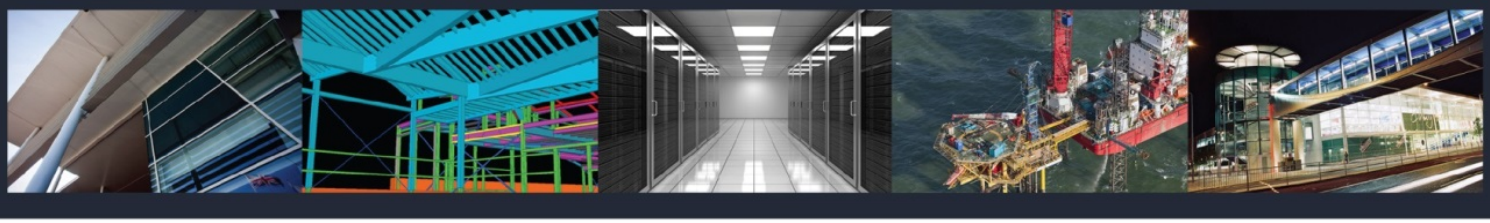
PINNACLE
CONSULTING ENGINEERS



# BASEMENT IMPACT ASSESSMENT

**112A Great Russell Street, London**

**Criterion Capital Ltd**

**22-Apr-15**

STRUCTURAL • CIVIL • DUE DILIGENCE • ENGINEERING MASTERPLANNING
FLOOD MANAGEMENT • INFRASTRUCTURE DESIGN
PRE-DEVELOPMENT ENGINEERING • BUILDING INFORMATION MODELLING

PINNACLE
CONSULTING ENGINEERS

# CONTACT DETAILS


| Name | Position | Email | Telephone | Mobile |
|---|---|---|---|---|
| Ed Coupe BEng(Hons) CEng MIStructE | Director | ed.c@ukpinnacle.com | 0207 043 3412 | 07887893790 |
| David Meigh BEng(Hons) CEng MICE | Director | david.m@ukpinnacle.com | 01707 527635 | 07770 550712 |


# APPROVALS

| | Name | Signature | Position | Date |
|---|---|---|---|---|
| **Prepared by** | E Coupe | | Director | April 15 |
| **Reviewed by** | D Meigh | | Director | April 15 |
| **Approved by** | D Meigh | | Director | April 15 |

# REVISIONS

| Revision By | Date | Context |
|---|---|---|
| EC | 22/4/15 | Minor amendments to figures |
| | | |
| | | |
| | | |

# ISSUES

| Version No. | Date | Context |
|---|---|---|
| 1.0 draft | 20/4/15 | Issued to Team |
| 2.0 | 22/4/15 | Final issue for Planning |
| | | |
| | | |

# CONTENT

# 1 INTRODUCTION

This report provides a detailed description of the basement works proposed at 112A Great Russell Street by Criterion Capital. The report provides a preliminary assessment on the likely impacts of the excavation works on the overall stability of the existing building, neighbouring properties, the groundwater environment and any mitigation measures required. The report reflects the requirements and considerations outlined in Camden's Planning Guidance on Basements and Lightwells document CPG4. The report author is a qualified Chartered Structural Engineer and checked/approved by a Chartered Civil Engineer, both with Pinnacle Consulting Engineers Ltd.

# 2 DESCRIPTION OF PROPOSED SCHEME

The St Giles Hotel, YMCA and below ground car parking and leisure facilities occupy the existing building. The building footprint is c50m x 75m on plan with twelve storeys above ground level, and a basement consisting of five levels of car parking at level -4 and -5 and other uses extending down around 16m below general ground and road level. The existing building superstructure is formed in a concrete frame. The basement is formed of one way spanning flat slabs 270mm thick spanning 7m onto 230mm downstand beams running east west through the basement supported on columns at c5m centres typically. Copies of the proposed plans and sections can be found in the appendix of this report. The following sections and figures represent the key works within the existing basement.

