Sir Frederick Gibberd School

Fire Strategy

Building Regulations Submission

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Contents

1 Introduction

It is proposed under the Education and Skills Funding Agency (EFSA) framework, to construct the new Sir Frederick Gibberd (SFG) College on the site of the former Passmore School in Harlow, Essex.

This report describes the key fire strategy and fire and life safety measures to RIBA Stage 4 level of design, for client and design team review and for submission to Building Control to assist in a Building Regulations application. The fire strategy has been developed in accordance with prescriptive guidance and adoption of fundamental fire engineering solutions where necessary to provide design flexibility and cost effectiveness.

This document should be read in conjunction with the fire strategy drawings, provided in Appendix B. Reference should also be made to any drawings produced by HLM Architects that supersedes Appendix B.

1.1 Building Description

The scheme involves construction of a new three-storey (Ground, First, Second Floors) school, which is predominately of modular construction by Caledonian Modular and partially traditional build (steel structure). In addition, a new detached single-storey sports block will be constructed, entirely in traditional build (steel and masonry).

The Ground Floor comprises dining hall and kitchen, office/support staff facilities, changing rooms and double height studio and main hall. Approximately 3600m^2 of the accommodation is within the modular construction, and approximately 420m^2 (Drama studio and main hall) is traditional construction, as identified in Figure 1. First and Second Floor comprise classrooms, laboratories, art studios and 6th form rooms, with ancillary staff support and facilities on each floor. The First and Second Floors are entirely of modular construction (with exception of the connecting roof to the traditional build areas).

The sports block contains sports hall, studios and changing facilities, with ancillary staff accommodation.

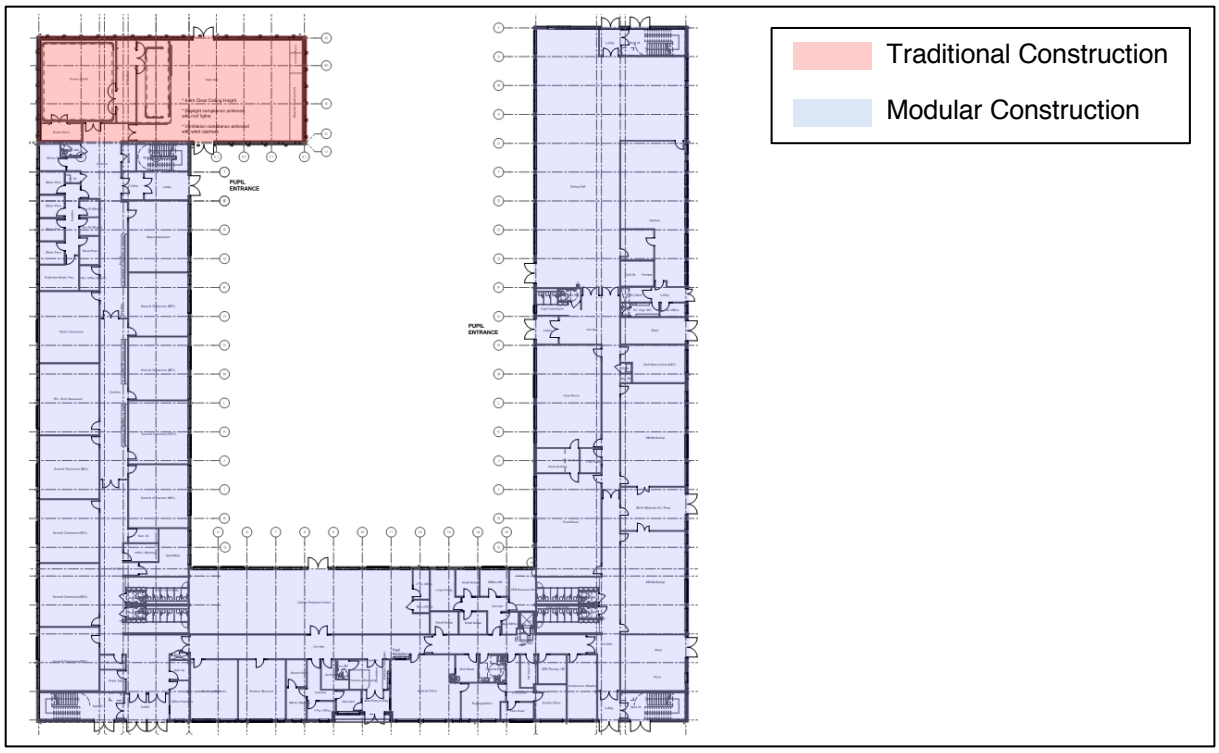


Figure 1: Modular and traditional construction location

1.1.1 Occupant Load

SFG has identified a maximum design occupant load of 1810 persons. This design brief will be used as the basis for determining fire safety measures in the building during normal operating hours.

It is noted that any increase on this occupant load will result in a requirement to reassess the means of escape strategy as part of a building fire risk assessment in consideration of exit capacity.

Due the nature of the building use, the distribution of persons throughout each of the floors will vary depending on the time of day and specific events (e.g. school assemblies). Therefore, in order to inform the means of escape strategy in the building, it is necessary to outline the maximum capacity of each floor, for any given time of day or event. This assessment is provided in Section 2.5.3.

1.2 Regulatory and Client Requirements

The fire strategy for the building as a whole has been developed to demonstrate compliance with Part B of The Building Regulations 2010[1] (Part B). Whilst fire strategy is for designed to achieve a life safety performance, some elements will also provide a level of property protection.

The EFSA has specified that an automatic sprinkler system is not required in this school. Any additional client requirements, insurer requirements or operator requirements with respect to fire safety have not been communicated and are not considered as part of the fire strategy.

1.2.1 Design Guidance

BS 9999[2] is used as the basis for assessing compliance. BS 9999 requires that the building (or parts of the building) be classified into Risk Profiles as a function of occupants' familiarity with the building and the likely fire growth rate associated with the building contents.

Due to the regular use of the building by staff, and frequent use by research students, a Risk Profile of 'A2' is assumed (i.e. occupants are awake and familiar with the building and a medium growth rate fire). The determination of Risk Profile is further described in Appendix A.

1.2.2 The Regulatory Reform (Fire Safety) Order 2005

Continuing assessment of the building is available to the local fire authority through the Regulatory Reform (Fire Safety) Order[3]. This legislation requires an employer to undertake and maintain a written fire risk assessment of the premises. This will be undertaken by the school.

Unless an 'alterations notice'[4] is in force, this legislation does not require an employer to submit their fire risk assessment for approval by the fire authority, only to have it in writing and readily available should the fire authority undertake an inspection.

This fire strategy report includes a review and assessment of proposed fire safety measures and escape routes, and identifies the limitations associated with those routes and adoption of alterations to the evacuation regime. This document will form a part of handover documentation under Regulation 38 of the Building Regulations, but is not the full fire risk assessment, which should be undertaken by the school.

Management recommendations requiring specific consideration is provided in Section 5.

[1] Statutory Instruments, '2010 No. 2214 Building and Buildings, England and Wales, The Building Regulations 2010' (as amended).
[2] BS 9999: 'Code of practice for fire safety in the design, management and use of buildings', 2008
[3] Statutory Instruments, '2005 No. 1541 Regulatory Reform, England and Wales, The Regulatory Reform (Fire Safety) Order 2005', 2005
[4] Article 29; The Regulatory Reform (Fire Safety) Order, 2005

2 Means of Escape

2.1 Evacuation Regime

The school will adopt a simultaneous evacuation regime, whereby all occupants within the building will evacuate via the nearest available storey exit immediately upon activation of the automatic detection and alarm system (by smoke detectors, manual call point or manual intervention by staff).

The sports block will have a connection to the main school fire alarm panel such that where the main school building is in alarm, the sports block will also evacuate. However, where the sports block is in alarm, the school would not immediately evacuate. Subsequent evacuation of the school will be initiated upon confirmed fire in the sports block (either by multiple detectors or manual intervention).

Refer to Section 4.5.1 for details of the automatic detection and alarm system.

2.2 General Provision of Escape Routes

Escape routes and exit widths adopt the guidance provided in BS9999. Table 1 highlights the basis of design for all escape routes inside the building, and should be read in conjunction with Appendix B.

		Number of Occupants		
		≤ 60 persons	**> 60 & ≤ 110 persons**	**> 500 persons**
Number of Exits		≥ 1 *	≥ 2	≥ 3
Door Swing		Against or in the direction of escape	In the direction of escape	In the direction of escape
Travel Distance	**Single Direction**	≤ 18m plant room (including plant access decks) ≤ 60m rooftop plant ≤ 22m elsewhere		
	Two or More Directions	≤ 35m plant room (including plant access decks) ≤ 100m rooftop plant ≤ 55m elsewhere		
Minimum Exit Widths		≥ 800mm	≥ 1050mm	3.6mm/person and ≥ 1050mm
Minimum Stair Width **		1500mm (refer to Section 2.5.2)		

Table 1: Minimum escape route recommendations

Notes:
* A single exit is acceptable providing that the single direction distance is within the stated recommendations, otherwise more than 1 exit will be necessary.
** Storey exits to stairs on all floors are to provide a minimum clear width of 1050mm.

2.3 Means of Escape Solutions

The following areas require specific consideration in order to demonstrate compliance with prescriptive guidance or justification of any deviations or uplift in occupant load of specific areas.

2.3.1 Dead-end Corridors

A number of dead-end corridors exist on each floor, which have a single direction portion of travel of approximately 3.75m or greater (refer to Appendix B), i.e. greater than the 2m maximum outlined in BS9999.

