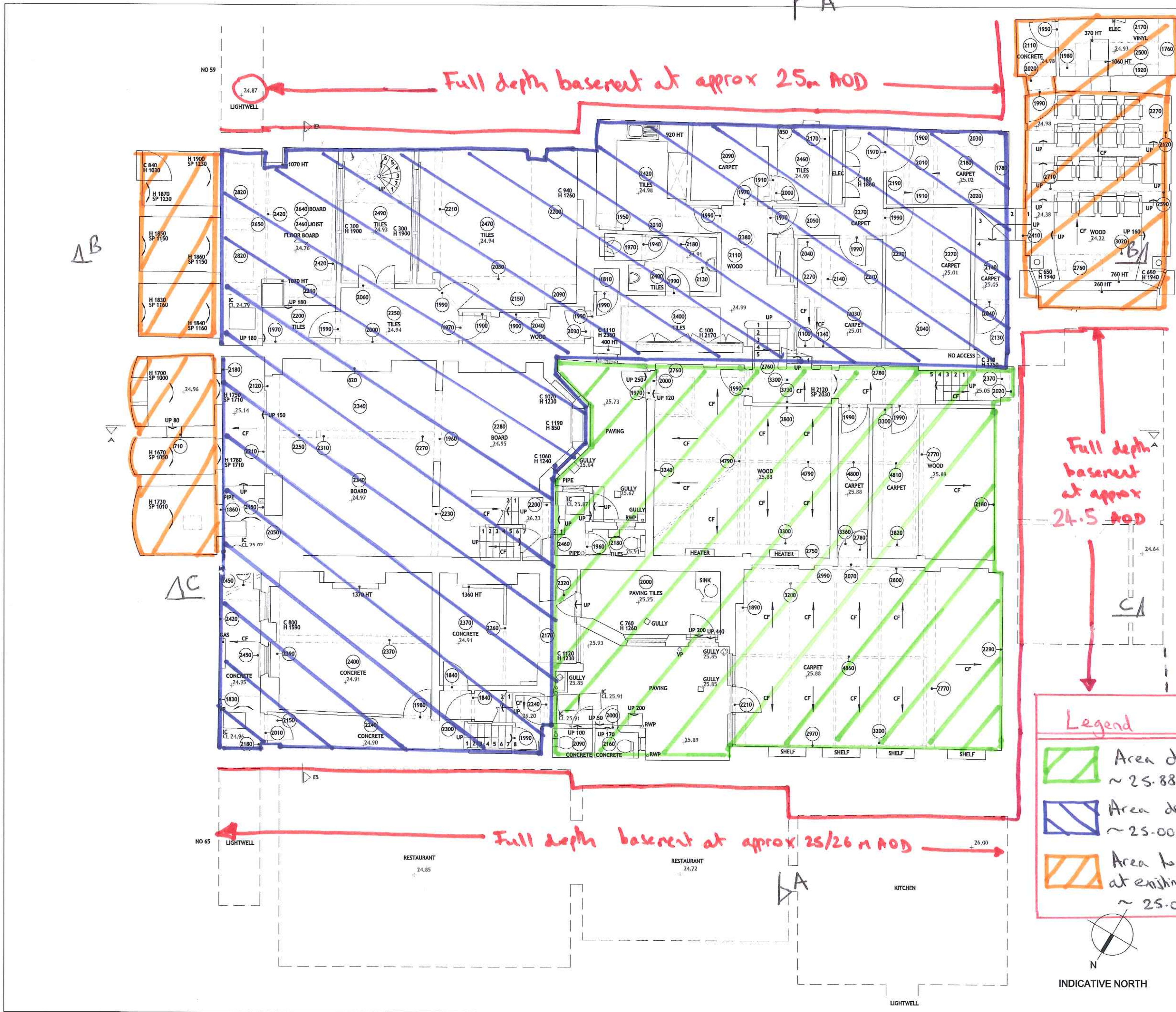
Project: 61-65 CHARLOTTE STREET

Drawing: LEVELS TO NEIGHBOURING PROPERTIES BASEMENT

Date	Scale	Drawn by	Checked by
JAN 2014	NTS	GAJ	SW

Project No	Drawing No	Revision
13478	-SK01	

INDICATIVE NORTH



Legend

- Area dropped from ~25.88 to 24.31 (green)
- Area dropped from ~25.00 to 24.31 (blue)
- Area to remain at existing level ~25.00 / 24.22 (orange)

LEGEND

ABBREVIATIONS

B	BOLLARD	MH	MANHOLE
BOE	BRICK ON EDGE	O/H	OVER HEAD
BOX.	BOXING	P	POST
BT	BRITISH TELECOM	P/L	PAVEMENT LIGHT
B/W	BRICK WALL	RAD	RADIATOR
CATV	CABLE TELEVISION	RE	RODDING EYE
CF	CEILING FALL	RS	ROAD SIGN
CL	COVER LEVEL	RSJ	ROLLED STEEL JOIST
CONC	CONCRETE FINISH	RSS	ROLLED STEEL STANCHION
COU	COVER ORIGIN UNKNOWN	RWP	RAIN WATER PIPE
CPD	CUPBOARD	SC	STOP COCK
DK	DROP KERB	SP	SIGN POST
DL	DERIVED LEVEL	SVP	SOIL VENT PIPE
ELEC.	ELECTRICAL	TL	TRAFFIC LIGHT
ER	EARTHING ROD	TN	TREE NUMBER
F/B	FLOWER BED	TP	TELEPHONE POLE
FAR	FLAT ASPHALT ROOF	UTL	UNABLE TO LIFT
G	GULLY	VP	VENT PIPE
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HLW	HIGH LEVEL WINDOW	WC	WATER CLOSET
IC	INSPECTION COVER	WHB	WASH HAND BASIN
L/L	LOW LEVEL	WV	WATER VALVE
LP	LAMP POST	Ø	DIAMETER

