Design Stage Fire Risk Assessment

Fitzrovia

247 Tottenham Court Road

London

W1T 7QZ

Version 1
3rd January 2023

Zeta Compliance Services Limited
Unit 1, Avonbury Business Park
Bicester, Oxfordshire OX26 2UB
Registered in England: 03351062

t: +44 (0) 1869 326 000
e: info@zetaservices.co.uk
www.zetaservices.co.uk

Registered Office:
Compliance Group Limited,
85 Great Portland Street,
London W1W 7LT
Registered in England No: 12351374

DOCUMENT CONTROL & NOTES

Company Details:

Company:	Zeta Compliance Ltd Company Registration No: 03351062
Registered Office:	Zeta House, Avonbury Business Park, Howes Lane, Bicester OX26 2UB

Report Details:

Prepared by:	Leon Wynn
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Notes:

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The contents of this desktop review report are confidential and privileged, and all parties are required to keep information received by them confidential and any "Report" (includes written or verbal, formal or informal) and its recommendations are without prejudice to all parties' obligations under the legal agreements existing between them.

Document History:

Issue	Date	Amendment Details	Author	Checked
V1	05/01/2023	Version Issued to Client	LW	

1. Scope and Objectives

Zeta Compliance Services Ltd (ZCS) has been appointed by Kier Construction to complete a remote desk top design review with reference to the proposed new mixed used premises offering retail and office space.

The proposed document aims to provide fire safety compliance in accordance with HSG 168 during the project.

Until the construction phase plan is confirmed, all information should be treated as advisory only.

2. Building Description

The premises due to be a new build which will consist of ten floors, lower-level basement to sixth floor and roof level above the sixth. The premises is due to be constructed at 247 Tottenham Court Road, London, where a pre-existing building has been demolished by a third-party organisation.

The building is due to be rectangular in shape. Construction materials as identified from the proposed elevation floor plans include external glazed terracotta cladding, metal rainscreen cladding, basalt stone cladding with PPC aluminium windows and shopfront windows. External construction materials are also to include brickwork with rendered finish. Internally the premises will consist of concrete cast columns and concrete planks.

The premises is due to be of mixed use with retail space available on the ground floor level whilst the remainder of the building is due to be used as office space and private resident flats.

It is clear from the floor plans that the premises will be sprinkler protected in its final state, with a sprinkler tank room located within the lower-level basement floor. Automatic opening vents appear to be present at the head of each staircase on 6th floor level providing the building in its final state with smoke ventilation.

The lower-level basement floor is due to have a single means of escape by means of an internal staircase ascending to ground floor level. The first basement level is due to have two means of escape by means of internal staircases ascending to ground floor level. The ground floor level appears to have proposed exits from three of the four building elevations discharging onto Tottenham Court Road, Bayley Street and Morwell Street. The fourth, southeast elevation appears to be landlocked.

3. Means of Escape

The general philosophy for the means of escape for occupants within the building is that there is satisfactory means of giving warning of a fire and that means of escape and travel distances are limited in order to facilitate a timely and safe exit from the building for all occupants in case of fire. The principles of the evacuation strategy for this building are that in the event of a fire people can turn their back on the fire and make their way to a final exit without assistance from other occupants or fire fighters.

During all phases, the construction site should operate a simultaneous evacuation on operation of any manual call point or if provided, fixed detection.

The lower-level basement floor is due to have a single means of escape by means of an internal staircase ascending to ground floor level. The first basement level is due to have two means of escape by means of internal staircases ascending to ground floor level. The ground floor level appears to have proposed exits from three of the four building elevations discharging onto Tottenham Court Road, Bayley Street and Morwell Street. The fourth, southeast elevation appears to be landlocked. The roof appears to have several access hatches within the proposed stair cores which are expected to act as the means of escape from the roof level during the construction phase.

A visual representation of the proposed escape strategy can be viewed in Appendix A. Here, escape routes and directional signage has been identified which would ensure a compliant escape strategy is available in accordance with HSG168.

3.1. Travel distances as the new building works consist of groundworks as a low risk, fully open structure.

As the groundworks are completed and providing there are very little flammable or combustible material present, the likelihood of a fire is considered to be low. During this stage, travel distances should be within the recommended 18m allowance for dead end travel and 60m for alternative as a low-risk structure given under HSG168.

Table 2 Maximum travel distances for enclosed structures

	Fire hazard		
	Lower	Normal	Higher
Alternative	60 m	45 m	25 m
Dead end	18 m	18 m	12 m

Storage of combustible materials should be kept to a minimum with minimal ignition sources (any hot works must be strictly controlled). Any smoke from a fire, which itself should be of a reasonable size, should be able to vent externally and therefore tend not to compromise the means of escape.

3.2. Travel distances as the building works become a normal fire risk.

The travel distances should be reviewed as the building works progress and normal use of a building site occurs which includes the occupancy of multiple floor levels, storage of flammable and combustible materials internally along with potential ignition sources from electrical appliances, tools, machinery and potential controlled hot works. The travel distances should be within the recommended 18m allowance for dead end travel and 45m for alternative escaper within the structure as highlighted in HSG168.

Table 2 Maximum travel distances for enclosed structures

	Fire hazard		
	Lower	Normal	Higher
Alternative	60 m	45 m	25 m
Dead end	18 m	18 m	12 m

Storage of combustible materials should be kept to a minimum with minimal ignition sources (any hot works must be strictly controlled). Any smoke from a fire, which itself should be of a reasonable size, should be able to vent externally and therefore tend not to compromise the means of escape.

3.3. Travel distances from any higher-hazard areas.

Higher-hazard areas are locations where significant quantities of flammable or combustible materials are present such that, in the event of a fire, rapid spread will occur possibly accompanied by copious amounts of smoke or fume. Normal precautions to minimise the fire load should ensure that such areas are rare on construction sites. The fire hazard category of a building may alter throughout the construction phase. For example, a lower-hazard steel-frame building may move to normal- or higher-hazard during fit-out depending on the combustibility of materials used and the construction methods. The escape routes requirements need to be assessed during programming and reassessed as construction progresses. Should this occur, the travel distances should be within the recommended 12m allowance for dead end travel and 25m for alternative escape within the structure as highlighted in HSG168.

Table 2 Maximum travel distances for enclosed structures

	Fire hazard		
	Lower	Normal	Higher
Alternative	60 m	45 m	25 m
Dead end	18 m	18 m	12 m

3.4 temporary escape routes

When temporary escape routes are required for changes in level (changes from one floor to another) consider installing proprietary all-metal system staircases. These can be adapted to any scaffold. If there are practical reasons why these cannot be used, such as a lack of space, under certain limited circumstances a fixed ladder may be acceptable instead of stairs. Designers must allow sufficient space for a safe exit, or protected stairway, from the building using stairs. Ladder access should only be used as a last resort.