Where these dead-end portions include access to habitable rooms or storage rooms, the corridor is enclosed in 30minute fire resisting construction and FD30S fire doors (refer to Section 4.1.4). In conjunction with the provision of automatic detection and alarm, it is proposed that this protection is sufficient to enable escape for occupants prior to the development of a fire that would compromise the single direction escape route.

Where the dead-end portions include only toilets on route to/from the habitable room, it is proposed that protection is not provided due to the limited likelihood of fire from these areas. In conjunction with limited single-direction travel distances (significantly less than in an open plan arrangement) it is proposed that the risk of fire compromising the route is appreciably low.

2.3.2 Library Resource Centre Occupant Load

The library resource centre on Ground Floor comprises two escape routes: one 2200mm door to external, opening in the direction of escape; and one 1800mm door to internal, opening against the direction of escape.

In accordance with prescriptive guidance, where the largest exit is discounted the occupant load would be limited by the capacity of the remaining exit. In this instance, the remaining exit is the internal route which opens against the direction of escape and would therefore have a capacity limit of 60 persons.

The school requires the library resource centre to enable a capacity of 83 persons. Although exceeding the maximum 60 persons limit by the inward opening door; it is proposed that an occupant load of 83 persons is acceptable in this instance because both escape routes are accessible within the maximum single direction travel distance (22m). Prescriptive guidance allows the use of a single exit that is accessible within travel distance limitations, which infers that it is not likely for the exit to be compromised by a fire that would restrict escape. As both doors are within this travel distance limitation, it is proposed that the combined capacity (with a capacity in excess of 83 persons) is acceptable.

2.3.3 Sixth Form Social and Study Rooms

First Floor Social Room

The sixth form social room on First Floor has an intended occupant load of 169 persons. The room will comprise three escape routes. Two of the routes are to the circulation corridor via doors with a clear width of 800mm that open against the direction of escape. A further route leads directly to the protected lobby via a door with 800mm clear width and opening in the direction of escape.

Each of the escape routes are accessible within the maximum travel distance limit (22m) of all points of the social room and therefore it is proposed that the exit capacity can be combined, as outlined in Section 2.3.2. Consequently, the capacity of 169 persons is achievable in conjunction with the package of fire safety measures provided in the building.

Second Floor Study Room

The sixth form study room on the Second Floor has an intended occupant load of 76 persons. The room will comprise two escape routes to the circulation corridor via doors with a clear width of 800mm that open against the direction of escape.

Each of the escape routes are accessible within the maximum travel distance limit (22m) of all points of the study room and therefore it is proposed that the exit capacity can be combined, as outlined in

Section 2.3.2. Consequently, the capacity of 76 persons is achievable, in conjunction with the package of fire safety measures provided in the building.

2.3.4 Sports Block Activity Studio

The sports block activity studio has a potential maximum occupant load of 120 persons (considered a peak load when used for examinations). The room will comprise two escape routes. One route is to external, via a door with a clear width of 1860mm that opens in the direction of escape. The second route leads to the circulation corridor via a door with 800mm clear width and opening in the direction of escape.

Both of the routes are accessible within the maximum travel distance limit (22m) from all points of the activity studio and therefore it is proposed that the exit capacity can be combined, as outlined in Section 2.3.2. Consequently, the capacity of 120 persons is achievable in conjunction with the package of fire safety measures provided in the building.

2.4 Use of Space in Corridors/Exits

Transient circulation corridors and breakout areas (seating only) must comprise non-combustible lockers, notice boards and tables and chairs. Tables and chairs must be steel (or similar) frame and timber or polypropylene backing and table tops or will be upholstered and resistant to ignition source 5 (Crib 5) when tested to BS 5852[5]. These items are to be isolated (i.e. not stacked) and are not readily ignitable without significant exposure to a pilot fame. An indicative illustration of the expected furnishing (those not tested to BS5852) is provided in Figure 2.

Figure 2: Indicative lockers, tables and chairs adopted in dining/corridor areas

The use of unenclosed cloaks and bag storage along the corridors is not acceptable. It is preferable that lockers used also contain sloped tops, to avoid bags and coats being stored above the lockers.

It is not acceptable to locate any furnishing, cabinets or other wall/ceiling decorations within the protected stair or protected lobby areas.

[5] BS 5852, 'Methods of test for assessment of the ignitability of upholstered seating by smouldering and flaming ignition sources', 2006

2.5 Exit Capacity & Occupant Load Assessment

2.5.1 Horizontal Exit & Storey Exit Capacity

The clear width of each escape route and storey exit is based on the clear width of storey exits and a capacity factor of 3.6mm/person, as outlined for an A2 Risk Profile.

In general, the majority of teaching rooms have an occupant load of less than 60 persons and therefore a minimum clear width of 800mm will apply. Specific deviations from this are identified in Section 2.3.

Where the occupant load served by an exit is in excess of 138 persons, a minimum clear width of 1050mm applies to each door is applicable. This is typically exceeded for all storey exits.

Table 2 identifies key storey exits, available clear width and maximum capacity per floor. The capacity of storey exits is further limited by the vertical escape capacity available within the stair at each floor level, refer to Section 2.5.2.

Floor	Exit	Location	Clear Width	Capacity	Area Capacity *
School Building					
Ground Floor	0.1 0.2 0.3 0.4 0.5	KS3 & KS4 entrance Sixth Form entrance Pupil entrance via base of Stair 3 External LRC exit	2x1582mm 1682mm 1682mm 1682mm 1682mm	878 persons 467 persons 467 persons 195 persons** 42 persons ***	1171 persons
	H1 H2	Main hall exit 1 Main hall exit 2	1860mm 1860mm	516 persons 516 persons	516 persons****
	DH1 DH2	Dining hall exit via lobby Dining hall external exit	1582mm 2086mm	439 persons 579 persons	439 persons****
First Floor	1.1 1.2 1.3 1.4	Exit to Stair 1 Exit to Stair 2 Exit to Stair 3 Exit to Stair 4	1582mm 1582mm 1582mm 1582mm	493 persons 493 persons 493 persons 493 persons	1479 persons
Second Floor	2.1 2.2 2.3 2.4	Exit to Stair 1 Exit to Stair 2 Exit to Stair 3 Exit to Stair 4	1582mm 1582mm 1582mm 1582mm	493 persons 493 persons 493 persons 493 persons	1479 persons
Sports Block					
Ground Floor	SH1 SH2 SH3 AS1	Exit direct from hall Exit direct from hall Exit from corridor Activity studio external	1528mm 1528mm 1782mm 1782mm	424 persons 424 persons 495 persons 60 persons ******	908 persons

Table 2: Storey exit width and capacity

Notes:

* Capacity after the largest exit has been discounted. Note that upper floor capacity limited by stair capacities, see Section 2.5.2 and Section 2.5.3.

** Limited by the merging flow of Ground Floor occupants and upper floor occupants at the base of Stair 2.

*** Limited to half of the maximum occupant load of the library resource centre, as per Section 2.3.2.

**** Occupants that escape into general circulation areas are limited by the identified storey exits. They are therefore not considered additional.

***** Limited to half of the maximum occupant load of the activity studio as per Section 2.3.4.

2.5.2 Stair Capacity

Each floor has access to four stairs, each with a clear width of 1500mm (measured from stringers due to handrail width not protruding more than 100mm into the stair).

The escape capacity per stair is based upon the occupant capacity factor of 3.8mm/person, based on two storeys served. Consequently, each full stair has a maximum capacity of 394 persons.

As each stair is accessed via a protected lobby, the full capacity of each stair can be used by both floors, i.e. a total aggregate First and Second Floor capacity of 1576 persons (4 x 394 persons). In accordance with BS9999, a protected lobby is required on all floors except the top floor. Therefore, protected lobbies are not provided on Second Floor.

The final exit from each of the stairs must have a clear width at least equal to that of the clear width of the stair, i.e. 1500mm.

2.5.3 Maximum Occupant Load Assessment

The maximum occupant load of each floor is driven by the available storey exit capacity and the limitation of stair capacity. When considering the clear exit widths available, the school building has a capacity as follows:

- Ground Floor = 1171 persons.
- First Floor = 1479 persons (where Second Floor occupant load is limited to 97 persons).
- Second Floor = 1479 persons (where First Floor occupant load is limited to 97 persons).
- Aggregate First and Second Floor = 1576 persons.

Each classroom and office/support area has a maximum expected capacity based on the design brief. However, due to timetabling, it is unlikely that all of these rooms will be fully utilised at any given time. Note that when considering 100% capacity of all rooms/spaces, this would result in an occupant load that is significantly in excess of the design occupant load.

The occupant load through the school will vary from hour to hour and day to day. Therefore, the capacity identified above is not intended to be considered as an accurate reflection of the timetabling within the school. Rather, the results provide an indicative representation for each floor, with a consequential effect on adjacent floors. This is a more accurate assumption of occupant load distribution than the consideration of equal distribution (as expected by prescriptive guidance) or a % utilisation of occupant load (as is typically determined by the operator) and is therefore more realistically enforceable by the school for the design occupant load.

The capacity of the exits assessed in the main school building is 2747 persons at any one time (noting that the single floor limitations outlined above also apply to class changeover times). The capacity of the exist assessed in the sports block is 908 persons. This total occupant load exceeds the maximum expected design load for the school.

2.6 Escape for Mobility Impaired Persons

Step-free escape routes are provided from all areas on the Ground Floor.

On upper floors, refuge areas will be provided in each protected stair or protected lobby on each floor. Refuges will comply with the recommendations of BS9999, incorporating a dedicated refuge space of at least 900mm x 1400mm and a two-way communication point (refer to Section 4.5.2). The refuge spaces will be sited to ensure that the escape route width is not reduced.

Dedicated evacuation lifts are not necessary to meet the functional requirements of the Building Regulations and are therefore not currently provided within the building. However, additional management procedures are required to ensure effective and safe carry-down.