OVERHEAD DETAIL
BARRIER OR FENCE
CHANGE IN SURFACE
GATE
SURVEY STATION

HEIGHTS

C	HEIGHT FROM FLOOR TO CILL
H	HEIGHT FROM CILL TO HEAD
SP	HEIGHT FROM FLOOR TO SPRING OF ARCH
AH	HEIGHT FROM FLOOR TO HEAD OF ARCH
(2590)	HEIGHT TO CEILING, BEAM OR DOOR
S/C	STRUCTURAL CEILING HEIGHT
F/C	FALSE CEILING HEIGHT
DL	DEDUCED LEVEL DERIVED FROM PLUS MEASUREMENTS

TREES

Ø DIAMETER(mm)
S SPREAD(mm) diameter
H HEIGHT(mm)
ALL TREE HEIGHTS SHOWN IN (mm)

Rev	Date	By	Amendment

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Overview of proposed works to existing lower ground floor.

Client: MERCHANT LAND INVESTMENTS LIMITED
Project: 61-65 CHARLOTTE STREET
Drawing: Basement alterations
Date: Feb 15 | Scale: NTS | Drawn by: | Checked by:
Project No: 4610 | Drawing No: GA-01 | Revision: /

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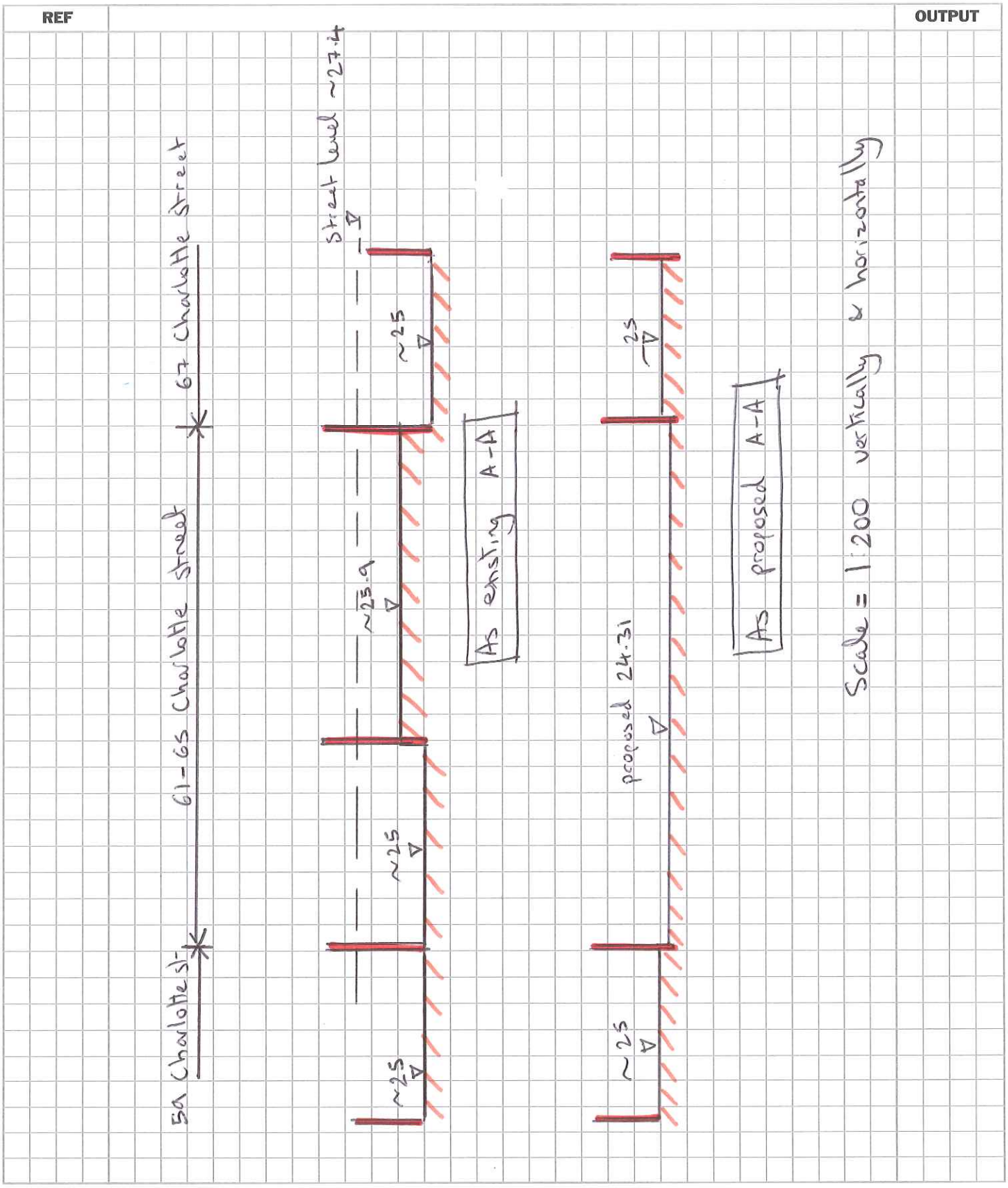
STRUCTURAL AND CIVIL CONSULTING ENGINEERS