The proposed hotel will require vertical access for staff and public through existing stair and lift cores. Existing staircases and lifts will be utilised, however two new passenger lifts and a fire fighting lift is to be installed through each basement level from ground level down to level -5. The lift locations have been devised to ensure the main beams are not affected by the voids needed in the slabs. The base of the lifts will require shallow lift pits 1200mm deep. The current lowest basement level is constructed from insitu concrete around 500mm thick with step downs to encompass services and drainage running above slab level. The lift pits and shaft have been set out to avoid breaking out column foundations.

The proposed works will include providing a suitable waterproofing membrane below the pits and lapped with the existing membranes where present. The new reinforcement bars in the pits will be connected to the existing slab using dowel bars drilled and fixed into sides of the cut slab to ensure continuity. Due to the nature of the surrounding geology, the likelihood of water flooding the basement during the works is considered very low. Some local ponding of water may occur during the excavation and will require temporary sump pumps in the excavation.

The proposed drainage for the hotel usage will utilise proprietary vacuum drainage systems by specialist suppliers. This approach has been developed for locations such as these where limited headroom and restrictions on below ground drainage is present. This option will utilise the existing foul water pumped rising main into the public combined sewer in the street, and also mitigates the need to cut drainage trenches through the lowest basement slab.

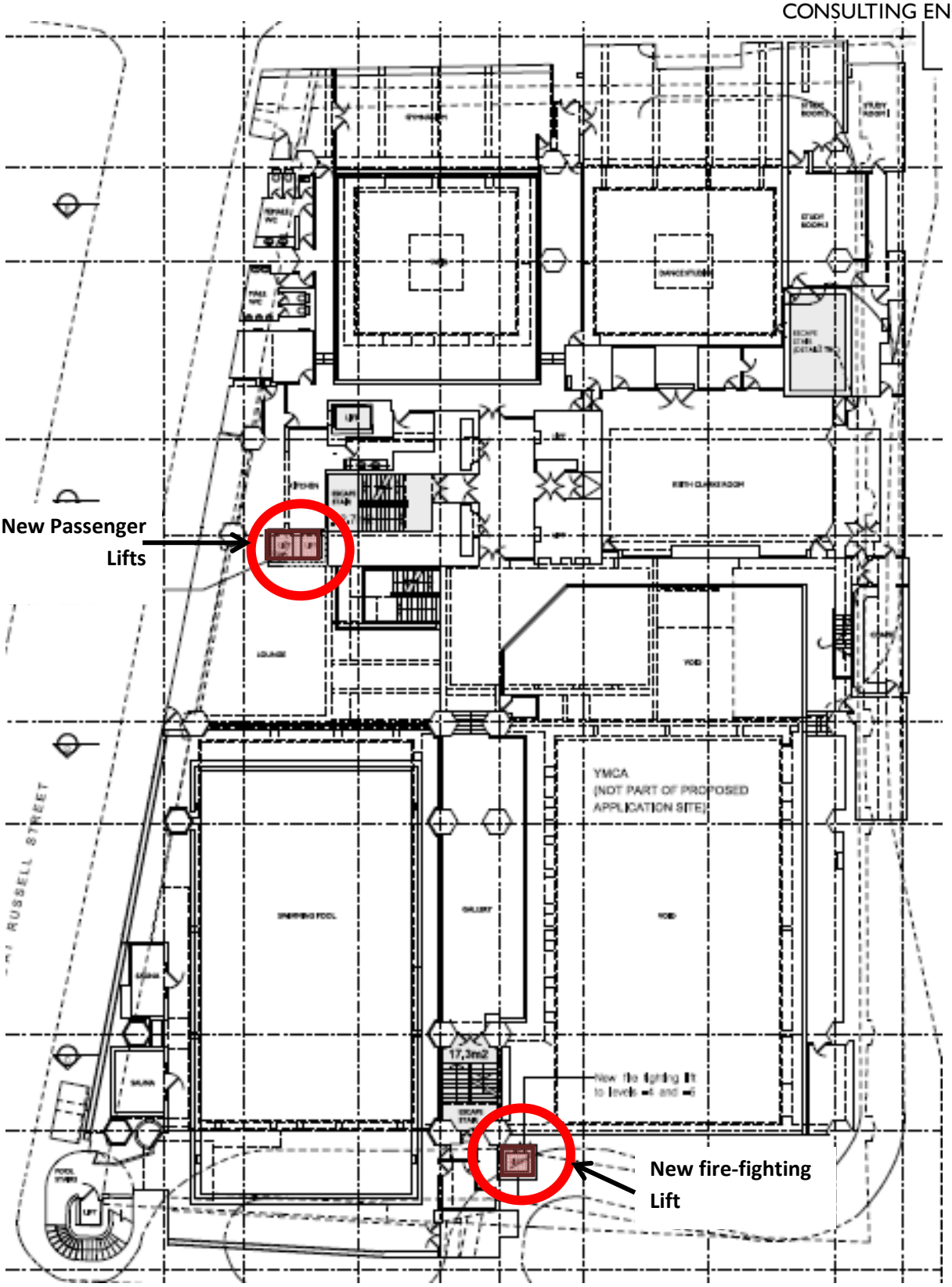



**Fig 1 – Typical upper basement plan showing new penetrations through decks**

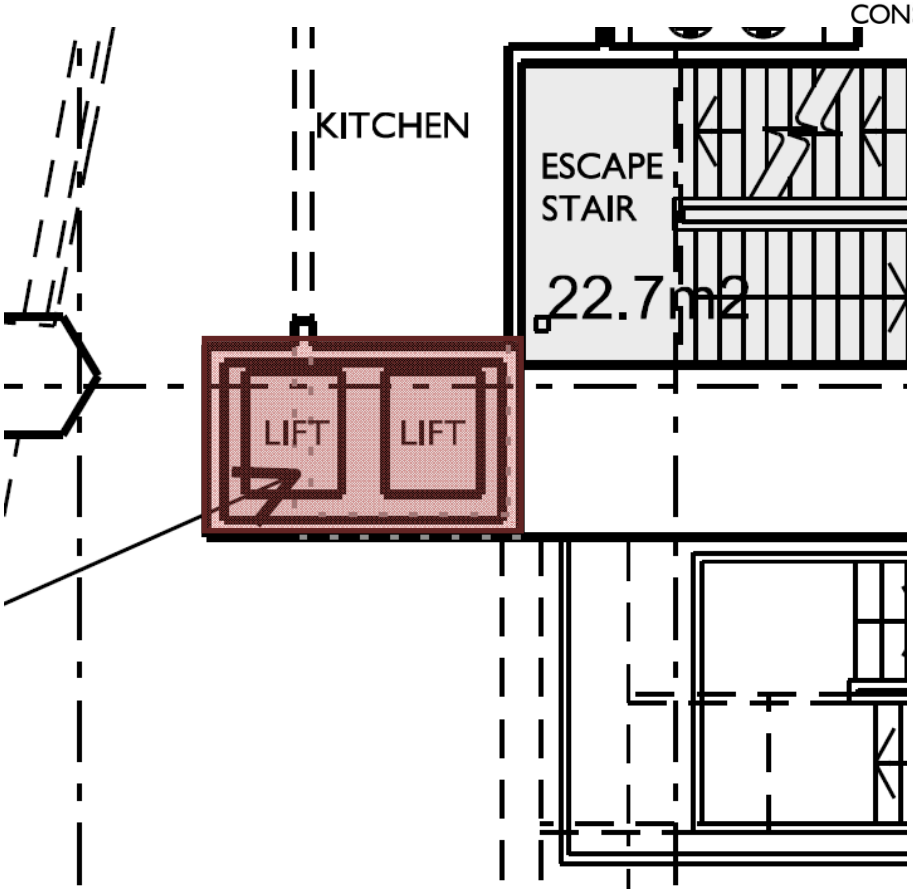



**Fig 2 – Larger scale detail of passenger lift cores required**

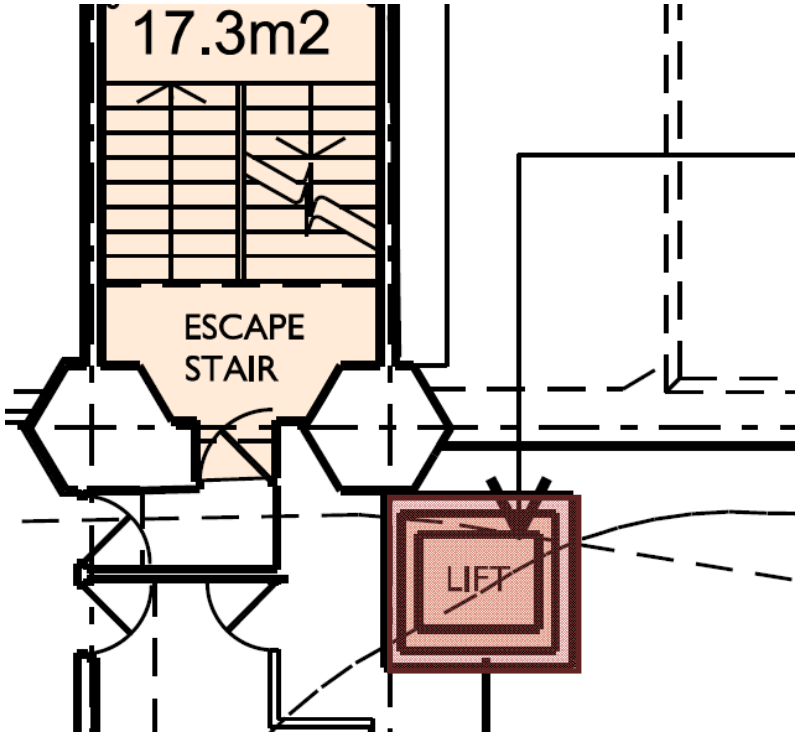



**Fig 3 – Larger scale detail of new lift core required**

# 3 CONSIDERATION OF CAMDEN CPG4

The initial assessment of the proposed works considers the followings aspects according to Camden's Planning Guidance on Basements and Lightwells CPG4.

- Groundwater flow
- Land stability
- Surface flow and flooding

## 3.1 Groundwater Flow

The geology of the site is recorded as Made Ground overlying the variable Lambeth Group of soils – sands and gravels to a depth of 4-5m overlying clay. There is likely to be a locally perched water table though the upper levels affected locally by significant Made Ground to depths of over 2m. The proposed works of cutting through the basement slab for the pits will need to take account of groundwater during construction but the proposals will have negligible impact on local hydrology and/or settlement risk. The new works will not affect groundwater flows and the scale of excavation is not of a significant size or obstruction to displace water via a new course or affect ground water behaviours upstream or downstream.

## 3.2 Land Stability

As stated previously, the existing basement is around 16m below ground level and is situated in layers of clay at depth and sands and gravel nearer the surface. The basement sits in very stable ground with no significant slopes of either the general surrounding ground levels or the underlying geology. Based on the proposed scheme, the lift pit excavations represent a very insignificant part of the overall footprint of the existing basement (<0.5%). The expected excavations will have no detrimental effect on the structural stability of the basement or superstructure itself and will have no effect on the nearby highways or properties, and therefore put no third parties at risk. For such minor works, condition surveys or vibration/movement monitoring will not be required for the neighbouring properties or local infrastructure.

## 3.3 Surface Flow and Flooding

The site is located within Flood Zone 1 and low risk of flooding and the mapping indicates there are no significant recorded watercourses within the vicinity of the site. The proposed basement will have no affect on the surface water outfall discharge rates to the neighbouring public combined sewer network. No increase in impermeable areas result from the works within the existing basement and therefore the need to consider sustainable drainage systems (SuDS) and attenuation is not required. A Flood Risk Assessment statement can be provided as part of the normal planning application to support this view.