If the nature of the work means it is not practicable to provide or maintain an internal protected stairway, you should provide external temporary escape stairways. Adequate stairways can be constructed from scaffolding or using a proprietary system. A temporary stairway attached to the external walls, as part of scaffolding, becomes part of the premises until it is removed (see Part 3, Fire Safety Act 2021). The important requirement is that the external wall against which the stairway is erected must be imperforate and afford a nominal period of 30 minutes' fire resistance for 9 m vertically below the stairway and 1.8 m either side and above, as measured from the stair treads. This means that all doors, apart from the uppermost one leading onto the external stairway, must have 30 minutes' fire resistance and be self-closing. Any other openings, including windows, that are not of fire-resisting construction, must be suitably protected (e.g., with plasterboard, proprietary mineral fibre-reinforced cement panels or steel sheets).

3.5 Roof level access and egress

When the site is handed over and complete, access to the roof levels will be available via roof hatches. For a building compliant with Approved Document B, travel distances on an open-air roof level are 60m in a single direction and 100m where an option of travel is provided. This will be compliant with ADB V2 in the finished state, however, would not be compliant with the recommendations set out in HSG 168 for construction sites.

The roof appears to have several access hatches within the proposed stair cores which are expected to act as the means of escape from the roof level during the construction phase. It is likely that temporary stairs are required to provide a suitable means of escape from this roof level.

As the roof level is open aired, the travel distances provided in section 3.2 apply and therefore consideration into secondary escape routes via haki stairs or ladders will need to be introduced to provide adequate options of escape for workers on the roof levels.

3.6 Temporary accommodation units

The means of escape from the temporary accommodation units is to include the provision of two haki staircases at either end of a rectangular shaped office layout which is located externally from the new building and is positioned on a high-level gantry. The option of two escape routes will ensure the travel distances are adequately within 45m where an option is provided.

4. Fire Alarm System

The construction site will need to be provided with a wireless fire alarm system consisting of manual call points and electronic sounders as a means of warning to site occupants. The base station is to be fixed within the main office TAU.

The temporary accommodation unit should be provided with fixed automatic detection throughout and manual call points by each final exit.

Due to the fact the construction site is a standalone project, with no involvement with occupied third-party areas, there is no requirement for any fixed automatic detection during the pre-construction ground works phase. The need for automatic detection may be reviewed upon a later date during the onsite construction fire risk assessments.

Once installed, the alarm system should be tested for function and audibility within the building and if not, sufficient additional sounders fitted as necessary. Ensure the units are regularly tested (weekly) and the test recorded. Ensure all staff are aware of the fire alarm and how it operates.

5. Compartmentation

Compartmentation will be provided in the handover building in the form of internal compartment floors, walls internal fire door sets.

Because of the height of the building and thus extended times necessary to escape from the structure and to maintain the recommended safe travel distances (see section 3), compartmentation will be required. The compartmentation will need to prevent smoke and fire spread both vertically and horizontally. Compartmentation of staircases in high-rise buildings needs to be installed early and maintained throughout the construction work. This includes suitable self-closing fire doors. As the site is 7 stories above ground, it is recommended to install fire doors and fire resisting partitions to enclose the stair cores as early as practicably possible. If necessary, install temporary fire doors and compartmentation until it can be replaced by final finish products.

Kier Construction Ltd are to ensure any service breaches made in fire resisting walls and compartment walls throughout the course of this project are adequately fire stopped using approved products, by a third-party accredited fire stopping contractor, prior to handover and building completion.

It is recognised that this project is a newbuild being constructed nearby to an existing building. There are no major timber materials utilised in this project that will warrant a timber frame analysis. It has been confirmed with the Project Manager that the building has a 500mm gap between the adjacent existing building and that the external façade to the occupied building facing the construction project does not have any openings that may require temporary fire stopping.

6. Fire Exit Signage

Fire exit signage should be provided in locations that are easily visible and clear for all staff to identify their nearest escape route from all areas. The signage of fire escape routes and other fire safety signage should generally be in accordance with HSG 168 and BS 5499-4.

Escape signage should typically be located 2m above floor level, with internationally recognised pictograms used to ensure that these will be understood by all workers, including those for whom English is not their first language.

Fire escape plans should be provided at strategic points around the site, such as at fire points, identifying escape routes. They should be updated on a regular basis, so as to align with the development of the construction site.

Temporary fire exit signage will need to be installed and continually reviewed throughout the project. The location of the fire exit signage is identified on the mark up floor plan as recommendations, in Appendix A.

7. Manual Fire Fighting Equipment

Portable extinguishers are to be provided at each fire point marked in the floor plans attached to this report, consisting of a minimum of 2 (one of each type; water / foam and CO2) per floor as per HSG168 (generally, a set per floor exits will provide this, units are required per 200m2). Where a transformer is located, a CO2 fire extinguisher is within 10m.

Dry powder extinguishers are advised to be avoided as the site will be an enclosed environment where discharge of a dry powder extinguisher may be hazardous to health if inhaled and may cause issues to the vision of the user.

8. Emergency Lighting

In the event of a fire within the building, it is very unlikely that the power to the normal light circuit would be lost in the early stages while the occupants are escaping. The temporary emergency lighting is specified in accordance with HSG 168. This requires that emergency lighting be provided to escape routes, firefighting equipment and escape signage. It should also be ensured that all tasks will be sufficiently lit to allow them to be discontinued safety upon failure of the primary lighting system.

In the event of lighting failure, the emergency lighting will turn on immediately, being powered by internal batteries. Emergency lighting will not necessarily meet normal working standards but will allow safe egress via the means of escape. The lights should be checked and tested on a weekly basis by a competent person. Testing of the lighting should be undertaken at a time of minimum risk (i.e. when the site is unoccupied), as time will typically be needed for the system batteries to recharge after testing.