Evacuation Management

When the building is operational, the school will require an evacuation plan to cater for any mobility impaired occupants within the building. This plan will need to consider the evacuation of visitors as well as developing a personal emergency evacuation plan (PEEP) for disabled employees. The plan should ensure that reliance is not placed upon the fire service for the evacuation of disabled occupants.

Upon alarm, wardens must be aware of the location of mobility impaired persons (via the PEEP system outlined above) and ensure that they are located to the most appropriate refuge location for carry-down.

A team of fire wardens must be identified and trained appropriately for the specific carry-down actions required. It is recommended that these persons are non-teaching staff to avoid conflict of responsibility. It is recommended that carry-down occurs prior to or during escape of all other occupants.

Further guidance on planning an evacuation plan for mobility impaired persons has been provided by the government and can be downloaded from:

http://www.communities.gov.uk/publications/fire/firesafetyassessmentmeans

2.7 Rooftop Escape

Access is provided to rooftop plant space for maintenance and cleaning of air handling units, photovoltaic panels and rooflights. Access will be provided to the rooftop plant via a hatch located at the head of the Stair 1 and extension of Stair 4.

2.7.1 Roof Hatch & Ladder Escape

BS9999 allows the use of hatch/ladder escape in certain circumstances, stating that *'fixed ladders…should only be intended for use in circumstances where it is not practical to provide a conventional stair, for example, as access to plant rooms that are not normally occupied'*. Consequently, escape from the roof via the hatch and ladder is considered compliant. Fixed ladders are to be design in accordance with Approved Document K.

In order to support the above escape route, it is recommended that:

- The hatch is not able to be locked from the inside automatically on closure.
- Adequate sounders and beacons are provided to give sufficient warning of fire on the floors below.
- A means of communication (by radio or otherwise) is offered by school management for works, as part of their risk assessment. This is not controllable under Building Regulations but a recommendation of this fire strategy.

2.8 External Escape Routes and Assembly Points

Although it is necessary to ensure that occupants are able to reach a place of ultimate safety away from the buildings, the external routes for means of escape and the identification of external assembly points are not controllable under the Building Regulations.

Consequently, the following recommendations are provided as general good practice in regards to the bespoke nature of this site and are subject to management consideration and findings of fire risk assessment, fire safety plans and evacuation drills. Refer to Section 5 for management responsibilities.

The assembly points and external egress routes are shown on the site drawings provided in Appendix C.

2.8.1 Assembly Points

It has been advised by the school operator that the intended assembly point is located on the all-weather sports pitches. This assembly point is considered to be of sufficient area to enable occupant load of the school and sports block to congregate for registration and enables onward escape off the school grounds if necessary (under management control).

It is the responsibility of the school operator to develop a fire safety management plan to ensure all occupants reach the assembly area for registration. The management plan should identify all staff responsibilities in this matter.

The route to the assembly point is via the service road adjacent to the school. The service road is in excess of 5m in width, with opportunity for use of the adjacent grassed area. However, it is recommended that if this route becomes compromised, that an alternative assembly point is considered. It is recommended that the alternative assembly point is in the school car park or adjacent field due to the availability of area for the building population; however this is to be determined by the school operator.

2.8.2 External Egress Routes

The external routes from the buildings are identified in Appendix C. Due to the provision of significant security measures, specific consideration is provided to the requirements on gates that form part of the external egress routes. All gates will be arranged to open in the direction of escape and will operate as follows:

Gates 07a, 07b and 07c

Three gates are provided to the courtyard area between the main school building and the sports block. During operational hours these gates will be under access control. Upon alarm in either the sports block or the main school, the gates will automatically unlock and will open to 180º by virtue of a spring-loaded opening mechanism.

The clear width of the gates is approximately 10m in aggregate. This is deemed sufficient to enable escape from Stair 1 (1500mm) and Exit 0.1 (3364mm) from the main school building and Exit SH3 (1782mm) and Exit AS1 (1782mm) from the sports block, i.e. a combined 8428mm.

Gate G04

A single leaf gate is provided for alternative egress from the sports hall. The gate will open automatically on confirmation of fire alarm, as per Gate 07a, 07b, 07c.

The gate has a clear width of 1500mm. Although this width is not equal to the combined width of sports hall exits SH1 and SH2, it is sufficient to enable 416 persons to escape within an 2.5minute escape time (inferred as acceptable in prescriptive guidance) with the remaining occupants able to

queue for a period of time in external air and away from the sports block itself. It is noted that the capacity of the gate is in excess of the design load of the sports hall (248 persons).

Gate G06

Gate G06 is a main delivery attendance and fire service access point for the school building and as such includes communications interface and remote opening in addition to the fire safety measures provided as per Gates G07a, 07b and 07c.

The gate has a clear width of 6000mm. Although not sufficient to account for all exits using this route, sufficient area is provided in the car park, away from both the school building and sports block, to allow queuing. Notwithstanding, the acceptability of queuing in this area should be reviewed by the school operator.

It is noted that a clear width of 6000mm would enable a capacity of 1667 persons within 2.5 minutes (inferred as acceptable in prescriptive guidance). This represents a significant portion of the school occupant load and is therefore conservative, as this occupant load does not fully consider occupant escape via routes to the rear of the building (e.g. via Stair 3 and Stair 4, main hall and dining hall).

Gate 15

Gate 15 is to be locked at all times of day, with only supervised access. The gate is not provided with an automatic release on alarm; however, panic hardware is provided on the side of the service road, to enable occupants using this route to reach the all-weather pitches.

The clear width of this gate is 3000mm, which represents a reduction in the escape width along the route from the front of the school building. This is not considered as a risk to life safety due to the significant open space available away from the school building (grass fields) to queue or await registration.

All-weather Pitch Gates

Gates leading to the all-weather pitches, used as the assembly point are typically locked with padlocks, requiring master key to open. It is recommended that a fire safety management plan is developed by the operator to ensure that these gates are unlocked prior to their required use for external egress.

Should it be determined, through findings from evacuation drills (as is required) that these gates are not unlocked and opened in sufficient time for use by occupants, or that there is significant queuing or other obstructions, alternative measures should be developed by the school operator.

3 Fire Fighting Access and Facilities

3.1 Building Access

The topmost storey of the building is not more than 7.5m in height. Therefore, internal fire fighting provisions are not required. The fire-fighting strategy is based upon providing sufficient perimeter access to enable fire fighting to be undertaken from outside the building.

In accordance with BS9999, the building is assessed as between 2,000m²-8,000m² in plan area, with a top storey less than 11 m above ground level. Therefore, access is required to at least 15% of the building perimeter, i.e. 33m. Figure 3 shows the fire service access provided to the building in the finished condition, with hardstanding provision resulting in at least 33% of the building's perimeter being accessible, with entry doors provided.

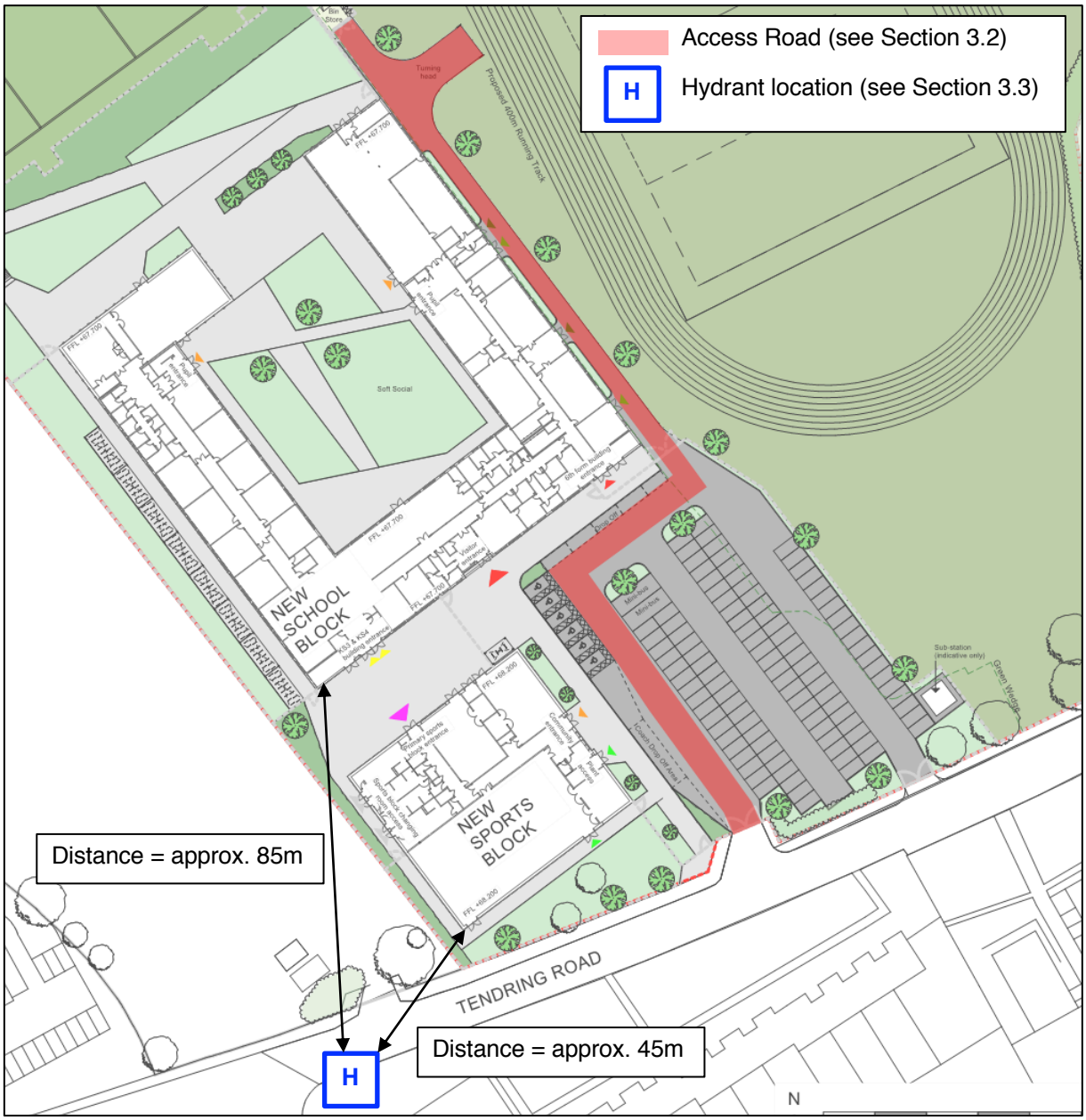


Figure 3: Fire Service site access

3.2 Access Roads

New access roads should be designed as follows for pump appliances:

- Minimum road width = 3.7m between kerbs.
- Minimum width of gateways = 3.1m.
- Minimum turning circle = 16.8m between kerbs.
- Minimum clearance height = 3.7m.
- Minimum carrying capacity = 12.5 tonnes.