Project ▸		Project Ref ▸
61-65 Charlotte street		4610
Element ▸		**Page No ▸**
basement impact sections		GA-02
Date ▸	**Made By ▸**	**Checked By ▸**
Feb 15	CAR	

REF	OUTPUT



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Element ▸		**Page No ▸**
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Date ▸	**Made By ▸**	**Checked By ▸**
Feb 15	CAR	

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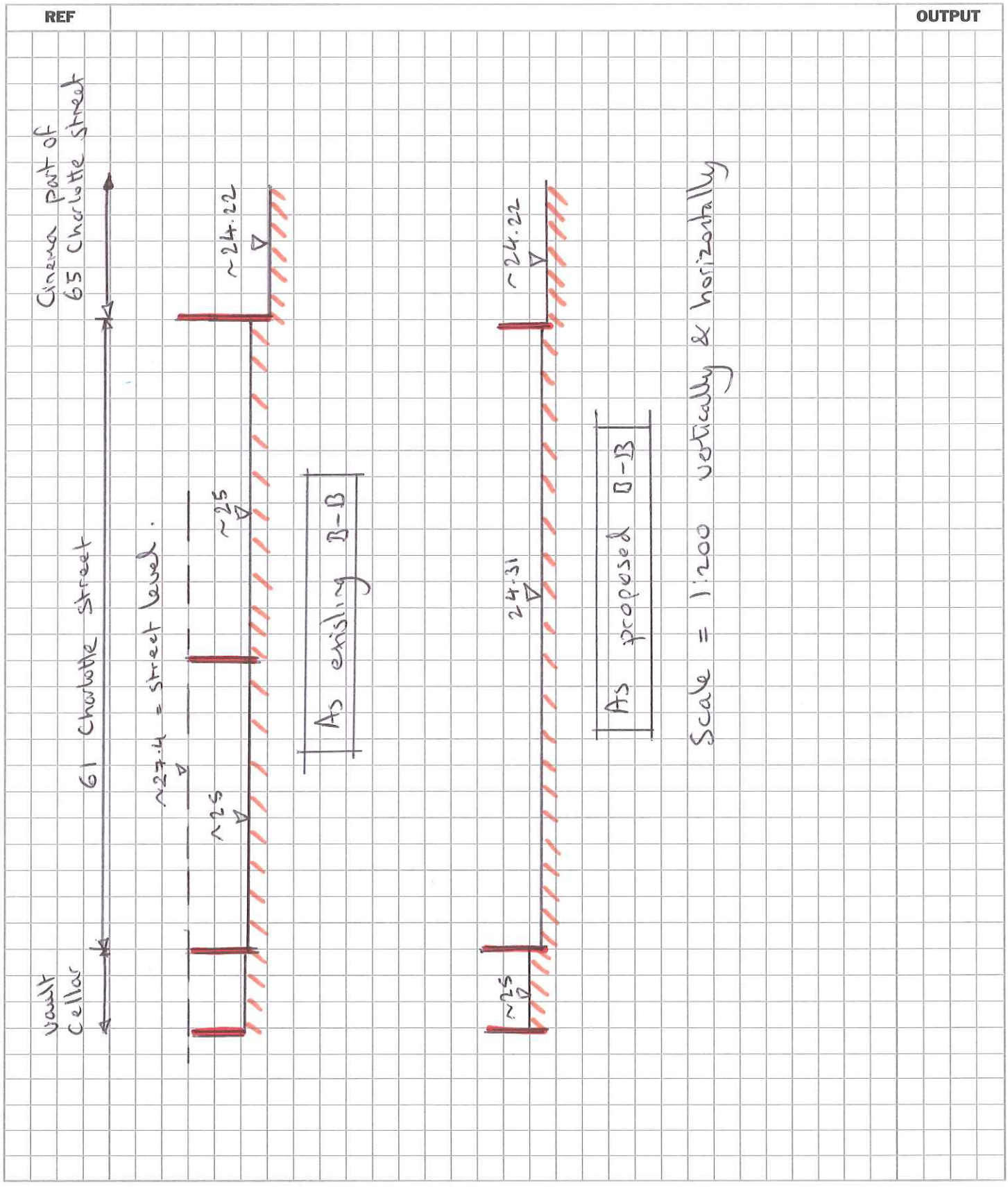

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Date ▸	**Made By ▸**	**Checked By ▸**
Feb 15	CAR	