Competency of Author

Leon Wynn

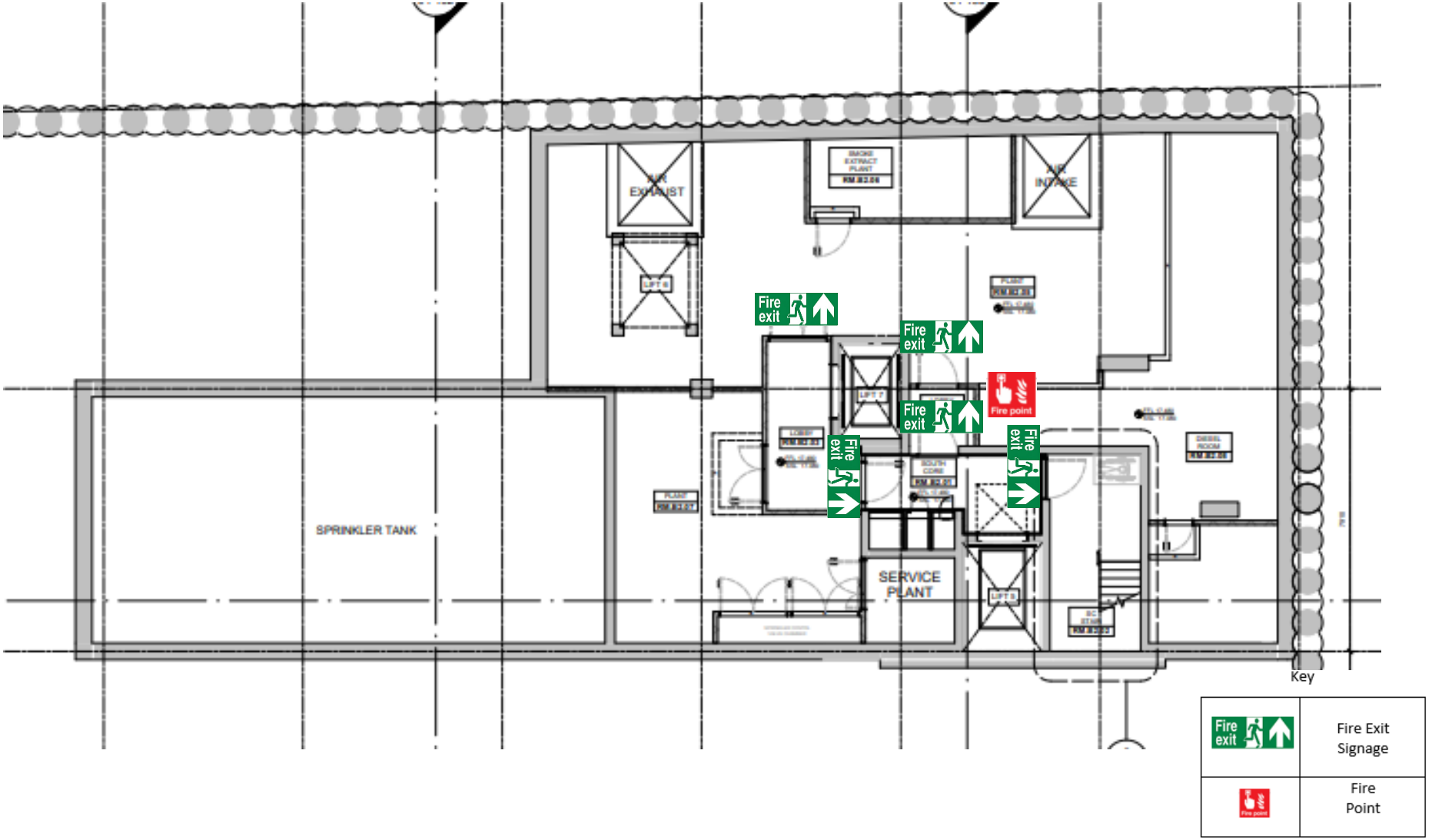
Leon Wynn BSc (Hons) AIFireE MIFSM
Fire Team Manager
Zeta Services Ltd

Memberships and Qualifications:

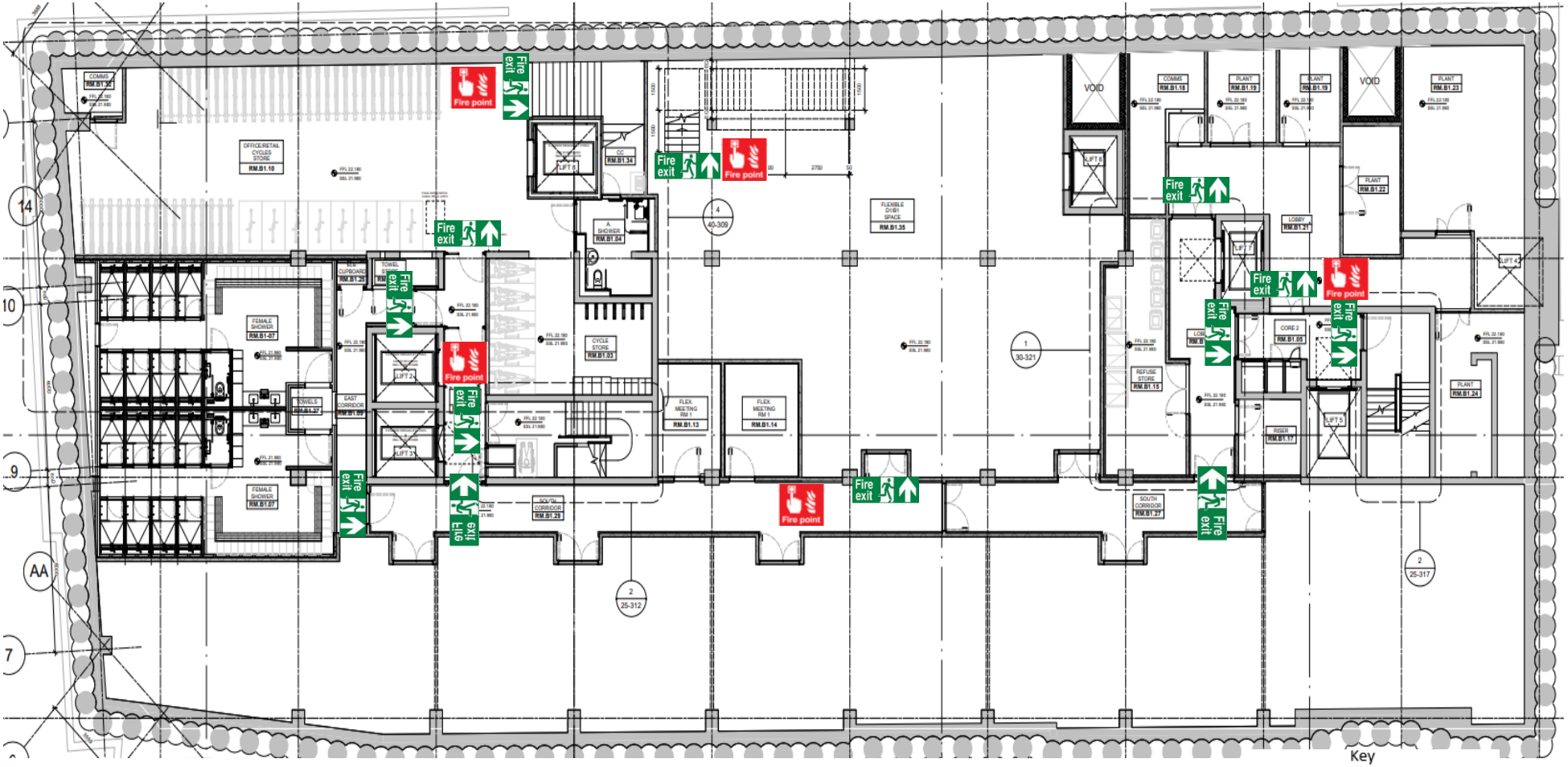
- BSc (Hons) Fire and Leadership Studies Advanced
- Fire Risk Assessment in Complex Residential and Complex Non-Residential Buildings
- NEBOSH National Certificate in Fire Safety and Risk Management
- Associate Member of the Institution of Fire Engineers
- Member of the Institute of Fire Safety Managers
- Tier 2 – IFSM Competent Fire Risk Assessors Register (CFRAR)