3.3 Water Supply

The Fire Service will use the existing hydrants around the site, and the water supply associated with those existing hydrants fed from the mains.

An existing hydrant is located in the grassed bank accessed off Tendring Road as identified indicatively in Figure 3. The distance from the existing hydrant to the sports block and the main school building is less than 100m and can therefore be adopted without required provision of a new private hydrant.

It is necessary for the MEP engineer and lead designer to determine the efficacy of the existing hydrant with the utilities supplier. This is beyond the remit of this report.

4 Fire Protection Features and Systems

4.1 Structure and Fabric

Where fire resistance standards are quoted in this document, they are to be in accordance with BS EN 1363-1[6] or BS476-20[7], and the following nomenclature has been used:

- R – loadbearing capacity
- E – integrity
- I – insulation

Unless otherwise stated:

- Loadbearing elements are required to achieve loadbearing capacity,
- Separating elements (e.g. compartmentation) are required to achieve integrity and insulation, and
- Elements that are both loadbearing and separating are required to achieve loadbearing capacity, integrity and insulation.

4.1.1 Modular Construction

The structure of the building is a bespoke modular steel construction provided by Caledonian Modular. This modular construction incorporates loadbearing steel columns and beams that are encapsulated within the internal and external walls by fire resisting construction as the means of protection. In addition, floors and loadbearing walls are also suitably protected (from all sides where forming a loadbearing element of structure, see below).

This type of modular system is not readily comparable to typical structure outlined in prescriptive guidance. It is therefore the responsibility of Caledonian Modular to provide all relevant testing certification and evidence for demonstrating adequate performance for integrity, insulation and loadbearing capacity. Caledonian must also ensure that the structure is constructed and maintained as outlined in testing documentation and in accordance with manufacturers recommendations.

This document only outlines the performance requirements for the system.

4.1.2 Elements of Structure

As an unsprinklered school, all elements of structure are to achieve a 60 minute period of fire resistance (R) from all sides. An element of structure requiring fire resistance is defined as the following:

- Members forming part of the structural frame (to all sides).
- Loadbearing walls or loadbearing parts of a wall.
- Floors (above and below).
- External walls requiring fire resistance.
- Compartment walls.
- Members supporting the rooftop plant.

[6] BS EN 1363: Part 1, 'Fire resistance tests. General Requirements', 2012.
[7] BS 476: Part 20, 'Fire tests on building materials and structures. Method for determination of fire resistance of elements of construction (general principles)', 1987.

With the exception of portal frames, elements of structure supporting only a roof do not require fire resistance. However, members supporting heavy rooftop plant and escape routes must be protected. Therefore, only those areas of the roof and supporting structure to rooftop plant require protection.

Protection to Elements of Structure

Where providing fire resistant encapsulation of the loadbearing structural frame, adequate test evidence from the supplier/designer (not DFC) must demonstrate that the elements of structure are sufficiently protected for the proposed/expected load. Evidence should be in the form of test reports and certification to the relevant British Standard as outlined above.

In addition, the system designer must demonstrate that adequate structural fire protection is maintained where the system incorporates penetrations (by sockets, service routes etc.) or any alternative boarding system.

4.1.3 Compartmentation

Walls

All compartment walls should also achieve the stated fire resistance period for loadbearing capacity, integrity and insulation (REI) in accordance with BS 476: Parts 21 & 22[8] unless stated otherwise.

The location of compartment walls is highlighted in the fire strategy drawings located in Appendix B. It is noted that in accordance with BS9999, it is not necessary to provide compartments of less than 800m^2 per floor.

Table 3 outlines the following fire resistance periods for walls throughout the building. Any instances where the drawings differ from Table 3, the requirements of Table 3 govern.

Areas	Fire Resistance Required
Escape stairs	30 minutes
Storage areas >1m^2 (including chemical and PE mat stores).	30 minutes
Plant rooms containing boilers, oil-filled transformer and switchgear, batteries	60 minutes
Kitchens with associated dining space	30 minutes
Sub-dividing corridors	30 minutes
Protected dead-end corridors	30 minutes

Table 3: Compartmentation required within the school

Floors

Compartment floors are not required. However, as an element of structure, floors should be protected such that they achieve a 60 minute period of fire resistance (REI) and due to the modular form of construction, this will be provided from above and below the floor. Note that fire stopping/dampers are not required for penetrations that do not impact on the loadbearing element of the floors.

[8] BS 476: Part 22, 'Methods for determination of the fire resistance of non-loadbearing elements of construction', 1987.

4.1.4 Protection of Openings and Fire Stopping

Fire Doors

All door assemblies (leafs, frames and hardware) within separating elements must achieve the same fire resistance standard as that of the element within which they are fitted. However, it is acceptable for doors in some separating elements to achieve lesser fire resistance standards as stated in Table 4 and Appendix B.

Fire door assemblies must be tested in accordance with BS476: Part 22 or BS EN 1634: Part 1[9]. The specification of the door must identify that the door leaf has been tested to each side separately. Fire doors denoted with the suffix 'S' require 'smoke seals'. Where cold smoke seals are required, they must comply with BS 476: Part 31[10] or BS EN 1634: Part 3[11]. Intumescent and cold smoke seals are required for all fire doors.

Note that smoke seals and intumescent strips are not normally required along the threshold of a door, although the gap between the floor surface finish at the threshold and the base of the door must not exceed that associated with the tested door assembly.

The fastening of doors used as an exit during a fire, which is to be locked during normal operation, will comprise panic hardware in accordance with BS EN 1125[12]. The hardware will be located on the side approached by escaping persons.

Door Location	Fire Resistance Requirements
Door to any compartment Wall	As per the compartment wall (with suffix S)
Approach into protected lobbies	FD 30S (self-closing)
Approach into protected stair	FD 30S (self-closing)
Doors to stores	FD30S (locked shut)

Table 4: Fire resistance requirements for doors in separating elements

Pipes

The following pipes can be provided with fire stopping at the point which they penetrate a wall or floor:

- Non-combustible material with a melting point of 800ºC (cast iron, copper or steel) having a nominal internal diameter of ≤160mm.
- Lead, aluminium, aluminium alloy, uPVC (complying with BS 4514 or BS 5255) and fibre cement having a nominal internal diameter of ≤40mm, and
- Any other material not stated above having a nominal internal diameter of ≤40mm.

All other penetrations through fire resisting construction must be adequately fire stopped using either a suitable proprietary product, or a sleeve where appropriate, to maintain the period of fire resistance. Ventilation/air handling ductwork requires additional measures, see below.

[9] BS EN 1634: Part 1, 'Fire resistance tests for doors, shutters and openable windows', 2008.
[10] BS 476: Part 31.1, 'Methods for measuring smoke penetration through doorsets and shutter assemblies – Method of measurement under ambient temperature conditions', 1983.
[11] BS EN 1634: Part 3, 'Fire resistance tests for doors, shutters and openable windows – Smoke control tests for door and shutter assemblies', 2004.
[12] BSEN 1125, 'Building hardware. Panic exit devices operated by a horizontal bar, for use on escape routes. Requirements and test methods', 2008.

Ductwork Systems

Ductwork systems and air handling systems provide a route for smoke and heat transmission. This risk is to be mitigated by ensuring measures below are incorporated;

- Ventilation ducts, and their associated plant supplying or extracting air directly to or from a protected escape route, must not also serve other areas. A separate ventilation system must be provided for each protected stairway, lobby and corridor where applicable.
- Ductwork passing through fire resisting separating elements must be fire rated ductwork, enclosed within fire resisting construction or provided with fire dampers located at the junction of the compartment floor or wall.
- Fire and smoke dampers, rated as per the compartment wall are required where air handling ductwork passes through any protected lobby or protected stair. Fire and smoke dampers are to be actuated by smoke detector-controlled automatic release mechanisms in addition to being actuated by thermally actuated devises.
- Any ductwork passing through a protected stairway, lobby or corridor without an opening into that area must be fire resisting, i.e. the ductwork must be protected using fire-resisting enclosures or fire-resisting ductwork.

Junction with Fire Resisting Encapsulation

Any gaps between floors or walls (i.e. between individual modules or at the junction of modular and traditional construction) that form a part of the fire resisting encapsulation of the loadbearing elements must be provided with 60 minute fire stopping, using an appropriately tested product.