# 4 IMPACTS TO NEIGHBOURS FROM DEMOLITION AND CONSTRUCTION

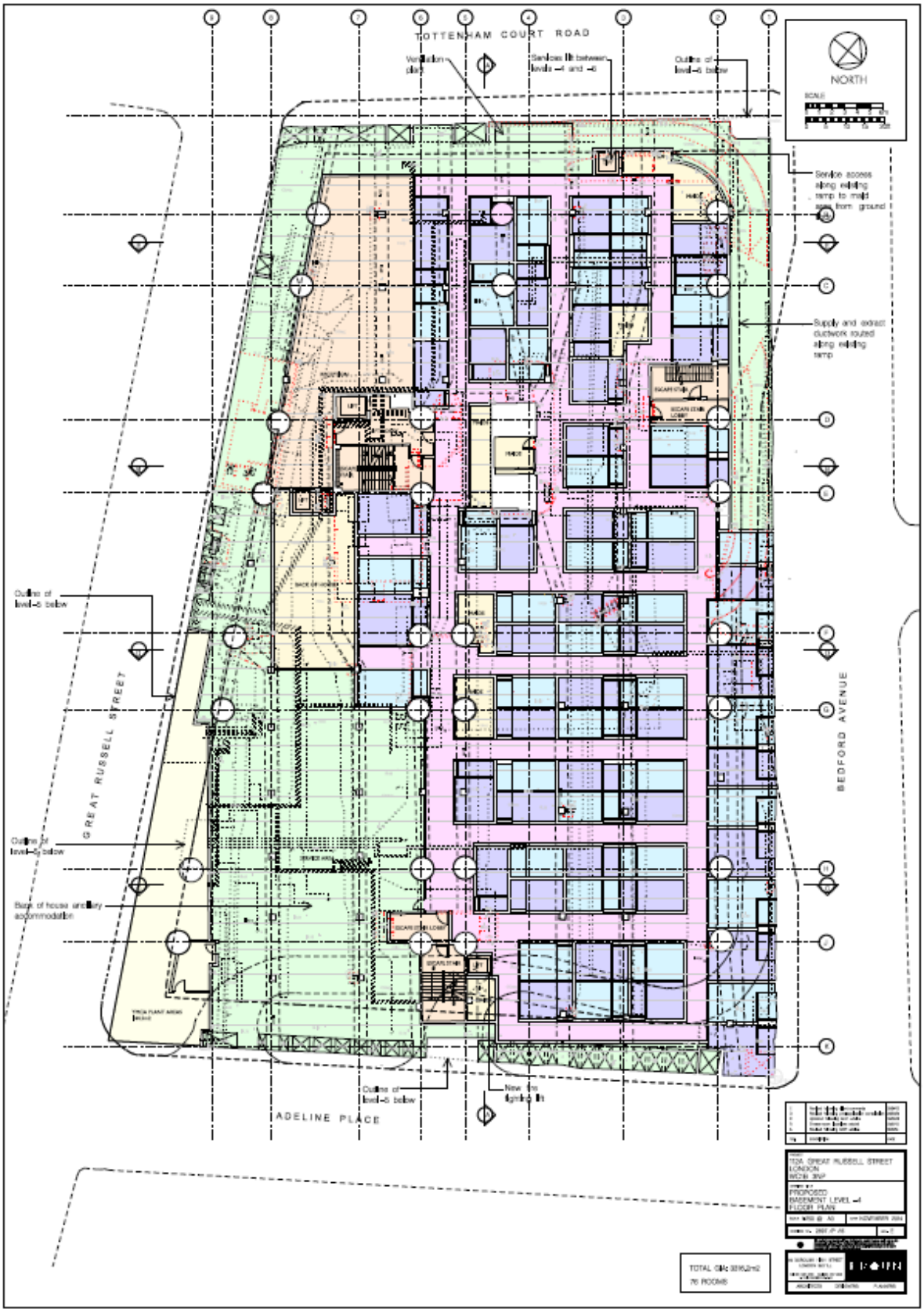
The cutting of the slabs to form the voids for the new lift cores can be carried out in a safe and controlled environment. The works are situated in small localised areas of the building and a significant distance from neighbouring properties and the sub-tenants within the building itself. The works will create some noise and vibration locally and dust generated in confined spaces will be managed by the contractor though suitable PPE and mechanical air extraction measures. A

management plan for demolition and/or construction will be provided by the appointed main contractor for the works.