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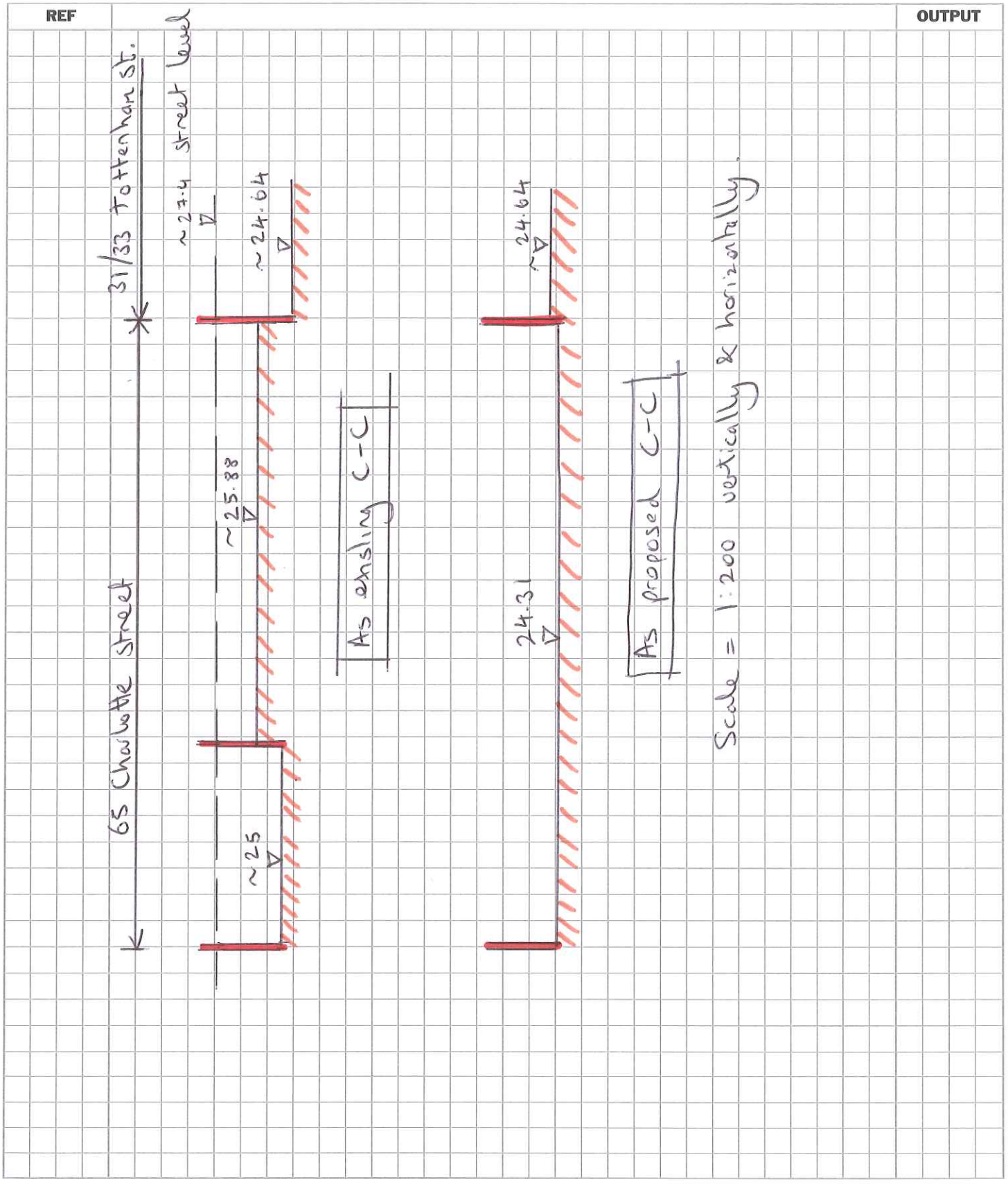
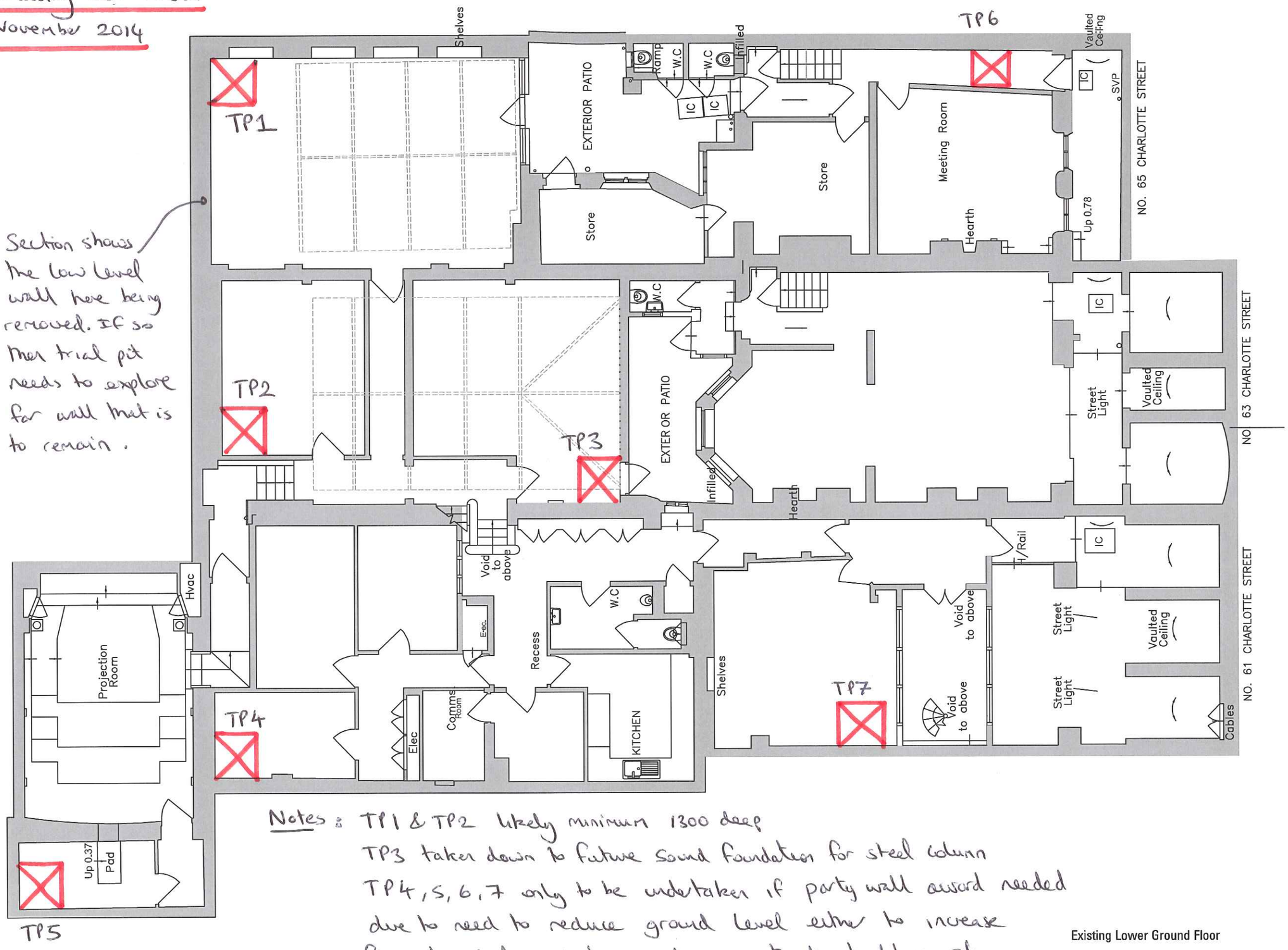