4.1.5 Concealed Spaces & Cavity Barriers

All concealed spaces and cavities must be subdivided with imperforate cavity barriers achieving a fire resistance of 30 minutes (E) and 15 minutes (I), as follows:

- To subdivide any cavity such that the maximum cavity dimension does not exceed 20m. In this instance, the cavity linings are to achieve either Class 1 or Class 0 (as outlined in Table 5).
- At the edges of all cavities (including around openings such as windows). Cavity barriers around openings can be formed of 0.5mm steel, imperforate timber with a thickness more than 38mm or Calcium silicate, cement-based or gypsum- based boards at least 12mm thick.
- Above sub-dividing cross-corridor doors, where the door does not form a part of a fire resisting wall sub-dividing the floor.
- At the junction between an external cavity wall and any compartment wall.

4.2 Fire Spread Performance for Internal Wall & Ceiling Linings

All internal wall and ceiling linings within the building will meet the classifications outlined in Table 5 when tested to BS EN 13501: Part 1[13] or BS 476: Part 7[14] & BS 476 Part 6[15] (Class 0 only).

[13] BS EN 13501: Part 1, 'Classification using data from reaction to fire tests', 2007.
[14] BS 476: Part 7, 'Method of test to determine the classification of the surface spread of flame of products', 1997.
[15] BS 476: Part 6, 'Method of test for fire propagation for products', 1989.

Location	National Class *	European Class **
Escape corridors, circulation routes, stairs	Class 0	B-s3, d2
Rooms with an area ≥30m²	Class 1	C-s3, d2

Table 5: Minimum performance requirements for internal wall & ceiling linings

4.3 External Façade

Each of the elevations of the school building and sports block has been assessed for risk of external fire spread across the site or notional boundary. This assessment is relevant for the current site arrangement only, any future building developments (owned/operated by the school) or any delineation of ownership on the site, would require additional assessment. The assessment of the external walls are illustrated in Appendix B, and summarised below.

Fire Spread to Adjacent Boundaries

The school sits on a large site, with the North and East elevations of the main school building are located a significant distance from the site boundary (>60m). As such, external fire spread analysis has not been undertaken for these elevations and fire protection would not be required.

The West elevation of the main school building is within 11m of the adjacent site boundary. The maximum allowable area of unprotected openings on this elevation is approximately 576m². This is a greater area than the aggregate area of windows and doors on this elevation (234m²) and therefore fire resisting glazing and fire doors are not required on this elevation. The solid portions of wall should be protected to achieve a 60 minute period of fire resistance (E) and 15 minute period of fire resistance (I) from inside.

The West elevation of the sports block building is also within 5m of the adjacent site boundary. The maximum allowable area of unprotected openings on this elevation is approximately 144m². This is a greater area than the aggregate area of windows and doors on this elevation (12.7m²) and therefore fire resisting glazing and fire doors are not required on this elevation. The solid portions of wall should be protected to achieve a 60 minute period of fire resistance (E) and 15 minute period of fire resistance (I) from inside (this includes portions above the brickwork up where required to achieve maximum 144m²).

The South elevation of the sports block building is approximately 13m from the adjacent notional boundary (to the centre of the road). The maximum allowable area of unprotected openings on this elevation is approximately 432m². This is a greater area than the aggregate area of windows and doors on this elevation (11.6m²) and therefore fire resisting glazing and fire doors are not required on this elevation. The solid portions of wall should be protected to achieve a 60 minute period of fire resistance (E) and 15 minute period of fire resistance (I) from inside (this includes portions above the brickwork up where required to achieve maximum 432m²).

The elevations facing the courtyard do not require fire protection as they are a part of the same building.

The elevations between the main school building and the sports block are separated by a distance of 9m. Where buildings are located on the same site and operated by the same management, external fire spread does not require assessment. This is also supported by the detection and alarm system connecting buildings (refer to Section 4.5.1). As such, potential for fire spread is not considered for life safety.

Note that in all instances fire protection, achieving a 60 minute period of fire resistance (R) continues to be required to both sides of the portion of the external wall that protects elements of structure within the wall.

Fire Spread Performance for External Wall Surfaces

Although not necessarily a requirement of BS9999, it is recommended that all external walls achieve the following:

- Fire Propagation Index (I) less than 20 (national class), in accordance with BS 476 Part 6, or
- A minimum Class C-s3 d2 (European class), in accordance with BS EN 13501 Part 1, or
- Timber cladding at least 9mm thick.

4.4 Roof Covering Designation

Roof surfaces are to achieve a minimum BA, BB, or BC rating in accordance with BS 476-3 or $C_{ROOF}(t4)$ in accordance with BS EN 13501-5, tested as part of the proposed substrate.

Where the roof passes over a compartment wall, a 1500mm wide strip on either side of each compartment wall is to have a roof covering of designation of AA, AB, or AC on a substrate or deck of a material of limited combustibility. Refer to Appendix B for location of compartment walls on Level 02.

4.5 Electrical Systems

4.5.1 Automatic Fire Detection & Alarm

The main school building and sports block will be provided throughout with a Category L2 automatic and addressable fire detection and alarm system in accordance with BS 5839 Part 1[16], comprising the following:

- Smoke detectors in all escape routes.
- Smoke detectors in all rooms leading onto an escape route.
- Heat detectors in kitchens.
- Smoke detectors in store rooms and plant rooms.
- Manual call points, as outlined by the school (Type A recommended at storey exits).
- Smoke detectors located in ceiling voids with depth >800mm.

Confirmation of a fire, via single head detection of smoke, manual call point activation or by manual intervention (at the fire alarm panel) will result in the simultaneous evacuation of the main school building and the sports block. This activation will also release all external gate security (refer to Section 2.8).

The fire alarm system within the sport block will be linked to the main school system. Confirmation of a fire in the sports block, via single head detection of smoke or manual call point activation will result in alarm throughout the sports block and release all external gate security (refer to Section 2.8).

Detection in the sports block will not automatically raise alarm in the main school building upon initial detection. Subsequent alarm in the main school will be activated upon activation of a second detector, a second manual call point or by manual intervention.

The fire alarm panel for the new school building should be located at the main reception and/or in sight of the main building entrance doors from outside. It is recommended that the main school fire alarm panel identifies the building of detection.

[16] BS 5839: Part 1, 'Fire detection and fire alarm systems for buildings — Code of practice for system design, installation, commissioning and maintenance', 2002.

4.5.2 Two-way Communication System

Refuge areas are outlined in Section 2.6. Two-way communication should be provided between these locations and the main fire alarm panel or other designated location (such as the main reception or staff room) via a Type B outstation, designed in accordance with BS 5839-9[17].

4.5.3 Emergency Lighting of Escape Routes

Emergency lighting of escape routes will be provided to all escape routes in accordance with BS 5266: Part 1[18], and any other relevant parts of BS 5266 necessary for the chosen system. This includes external escape routes from the building identified in Section 2.8.2 and Appendix C.

Where the layout of desks, equipment, etc., is unknown during the design and installation of the emergency lighting, escape routes within rooms/spaces will also be unknown, and the system should be designed to provide the minimum requirements to all areas of the room/space.

This system can be a 'Non-Maintained' system, providing normal lighting is not dimmed in various areas of the building during operation. A minimum duration of 1 hour would be appropriate where it is considered that the school is unlikely to continue operating during mains failure, otherwise a duration of 3 hours would be appropriate.

Escape Signage

Escape signage must be provided within all areas in accordance with BS ISO 3864: Part 1[19] and BS 5499: Part 4[20].

4.5.4 Emergency Power Circuits

All cabling for fire alarm and detection systems and emergency lighting systems must be in accordance with the standards outlined in Section 4.5.5 and Section 4.5.2 respectively.

All fire safety measures in the building are provided with an integrated battery backup and therefore additional specific secondary power supply is not required.

4.5.5 Electrically Powered Locks on Escape Routes

Electrically powered doors and locks to doors on escape routes (including external gates) must return to the unlocked position on each of the following:

- On operation of the fire alarm system, and
- On activation of a manual door release unit (green break-glass box), and
- On loss of power or system error.

4.6 Wet Systems

4.6.1 Automatic Sprinklers/Suppression

An automatic sprinkler system or suppression is not currently provided or required within the school to meet the life safety requirements of the Building Regulations.

[17] BS 5839: Part 9, 'Fire detection and fire alarm systems for buildings — Code of practice for the design, installation, commissioning and maintenance of emergency voice communication systems', 2011.
[18] BS 5266: Part 1, 'Code of practice for the emergency lighting of premises', 2011.
[19] BS ISO 3864: Part 1 'Graphical symbols — Safety colours and safety signs Design principles for safety signs and safety markings', 2011.
[20] BS 5499: Part 4 'Code of practice for escape route signing', 2000.

4.6.2 Fire Mains

Internal Rising Mains

Internal rising mains are not currently provided or required within the school to meet the life safety requirements of the Building Regulations.

Fire Hydrants

An existing hydrant is located within 100m of the main school building and within 50m of the sports block and therefore a new private hydrant is not required. The existing hydrant is located from Tendring Road as indicatively shown in Appendix B and Figure 3.

It is necessary for the MEP engineer and lead designer to determine the efficacy of the existing hydrant with the utilities supplier. This is beyond the remit of this report.

4.7 Smoke Ventilation

Smoke ventilation is not provided or required within the school to meet the life safety requirements of the Building Regulations.

Any ventilation systems that recirculate air from one part of the building to another will be provided with automatic smoke detection within the ductwork before the point of separation of the recirculated air and the air to be discharged to the open air. These detectors will be able to either shut down the ventilation plant on activation or switch the system to extract only (supply and recirculation is stopped).

5 Further Work / Fire Safety Design Implementation

The fire safety design (as documented in this report) has been developed to enable RIBA Stage 4 sign off from the client. This document will also be issued to Building Control and the Fire Service with the intention of gaining in principle Part B approval for its content.