Appendix A: Fire escape plans and fire precaution guidance

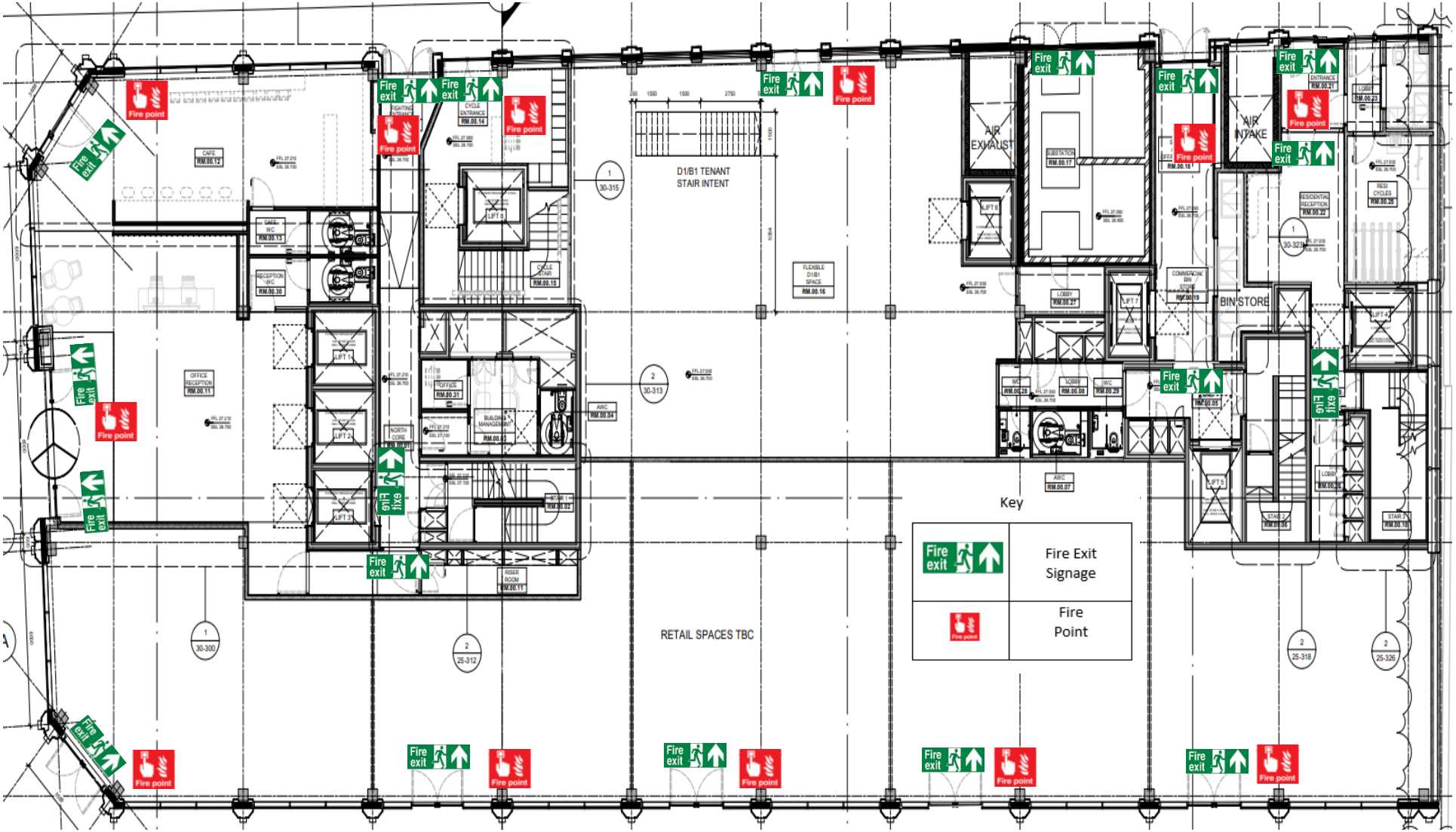
Basement level 2



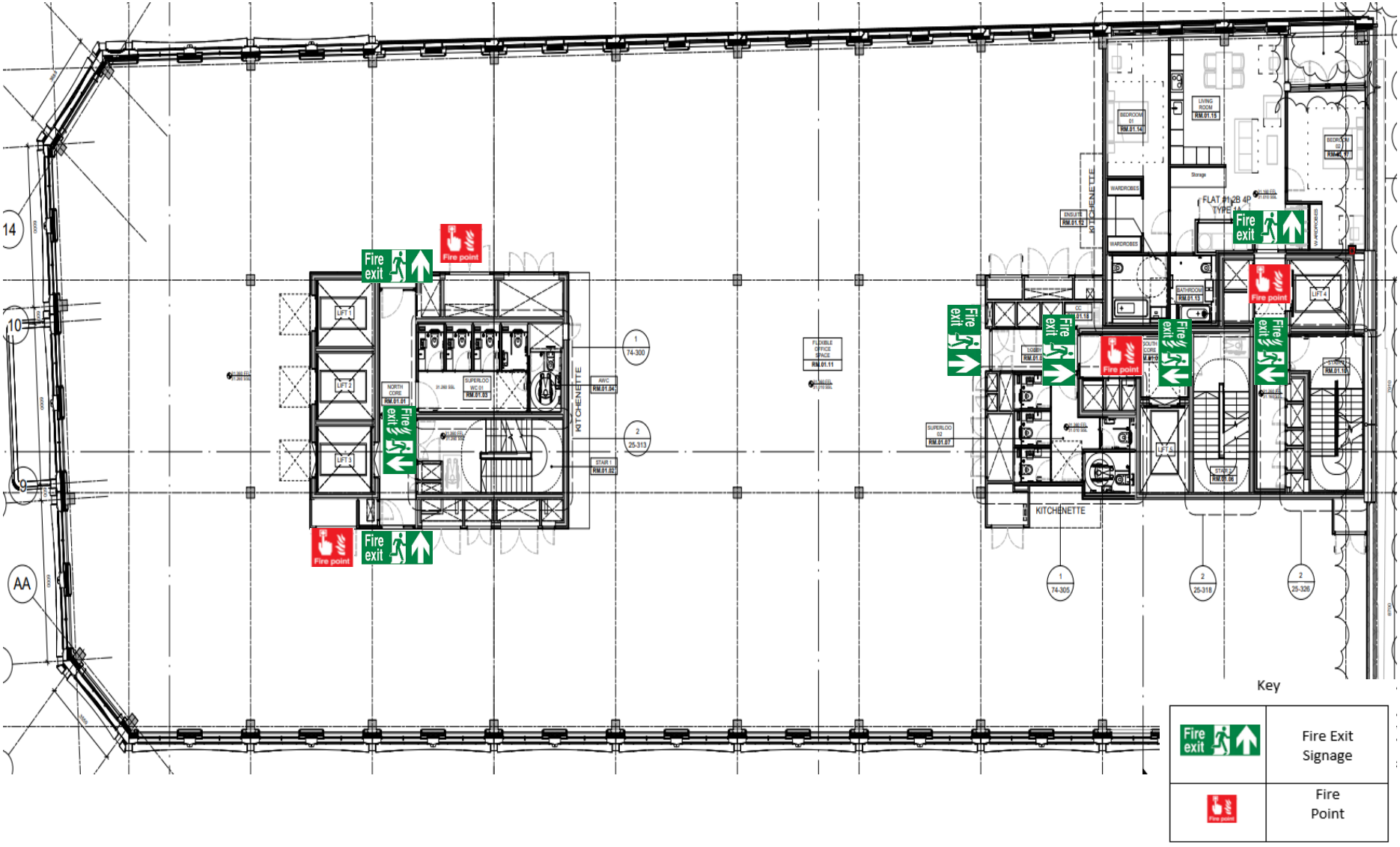
Basement level 1