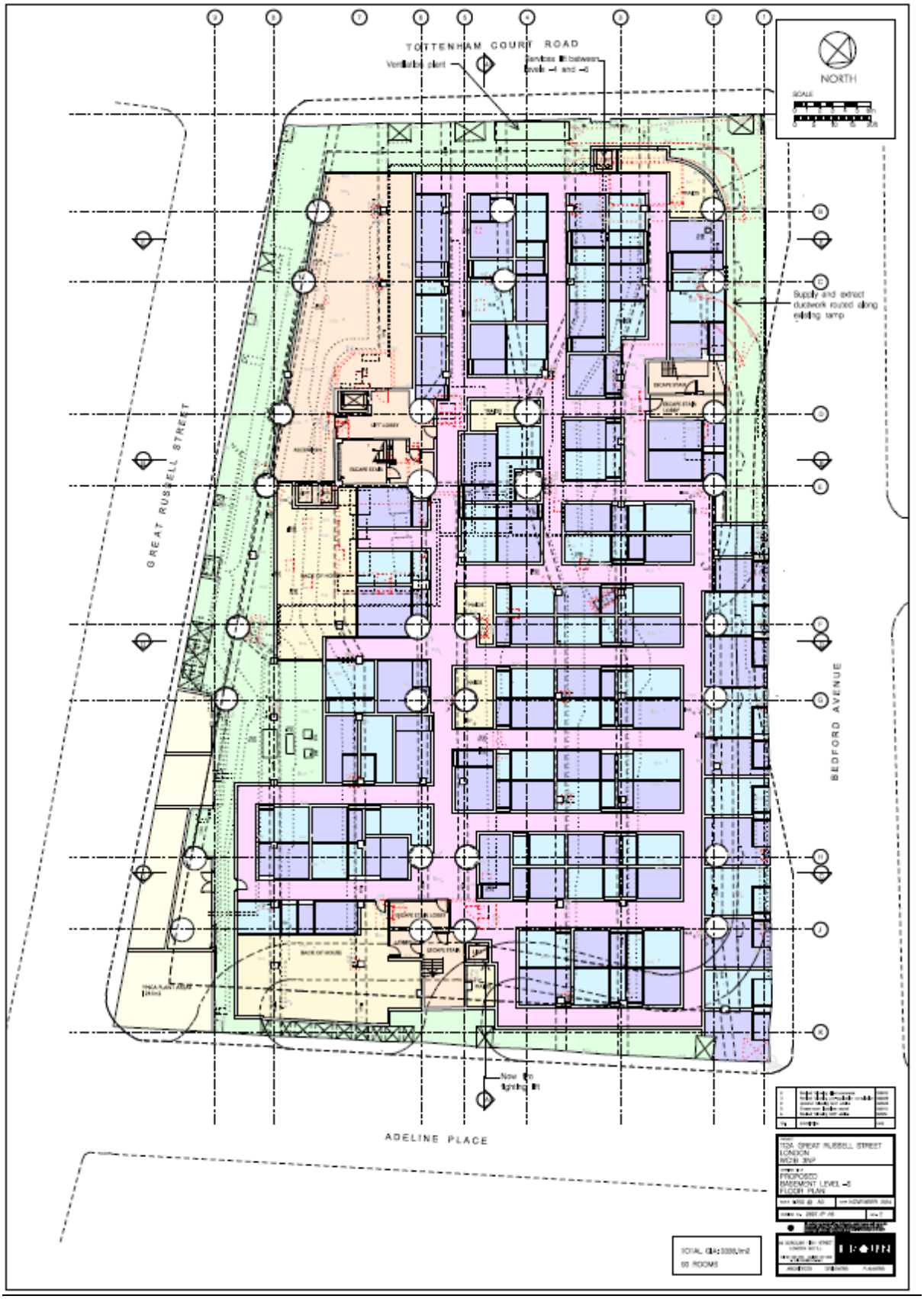
# 5 CONCLUSIONS

Based on the scope of work and minimal or no impact on the groundwater flows, land stability, surface flow and flooding, a full Basement Impact Assessment is not considered required on this scheme. This report on the excavations proposed demonstrates the relatively small scale of engineering works required to achieve the new development proposals and the methodology and means to mitigate any affects on the environment.