Once all works are completed, Building Control will issue a completion certificate, and once the building is handed over, the Responsible Person(s) must comply with their duties under the Regulatory Reform (Fire Safety) Order 2005. In order to get to this position, the following needs to be conducted.

1. The Design Team must incorporate the fire safety design as specified in this document into their Developed Designs and Specifications.
2. The Contractor must ensure that the Developed Designs are implemented and that any changes are tracked and agreed as appropriate with the Building Control authorities.
3. The relevant fire safety information must be given to the Responsible Person(s) on completion of the works.
4. The responsible person(s) must take responsibility for ongoing health and safety within the completed building.

5.1 Fire Safety Information

Regulation 38 of the Building Regulations requires that fire safety information must be given to the responsible person at the completion of the works, by the principal contractor. As a minimum this must include:

- The fire safety strategy.
- Assumptions regarding the management of the building. In this instance this includes a requirement to provide assisted evacuation as appropriate from refuges spaces within the stairs and policies regarding protection of the central core.
- The evacuation strategy / regime and high level cause and effect (provided by MEP engineer).
- Escape routes and muster points.
- Details of compartmentation, cavity barriers, fire doors, fire stopping and opening protectives.
- Smoke detector heads, alarm call points, alarm panels, emergency communication systems, fire safety signage, emergency lighting, fire extinguishers.
- As-built plans showing the above.

5.2 Fire Safety Management

The Regulatory Reform (Fire Safety) Order 2005 requires the responsible person to take responsibility for ongoing health and safety within the completed building.

Typically, this requires them to develop and implement a fire safety management plan, conduct a preliminary risk assessment upon or prior to building occupation and undertake regular fire risk assessments.

This report and associated fire strategy drawings can be used as part of the preliminary fire risk assessment to be developed by SFG School.

As part of the fire strategy for the building, at least a Level 2 Management regime should be adopted as a minimum. This includes the following:

- Reacts to the impact of proposed changes to the risk profile, identifies alternative protection and management measures required and ensures implementation.
- Responsibility for the management of fire safety may be divided over a number of different individuals, departments or even companies, and the implementation of changes may require approval of those not directly responsible for management of fire safety within the premises.
- Staffing level specific to the building considering the use of the building and nature of the occupants. Includes sufficient trained personnel to ensure all less able-bodied occupants are assisted out of the building effectively in an emergency. Contingency for sickness or holiday is not required as a minimum but is recommended where specific roles are identified.
- Ensures sufficient staff numbers are trained in fire safety and evacuation procedures and provision of fire wardens to assist evacuation. Contingency for sickness or holiday is not required as a minimum.
- Work control is developed reactively with clear lines of responsibility with a permit system and logging and audit processes.
- Communications ensure that those involved are informed of relevant fire safety information. Contingency for systems failure is not required as a minimum.
- Fire safety systems are monitored, and equipment is functional at all times when the building is in use. Alternative procedures for times when systems and equipment are unavailable are determined reactively.
- Liaison with the fire authority is proactive, including notification of the fire authority to changes in Risk Profile and other key factors. Routine meetings are not required as a minimum.
- Contingency planning takes account of a narrow range of possible emergency incidents.

The above reflects a well-managed building, and further guidance can be found in Section 4 of BS 9999.

In addition to the above, Sir Frederick Gibberd School must ensure that the following policies are fully developed and meet the fundamental requirements for this fire strategy report:

- Stair and lobby protection – policy to outline general requirements for ensuring the stairs and exit discharge routes are maintained clear of litter, goods and any other fire load.
- Maintenance and testing – policy to identify appropriate regime for testing/maintenance/cleaning of service routes and plant, particularly where access is required from within the stairs/lobbies. In addition, regular testing and maintenance logs to be provided for active fire protection systems.
- Occupant load – clear identification of maximum occupant load limits for floors and rooms (studios and hall). This should incorporate any instructions to staff and faculty members to ensure occupant load is limited to that stated in this report.
- Production of PEEPs for occupants with mobility impairments.
- Policy for the implementation of large scale evacuation and process for guiding occupants to the identified assembly point.
- Provision of evacuation drill and discussion/reporting of findings, particularly in respect of ensuring adequacy of the identified assembly point and the external routes to this assembly point.

Appendix A – Determination of Risk Profile

The new building is a place of work and a place of learning. Staff and students will be predominantly be full time occupants of the building with most teaching on upper floors being subject specific. Therefore, majority of occupants will be awake and familiar with the building and its escape routes. As such, a Category A occupant characteristic is adopted.

BS 9999 guidance does not provide detailed recommendations on the Fire Growth Rate associated within spaces of the building. However, Table 3 of BS 9999 does highlight what materials in which configurations would typically result in which fire growth rates. This has been replicated in the following table, which outlines the example combustible items associated with the Fire Growth Rates and their expected applicability to the building.

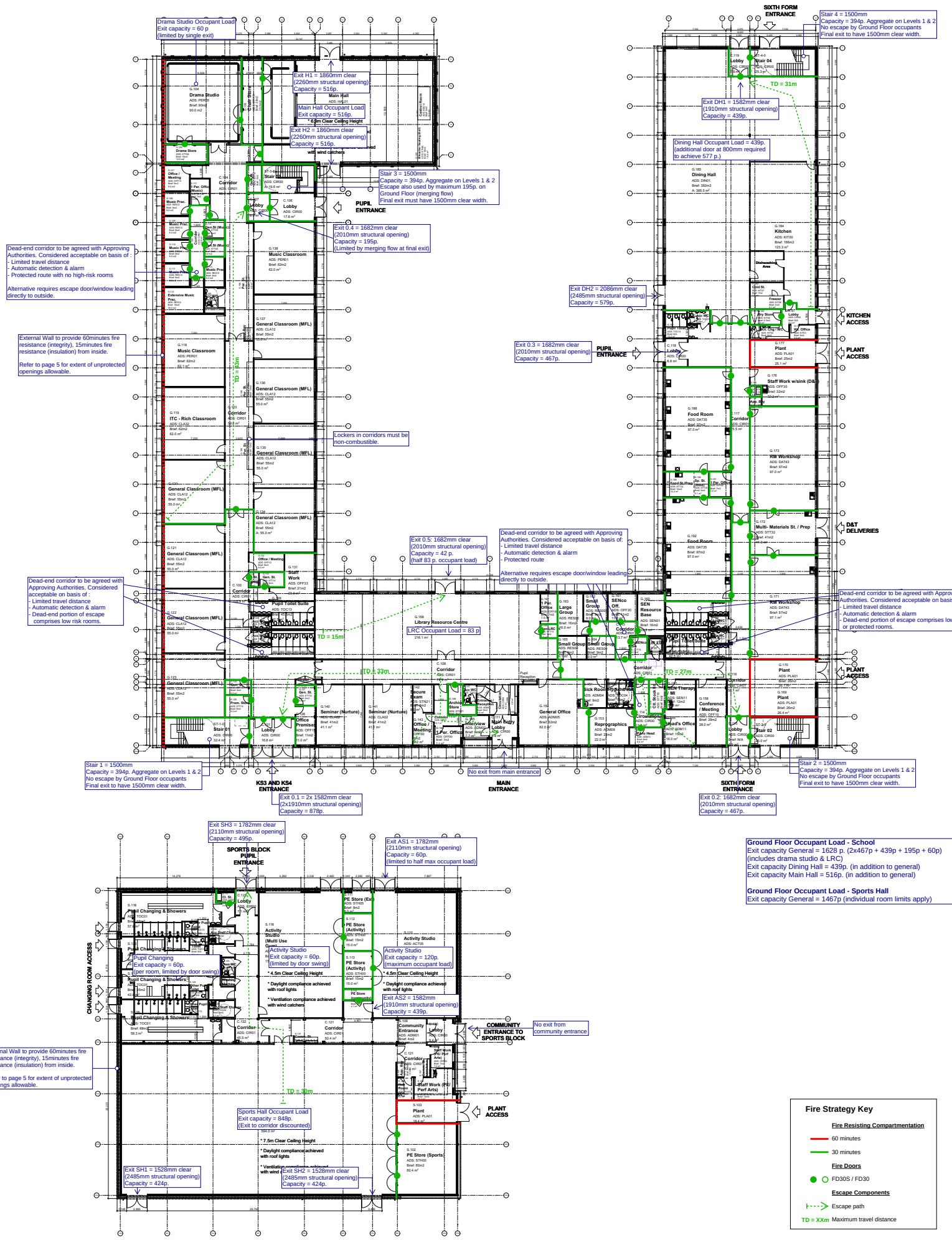
Fire Growth Rate	Description	Typical Examples
1 – Slow	Evenly distributed low level fire load, small discrete packets of fuel or material of limited combustibility	Reception areas, concourses and foyers
2 – Medium	Evenly distributed low to mid-level fire load comprising a mix of combustible materials	Offices, lounges, classrooms, auditoria, seating areas, galleries and car parks
3 – Fast	Stacked combustibles (on or off racking and shelving but excluding high rack storage), some small quantities of materials other than materials of limited combustibility (or where larger quantities are stored in separate fire-resisting enclosures), process, manufacturing or storage of combustible materials	Shop sales areas, workshops, factories and small storage buildings
4 – Ultra-Fast	Medium to large quantities of materials other than materials of limited combustibility, high racked storage, flammable liquids and gases or where rapid uncontrolled fire growth could occur	Warehousing, processing plants and car parks utilising a car stacker

Table 6 Example fire growth rates (BS9999 Table 3).

Based upon Table 6, a predominant Fire Growth Rate of '2' has been adopted. This would be applicable regardless of whether occupants are familiar or unfamiliar.

Therefore, Risk Profile A2 (the combination of the Occupant Characteristics and Fire Growth Rate) has been adopted.