Appendix C Site investigation exploratory trial holes

General sketch of proposed trial pits

Drawing No. SK01

November 2014



Section shows the low level wall here being removed. If so then trial pit needs to explore far wall that is to remain.

Notes: TP1 & TP2 likely minimum 1300 deep

TP3 taken down to future sound foundation for steel column

TP4, 5, 6, 7 only to be undertaken if party wall award needed due to need to reduce ground level either to increase floor to ceiling or to provide new thick build-up of e.g. slab, insulation, dpm, tanking, drained cavity, screed etc.

Existing Lower Ground Floor

Notes:

Existing building fabric

P1 26/8/14 Issue for Pre-App

Revisions

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Client: Holbud Investments

Project: 61-65 Charlotte Street

Drawing Title: Existing General Arrangement Plans Lower Ground Floor

Status	Drawn	Checked
Planning	NM	GO
Scale		Date
1:100@A3		Aug '14

Drwg. No. & Revision: P818-GALGEx-P1

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STRUCTURAL AND CIVIL CONSULTING ENGINEERS

Project ▸		Project Ref ▸
61-65 Charlotte Street		4610
Element ▸		**Page No ▸**
Site investigatory works		1
Date ▸	**Made By ▸**	**Checked By ▸**
Dec 14	C.A. Reynolds	

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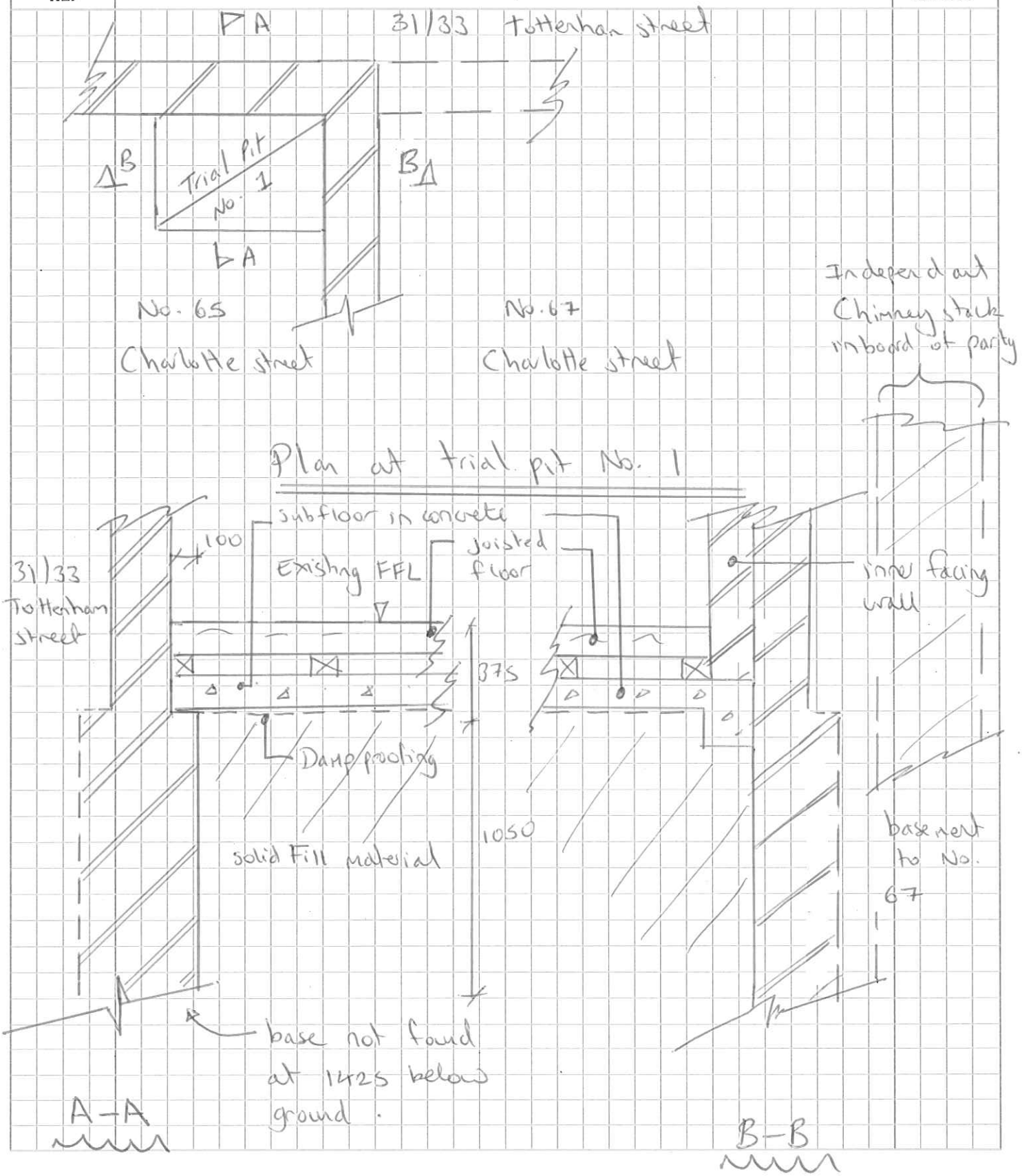