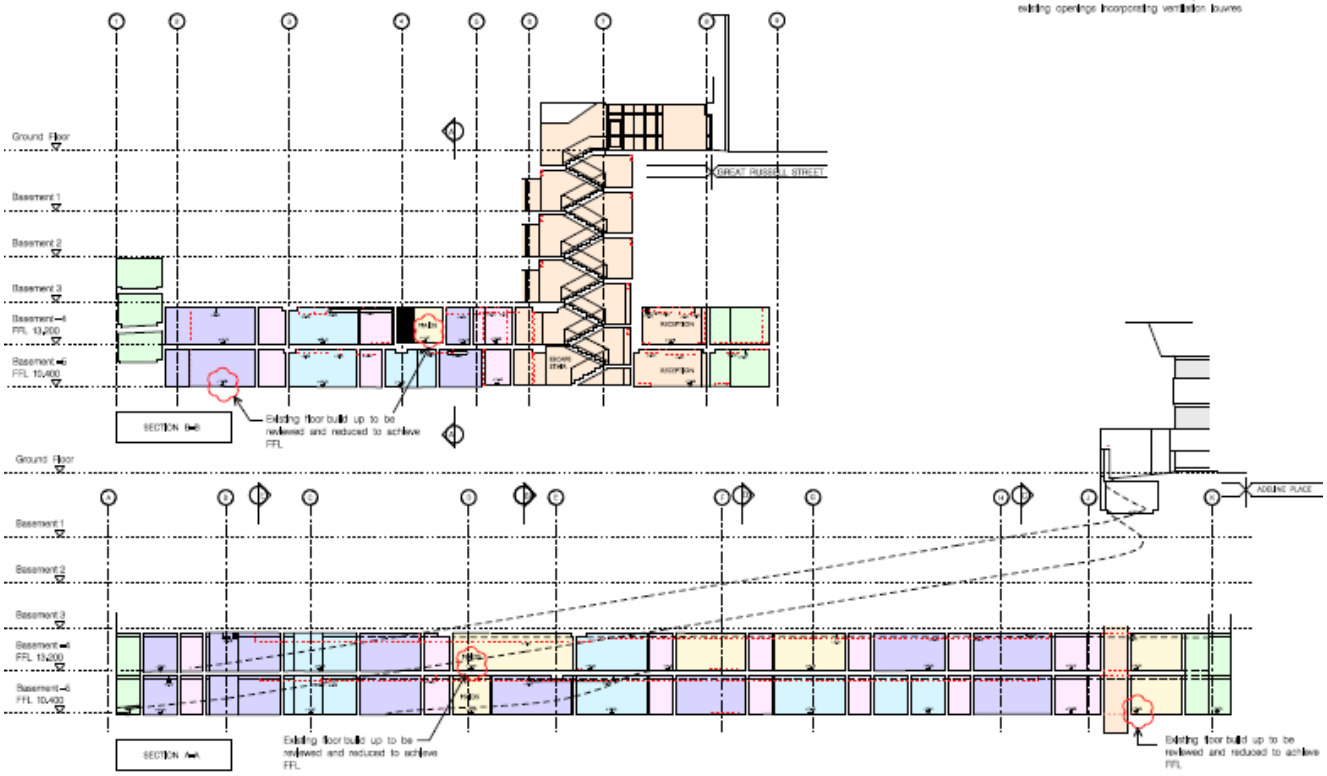
# APPENDIX A – PROPOSED ARCHITECTS PLANS




**Plan at Basement Level -4**




**Plan at Basement Level -5**




**Section Through Existing Basement and Proposed Works at -4 and -5**

**NORWICH**
Pinnacle House
3 Meridian Way
Norwich
NR7 0TA

PHONE
01603 327 170

EMAIL
norwich@ukpinnacle.com

**WELWYN GARDEN CITY**
Mercury House
Broadwater Road
Welwyn Garden City
AL7 3BQ

PHONE
01707 527 630

EMAIL
welwyn@ukpinnacle.com

**LONDON**
Woolverstone House
61 Berners Street
London
W1T 3NJ

PHONE
0207 043 3410

EMAIL
london@ukpinnacle.com

**BRISTOL**
Prudential Buildings
11-19 Wine Street
Bristol
BS1 2PH

PHONE
0117 214 0860

EMAIL
bristol@ukpinnacle.com

**DUBLIN**
Grosvenor Court
67a Patrick Street
Dun Laoghaire
Co Dublin

PHONE
+353 1231 1041

EMAIL
dublin@iepinnacle.com

**www.pinnacleconsultingengineers.com**