Appendix B —Fire Strategy Drawings/Comments



Ground Floor Occupant Load - School
Exit capacity General = 1628 p. (2x467p + 439p + 195p + 60p)
(includes drama studio & LRC)
Exit capacity Dining Hall = 439p. (in addition to general)
Exit capacity Main Hall = 516p. (in addition to general)

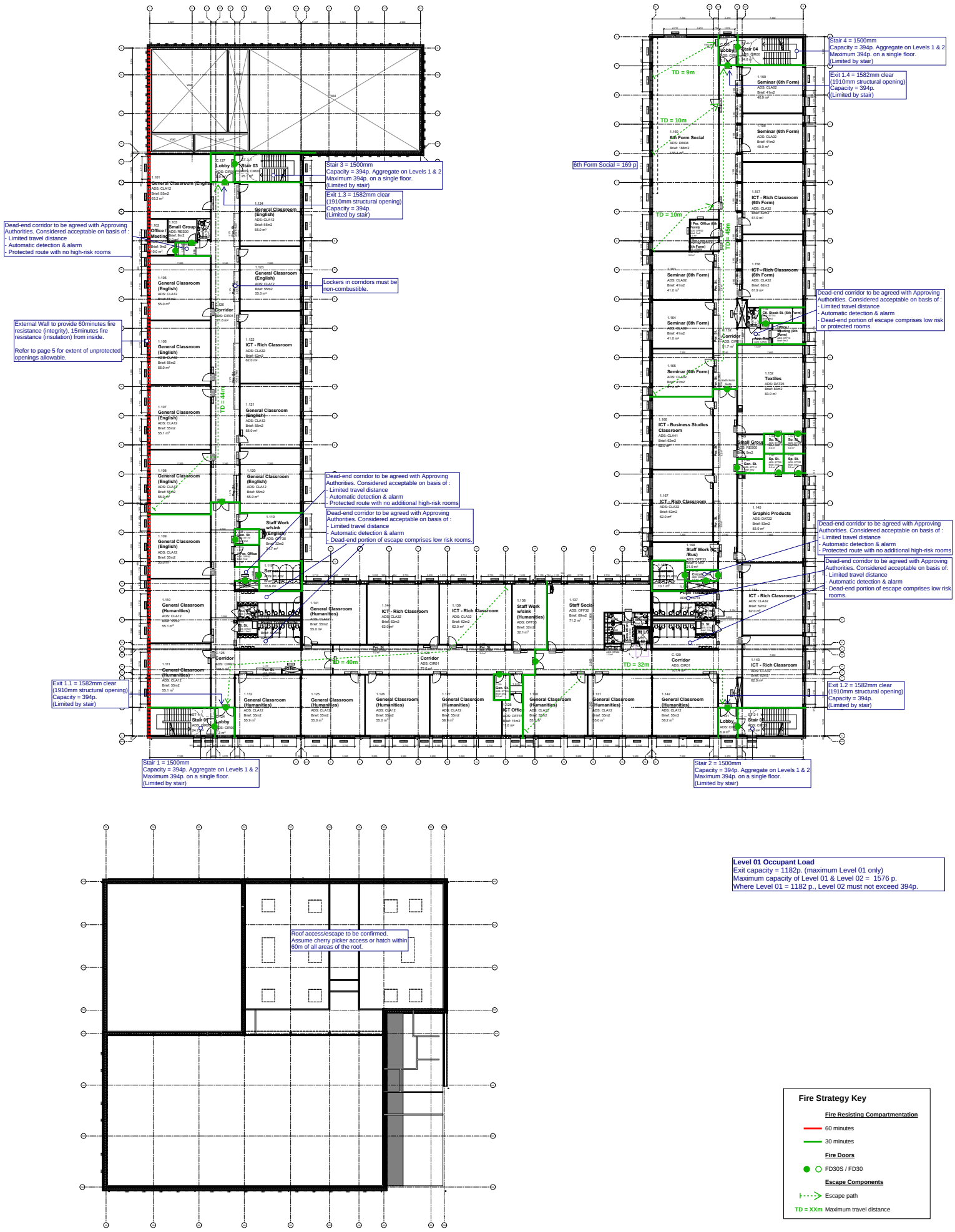
Ground Floor Occupant Load - Sports Hall
Exit capacity General = 1467p (individual room limits apply)

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance



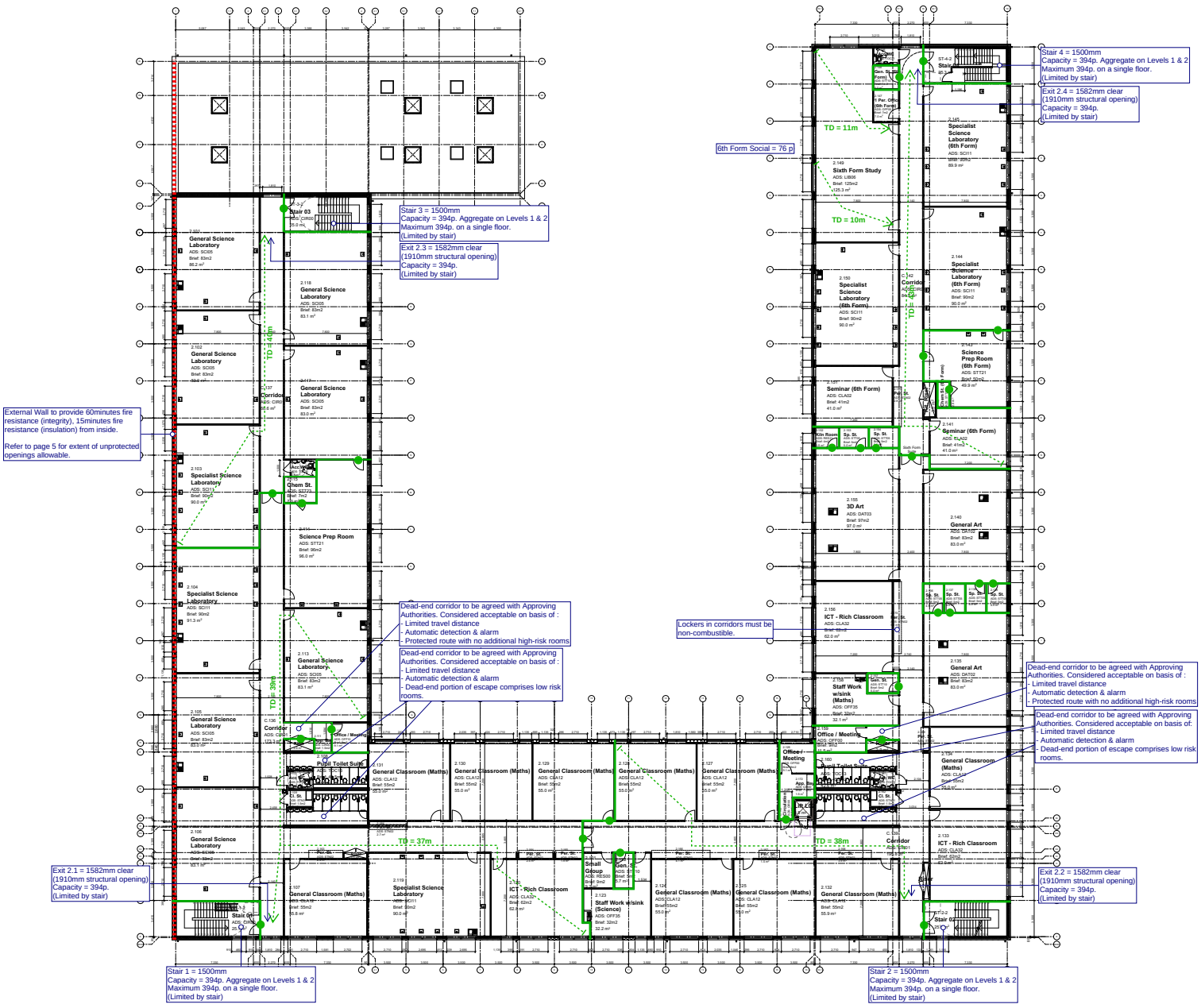
Level 01 Occupant Load
Exit capacity = 1182p. (maximum Level 01 only)
Maximum capacity of Level 01 & Level 02 = 1576 p.
Where Level 01 = 1182 p., Level 02 must not exceed 394p.