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Project ▸	Project Ref ▸
61-65 Charlotte street	4610
Element ▸	**Page No ▸**
Site investigatory works	2
Date ▸ / **Made By ▸**	**Checked By ▸**
Dec 14. / CAR	

P C

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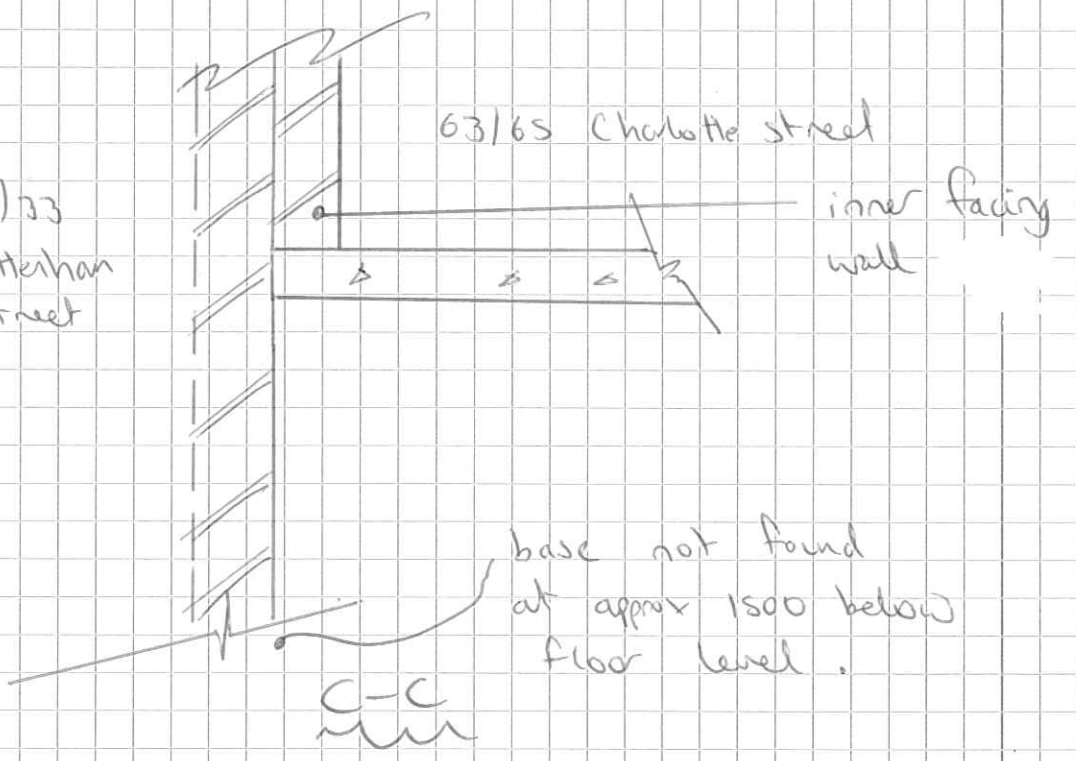
No. 63/65 Charlotte street.