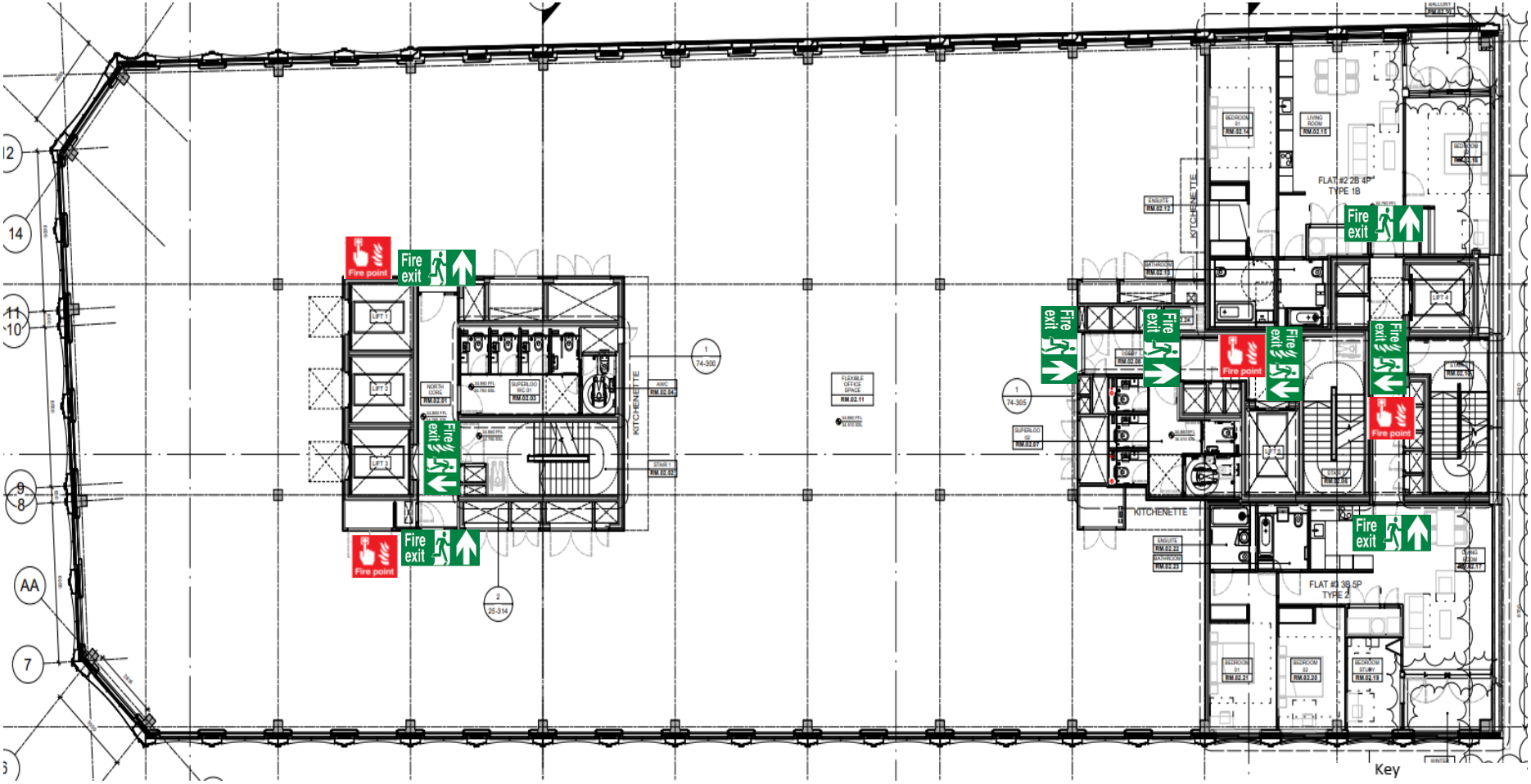
Ground Floor



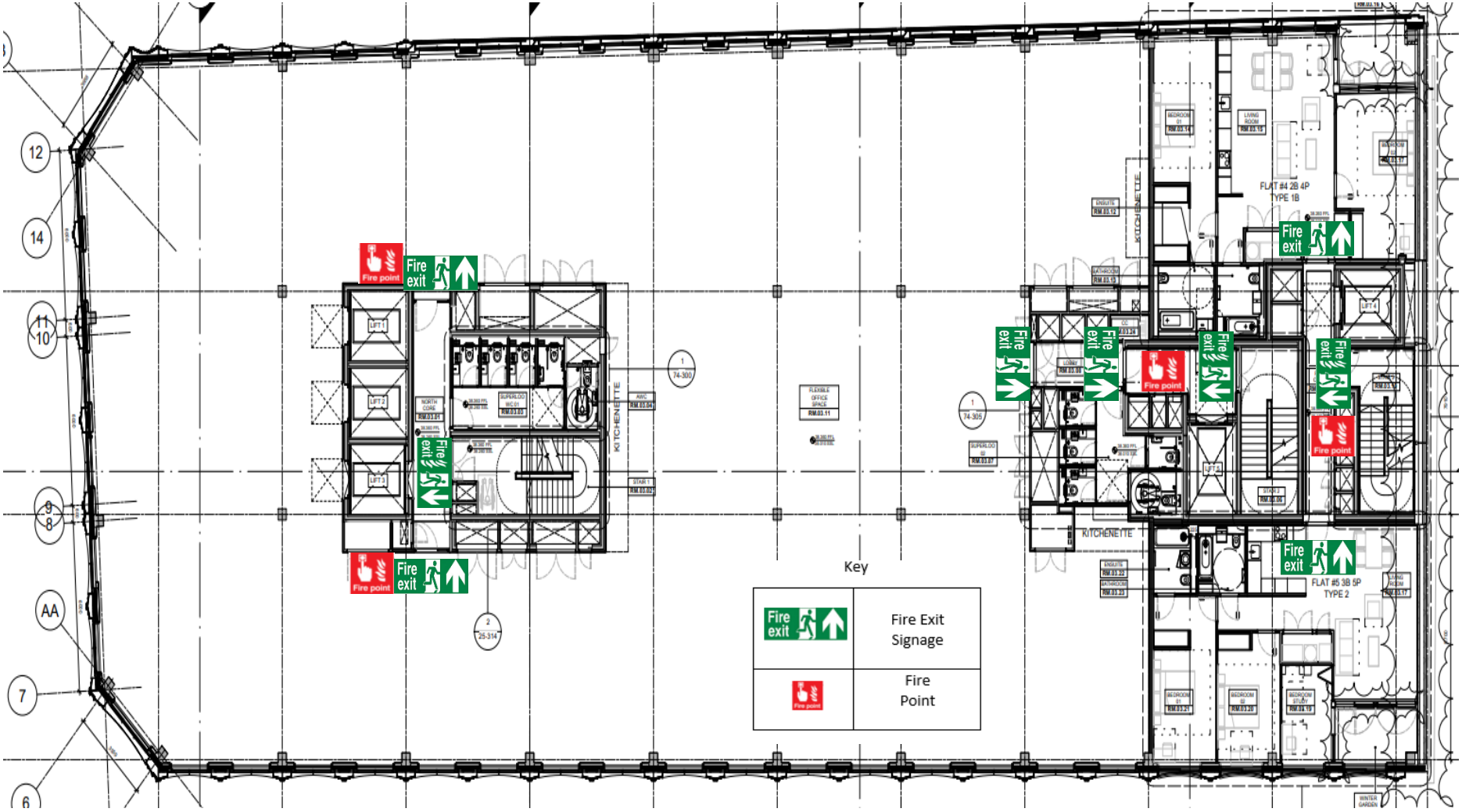
Level 1


Fire exit
Fire point
KITCHENETTE
Key
Fire Exit Signage
