

Fire Safety Design Note

18 Denmark Street

Prepared For: Atlas Property London Ltd

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Document Contents

1.	INTRODUCTION	1
1.1	PURPOSE OF REPORT	1
1.2	BASIS OF REPORT	1
1.3	GENERAL ARRANGEMENT	1
2.	PROPOSED FIREFIGHTING ACCESS	3
2.1	BACKGROUND	3
2.2	FIRE MAIN LOCATION	4
3.	SUMMARY	7

1. INTRODUCTION

1.1 Purpose of Report

18 Denmark Street is a proposed residential development in Tottenham, London comprising a total of 6 residential units as illustrated in Figure 1.

Due to the narrow access roadway (approximately 1950mm) it is not possible for a fire tender to reach a point in close proximity to the maisonettes. The purpose of this report is to outline the proposed fire service access strategy and fire main provision within the development to be discussed and agreed with the approving authorities.

Artec Fire has been engaged by Atlas Property London Ltd (hereafter referred to as the Client) to develop this report.

1.2 Basis of Report

This report is based on the architectural design information provided by Hill Patru Architects as outlined in Table 1.

Table 1 Information provided by others

Document title	Document Reference	Revision	Date
Proposed Site Plan – Ground Floor Plan	2210_10_10	Draft	-
Proposed Site Plan – First Floor Plan	2210_10_11	Draft	-
Proposed Site Plan – Roof Plan	2210_10_12	Draft	-
Proposed Site Elevations	2210_10_20	Draft	-

1.3 General Arrangement

Units 1-4 are two storey maisonettes accessed direct from external at Ground Level. Units 5 and 6 are both accessed from a common access lobby at Ground Level. Unit 5 is a single storey flat located at Level 1 accessed from Ground Level. Unit 6 is a single storey flat located at Ground Level accessed from Ground Level.



Figure 1 Site plan

2. PROPOSED FIREFIGHTING ACCESS

2.1 Background

As a new development the building is required to satisfy the functional requirements of Part B within Schedule 1 to the Building Regulations. The regulatory requirement relevant to this report is B5 as follows:

- (1) The building shall be designed and constructed so as to provide reasonable facilities to assist the fire fighters in the protection of life.*
- (2) Reasonable provision shall be made within the site of the building to enable fire appliance to gain access to the building.*

This requirement is functional in nature. Approved Document B Volume 1 (2019 inc. 2020 amendments) (hereafter referred to as ADB1) provides prescriptive guidance on means to satisfy the functional requirement.

Clauses 13.1 and 13.2 of ADB1 state the following:

- 13.1. *For dwellinghouses, access for a pumping appliance should be provided to within 45m of all points inside the dwellinghouse.*
- 13.2. *For flats, either of the following provisions should be made*
 - a) Provide access for a pumping appliance to within 45m of all points inside each flat of a block, measured along the route of the hose.*
 - b) Provide fire mains in accordance with paragraphs 13.5 and 13.6*

Table 13.1 of ADB1 states that access roadways for a fire tender appliance should be achieve a width of at least 3.7m between kerbs. Therefore, since the access route from Denmark Street to the residential units at the proposed development is only approximately 1.95m wide it is not suitable for a fire tender appliance. Subsequently, the hose distance (measured along a route suitable for laying a hose) from a fire tender accessible location to the further point in the development is approximately 76.2m as illustrated in Figure 2.



Figure 2 Hose distance from fire tender accessible location

Therefore, it is proposed to provide the development with a fire main.

2.2 Fire Main Location

Fire mains are generally to be designed in accordance with BS9990:2015 and ADB1. The following recommendations from these guidance documents are relevant to the proposed location of the fire main in this development:

1. In accordance with Clause 13.5 of ADB1 (and Clause 14.4 of LFEPA GN29), the fire main inlet should be located within 18m of a fire tender accessible location.
2. In accordance with Clause 13.2 of ADB1, the fire main outlet should be located within 45m of all points inside the building.
3. In accordance with 4.2.2 of BS9990:2015, the horizontal run of connecting pipework from the fire main inlet to the vertical main or outlets in a typical building is, ideally, a maximum of 18m in length.

Therefore, the proposed locations for the fire main inlet and outlet are illustrated in Figure 3 as follows:

- The fire main inlet is to be located in the green zone (within 18m of a fire tender accessible location)
- The fire main outlet is to be located in the orange zone (within 45m of all points in the building)

- The horizontal run of pipework between the inlet and outlet is to be kept to a minimum (preferably less than 18m).



Figure 3 Proposed fire main location

It is noted that, preferably the horizontal pipework run from the fire main inlet to the vertical main is to be kept to less than 18m. However, it is considered reasonable (i.e. considered to satisfy functional requirement B5 of Schedule 1 to the Building Regulations) for the horizontal pipework run to exceed 18m, subject to agreement with the approving authority and local Fire Service, based on the following:

- The proposed development is located in Tottenham which is considered densely populated urban area. Due to the restrictions on the proposed site, fire tender access within close proximity to the dwellings is highly limited. This arrangement would not be considered a 'typical building' as referenced in BS9990:2015
- In accordance with BS9990:2015 it would be considered acceptable for a fire main to include 18m of horizontal pipework from the inlet to the vertical main and then a vertical run of pipework to a top storey just under 50m above ground level. The proposed fire main in this development is not provided with any vertical extent and would then present a significantly reduced 'pressure loss' within the pipework

compared to a compliant fire main serving a storey just under 50m above ground level.

- The proposed development includes a total of 6no. dwellings with no common levels above ground level (i.e. all flats are accessed from ground level and include no storeys more than 1 level above ground. Therefore, the time for the Fire Service to reach the flat of fire origin (and exhaustion reaching the flat) is considered to be significantly limited compared to a '*typical building*' which may contain 4-5 storeys above ground without a firefighting lift. The extended distance between the fire main inlet and vertical main / outlet is not considered to significantly increase the Fire Service arrival time or exhaustion on arrival.
- It is to be ensured the fire main can be maintained and tested ensuring it can achieve the required flows and pressures at the outlet.

3. SUMMARY

It is not possible to reach all areas of the proposed development within 45m, measured along a route suitable for laying a hose, of a fire tender accessible location due to site restrictions (narrow access route). Therefore, it is proposed to provide the development with a fire main in order to provide adequate firefighting access to the residential flats.

The permitted locations for the fire main inlet and outlet are illustrated in Figure 3. It is noted that the horizontal pipework run from the inlet to the outlet is to be kept to a minimum, however, where it is proposed for the horizontal run to exceed 18m, it is still considered to satisfy functional requirement B5 of Schedule 1 to the Building Regulations (and LFEPA GN29), subject to agreement with the approving authority and local Fire Service.