P C

Plan at trial pit No. 2



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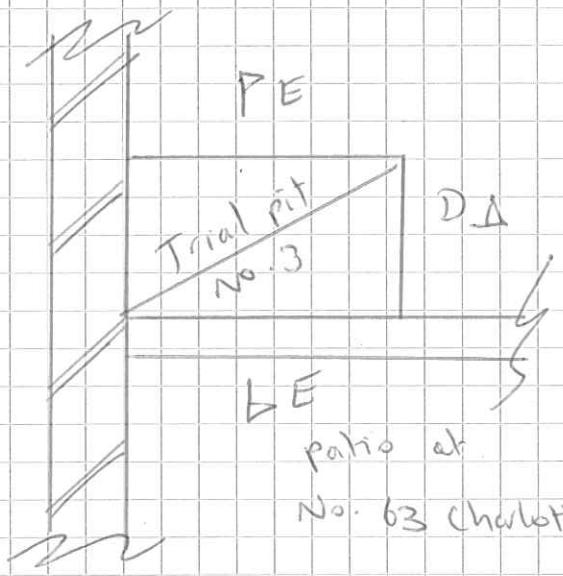
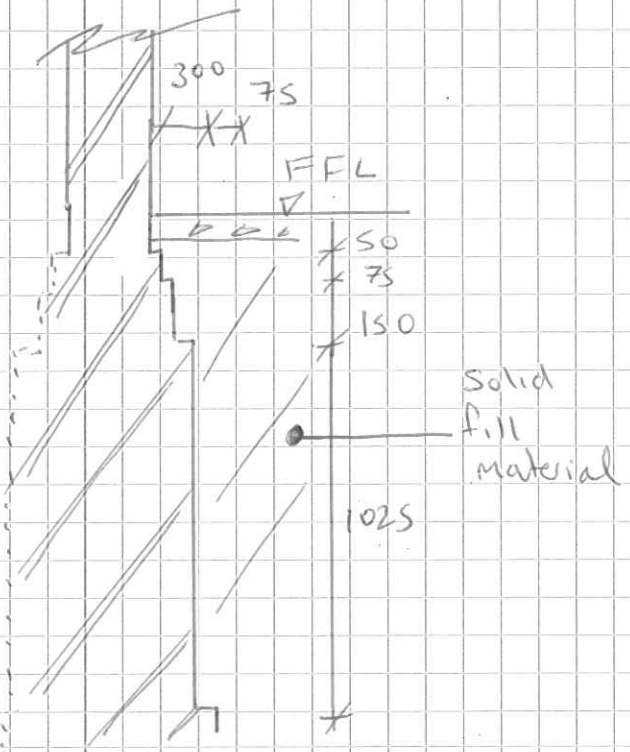
STRUCTURAL AND CIVIL CONSULTING ENGINEERS

Project ▸	Project Ref ▸
61-65 Charlotte Street	4610
Element ▸	**Page No ▸**
Site investigatory works	3
Date ▸	**Made By ▸** / **Checked By ▸**
Dec 14	CAR.

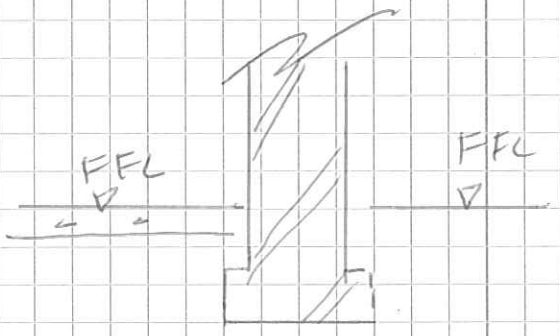
REF | OUTPUT



Plan at trial pit No. 3



D-D



E-E

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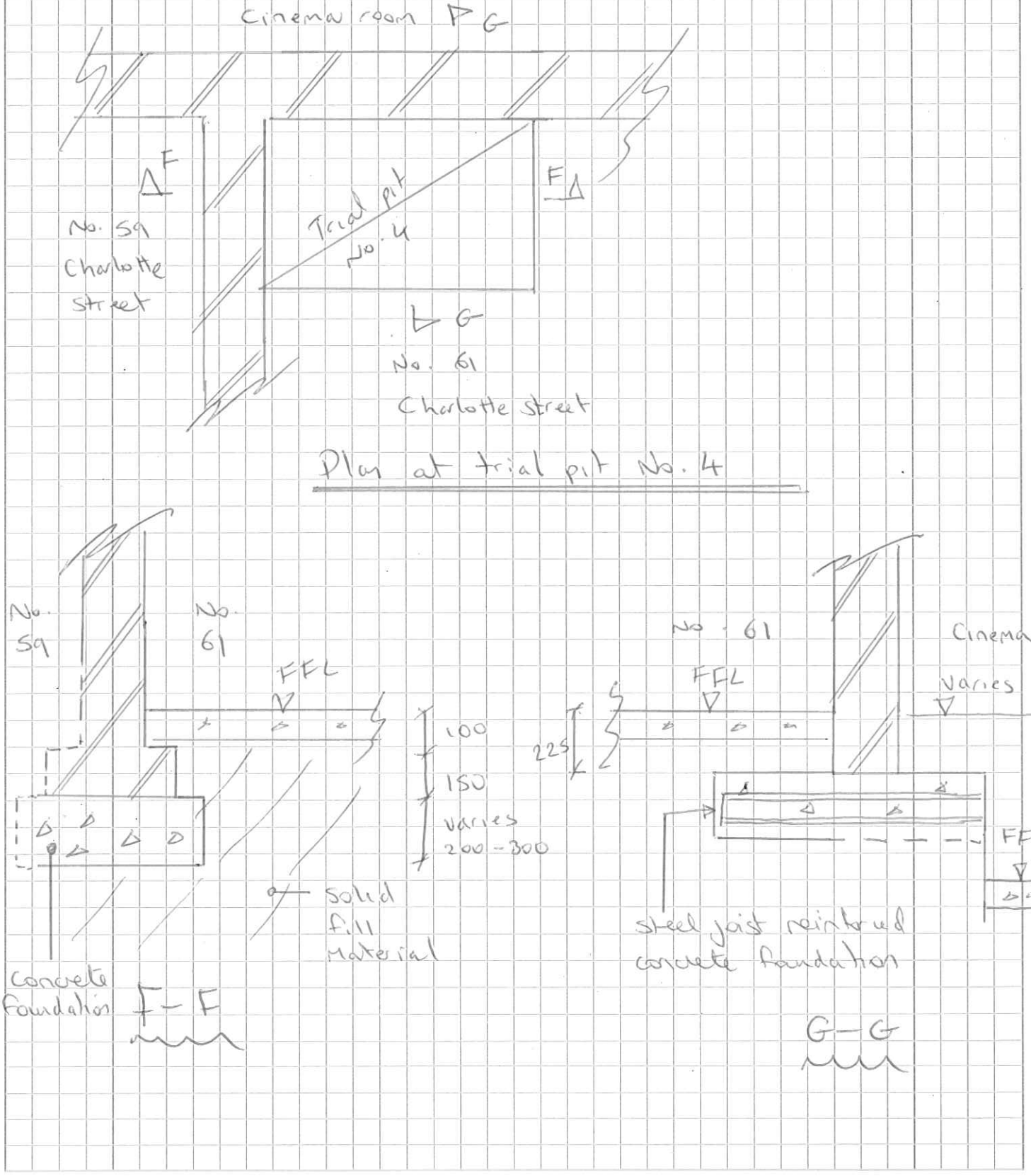
STRUCTURAL AND CIVIL CONSULTING ENGINEERS