Fire Point

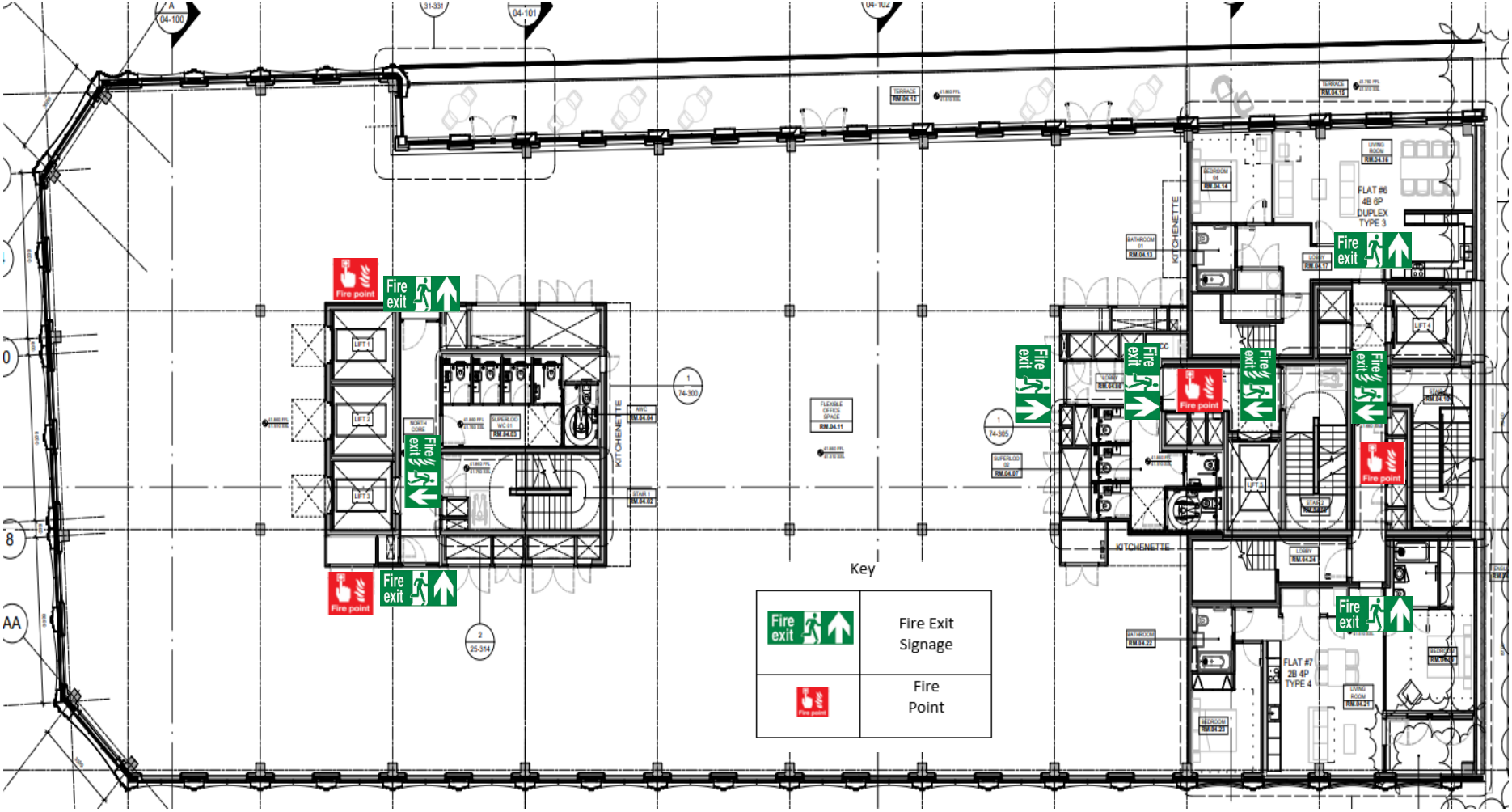
Level 2


Fire point
Fire exit
KITCHENETTE
FLAT #2 2B 4P TYPE 1B
FLAT #3 3B 5P TYPE 2
Key
Fire Exit Signage
Fire Point