Project ▸	Project Ref ▸
61–65 Charlotte street	4610
Element ▸	**Page No ▸**
Site investigatory works	4
Date ▸ / **Made By ▸**	**Checked By ▸**
Dec 14 / CAR	

REF | OUTPUT

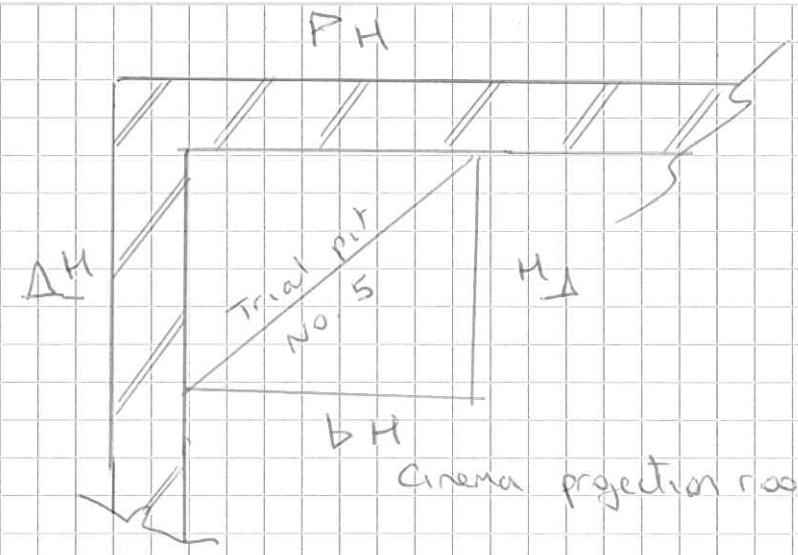


bwm

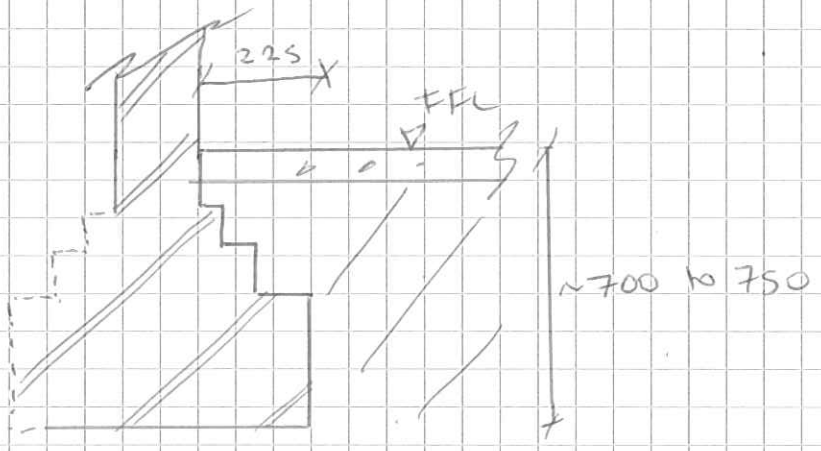
STRUCTURAL AND CIVIL CONSULTING ENGINEERS

Project ▸	Project Ref ▸
61-65 Charlotte street.	4610
Element ▸	**Page No ▸**
Site investigatory works	5
Date ▸ / **Made By ▸**	**Checked By ▸**
Dec 14 / CAR.	

REF		OUTPUT



Plan at trial pit No. 5



solid brick & clay fill material

H-H

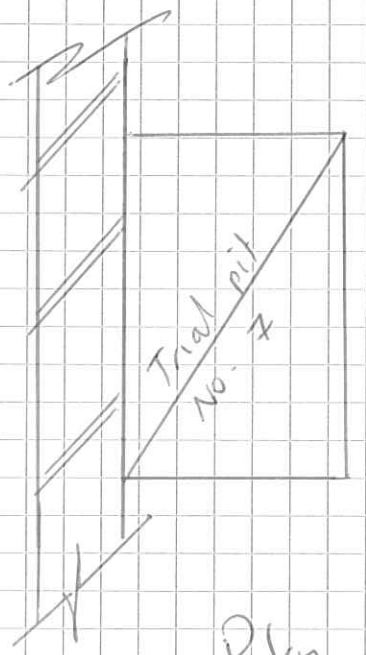
bwm

STRUCTURAL AND CIVIL CONSULTING ENGINEERS

Project ▸ 61-65 Charlotte street		Project Ref ▸ 4610
Element ▸ Site investigatory works		Page No ▸ 6
Date ▸ Dec 14	Made By ▸ CAR.	Checked By ▸

REF

OUTPUT



Plan of Trial pit No. 7