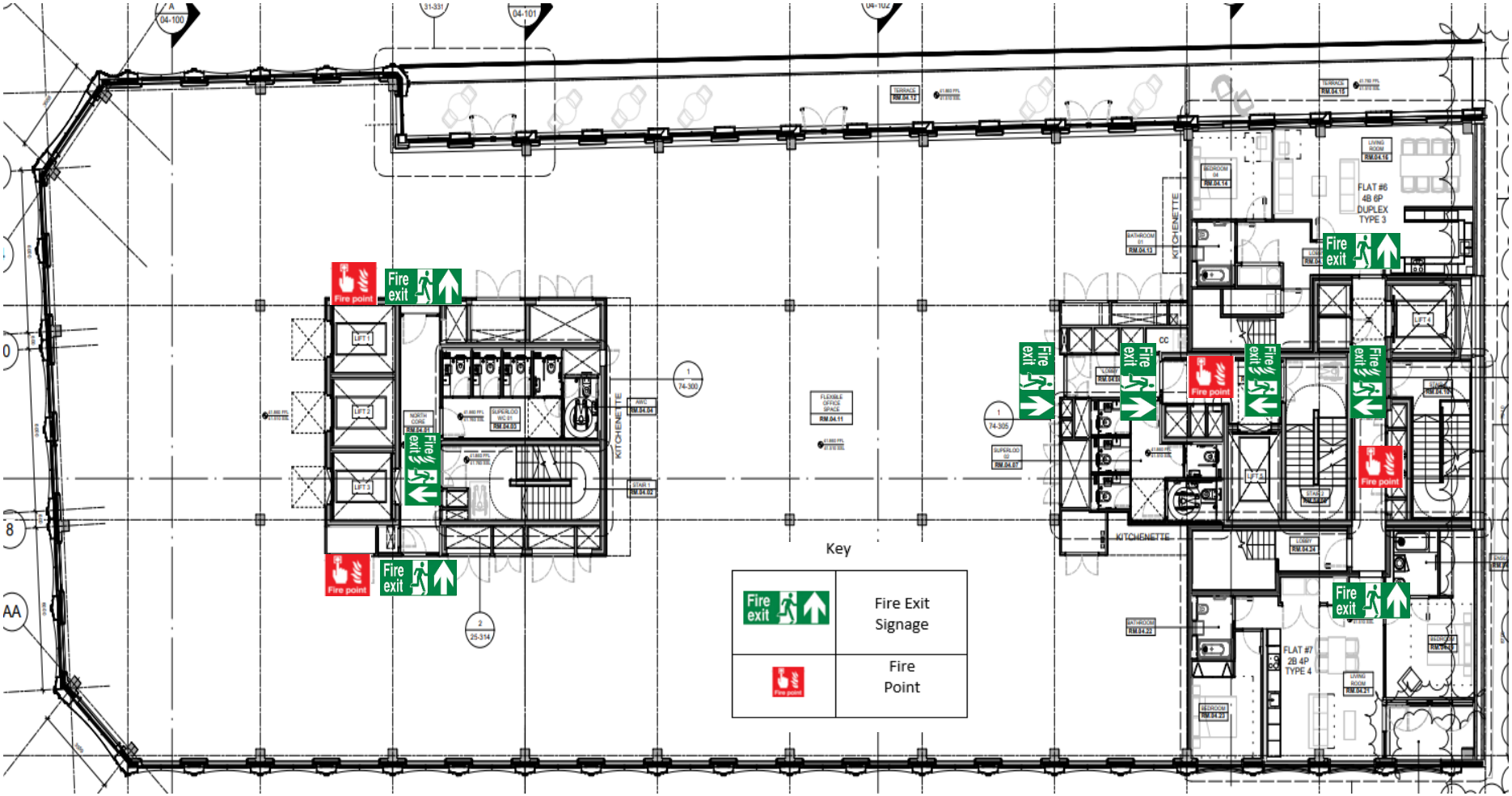
Level 3


Fire point
Fire exit
KITCHENETTE
FLAT #4 2B 4P
TYPE 1B
FLAT #5 3B 5P
TYPE 2
Key
Fire Exit Signage
Fire Point

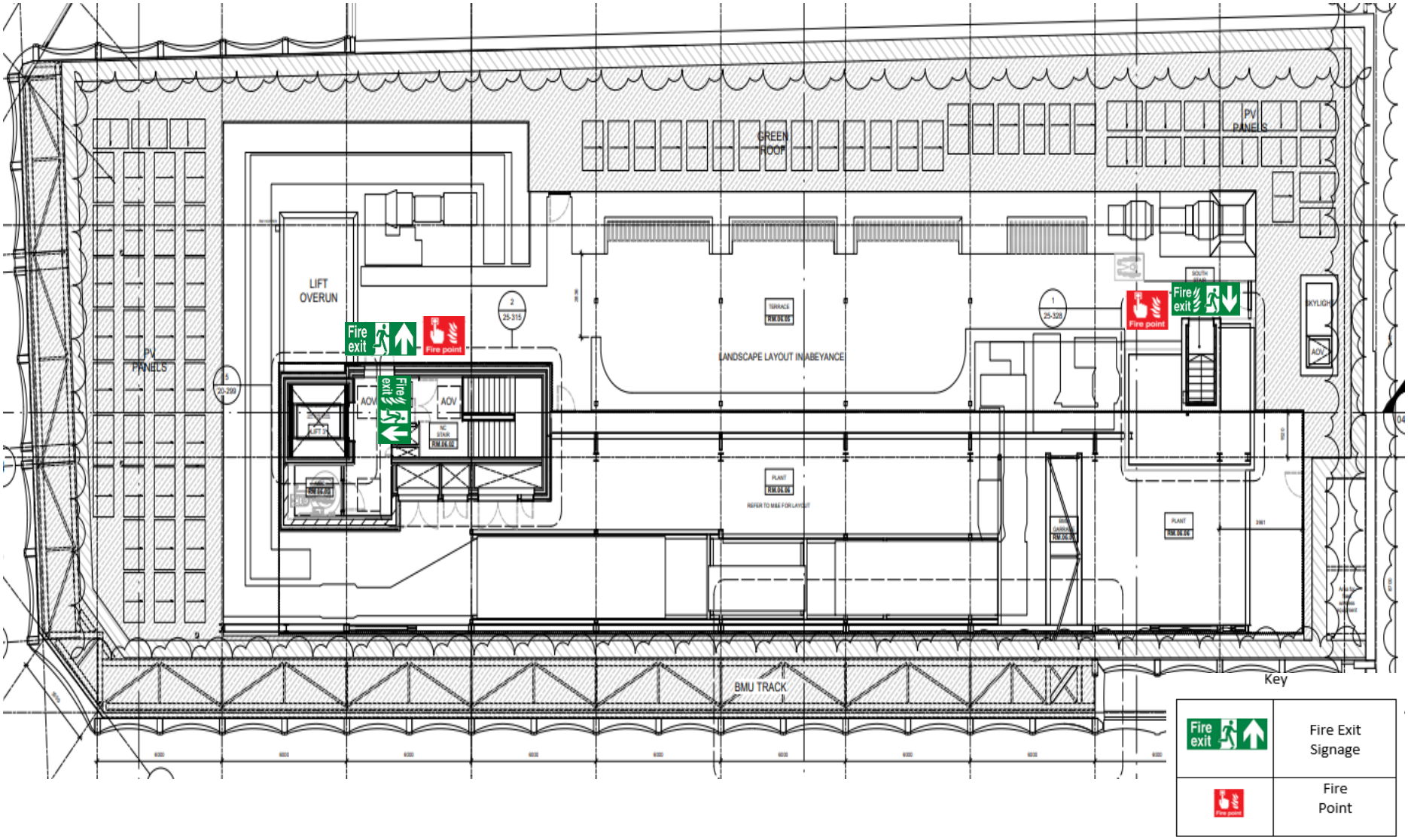
Level 4


Fire point
Fire exit
Key
Fire Exit Signage
Fire Point
FLAT #6
4B 6P
DUPLEX
TYPE 3
FLAT #7
2B 4P
TYPE 4
KITCHENETTE

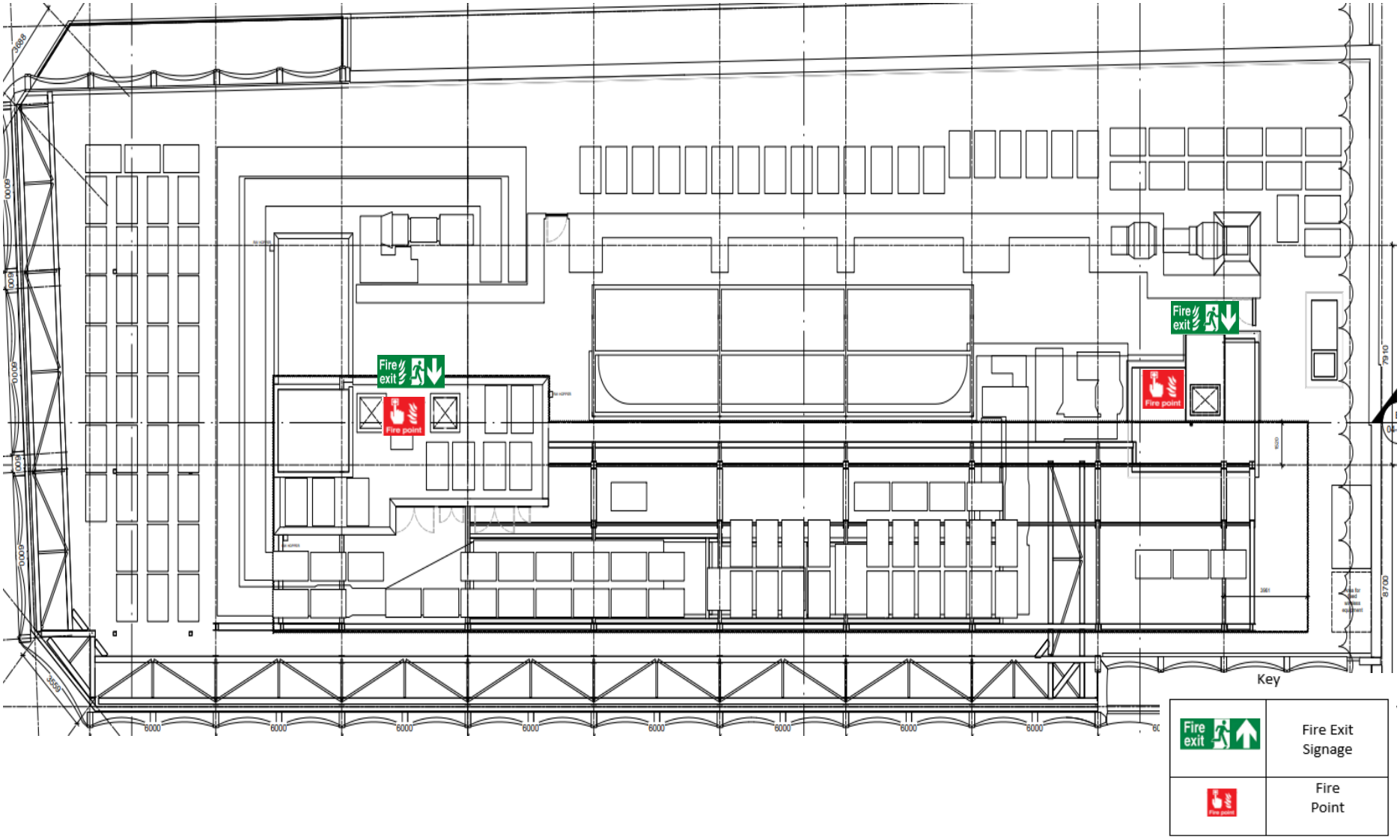
Level 5


Fire point
Fire exit
Key
Fire Exit Signage
Fire Point
FLAT #6
4B 6P
DUPLEX
TYPE 3
FLAT #7
2B 4P
TYPE 4
KITCHENETTE

Level 6

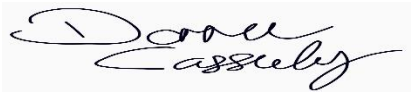

GREEN ROOF
PV PANELS
LIFT OVERUN
PV PANELS
LANDSCAPE LAYOUT IN ABEYANCE
AOV
AOV
Fire exit
Fire point
Fire exit
Fire point
SKYLIGHT
AOV
BMU TRACK
Key
Fire exit
Fire Exit Signage
Fire Point
Fire Point

Roof level


Fire exit
Fire point
Fire exit
Fire point
Key
Fire exit
Fire Exit Signage
Fire Point
Fire point

Quality Assurance Statement

All reasonable skill and care have been taken in the preparation of this report.

	Originator:	**Authorised by:**
Signature:		
Name:	Leon Wynn BSc (Hons) AIFireE MIFSM	Darren Cassidy BSc (Hons) PGDip (Fire) EngTech AIFireE MIFSM
Title:	Fire Team Manager	Principle Technical Fire Safety Consultant