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance



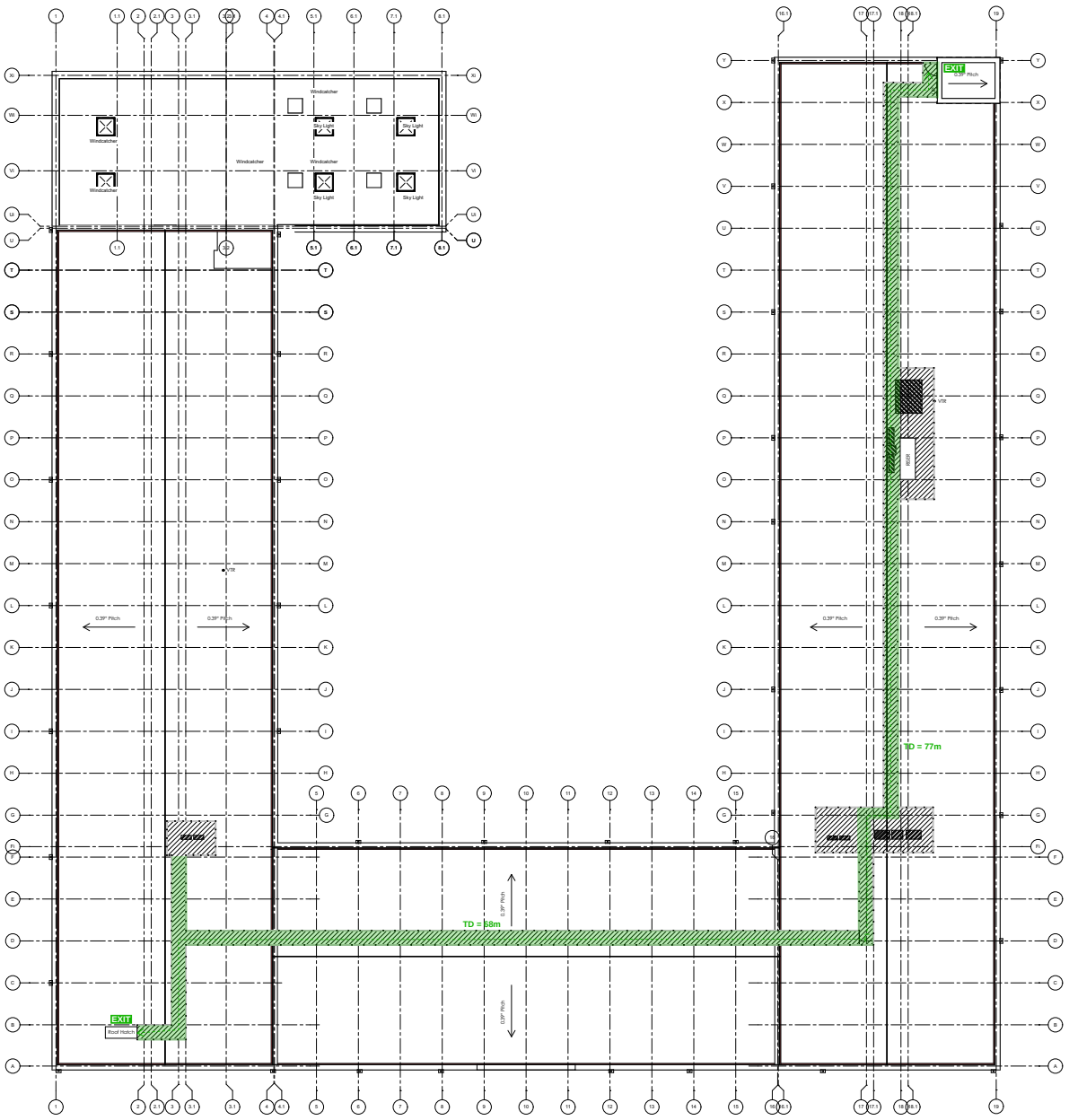
Level 02 Occupant Load
Exit capacity = 1182p. (maximum Level 02 only)
Maximum capacity of Level 01 & Level 02 = 1576 p.
Where Level 02 = 1182 p., Level 01 must not exceed 394p.

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance



3. RF 1:200

Fire Strategy Key

Fire Resisting Compartmentation

60 minutes

30 minutes

Fire Doors

FD30S / FD30

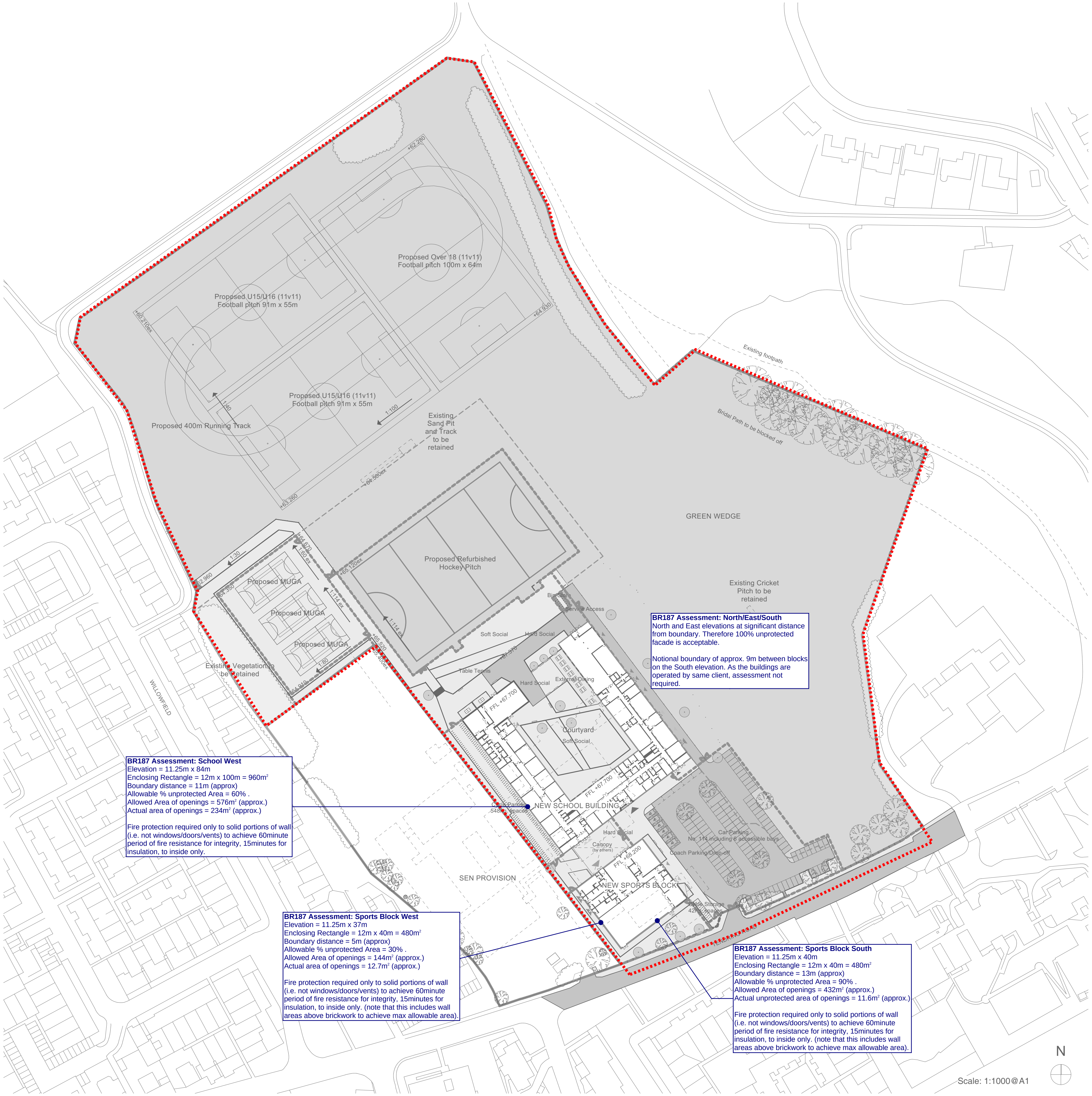
Escape Components

Escape path

TD = XXm Maximum travel distance

ROOF PLAN

Sir Frederick Gibberd School
Proposed Site Layout
17/12/2018



SITE PLAN KEY:

- Site Boundary/ Boundary Fenceline
- SEN Site Boundary
- Existing School Building Demolished
- Green Wedge Boundary ref: Harlow Proposals Map - Emerging LDP May 2018
- Primary School Building Entrance
- Primary Sports Block Entrance
- Sports Block Changing Room Access
- Sixth Form Building Entrance
- KS3 & KS4 Building Entrance
- Delivery Building Entrances
- Community Entrance
- Plant Access
- Pedestrian Grade Concrete Asphalt
- Vehicular Grade Concrete Asphalt
- Porous Concrete Asphalt (MUGA only)
- Proposed grass
- Proposed planting
- Existing Sports Pitch
- Proposed Refurbished Hockey Pitch
- Existing Tree
- Proposed Tree 23no. to replace the 21no. existing trees and 2no. groups of trees which are to be removed as a result of the development
- Existing Vegetation
- Proposed Secure Fenceline
- Concrete Block Paving (External Dining Area)
- External Seating (Not Funded)
- External Canopy (Not Funded)
- Table Tennis Table (Not Funded)
- External Dining Table (Not Funded)
- +68.700 Levels

HLM

SIR FREDERICK GIBBERD - CLIENT ENGAGEMENT MEETING / SCHOOL ENGAGEMENT MEETING
PROPOSED SITE CONTEXT

LONDON SHEFFIELD GLASGOW BELFAST CARDIFF MANCHESTER JOHANNESBURG ABU DHABI DUBAI

SFG-L-SK-02-CEM 07

Caledonian

1. This drawing has been prepared in accordance with the scope of CML's appointment with its clients and is subject to the terms and conditions of that appointment. CML accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.

2. This drawing is to be read in conjunction with all other relevant drawings and specifications for this project and apparent inconsistencies brought to the attention of the Project Design Manager.

3. Do not scale directly from drawing - if in doubt ask!

NOTES:

Existing Sand Pit and Track to be retained & refurbished

Green Wedge

Proposed Refurbished Hockey Pitch

Proposed MUGA
3 x Netball 30.5 x 15.25m
3 x Tennis 23.77m x 10.97m

Basic Pitch Size: Senior Rugby Union 100x70m max

Bin Store

Turning head

Proposed 400m Running Track

Hammerhead required for vehicle turning. To be confirmed with vehicle tracking. Note access through gate required.

Fire Service access is required to 15% of the building perimeter (78m).

New portions of road (shown highlighted in red) must comply with the following:
- Minimum width between kerbs = 3.7m
- Minimum width of gateways = 3.1m
- Minimum turning circle between kerbs = 16.8m
- Minimum clearance height = 3.7m
- Minimum carrying capacity = 12.5tonnes

This route should also be maintained during construction (or alternative route provided with comparable provisions).

Vehicular access is not required in the internal landscaping area.

NEW SCHOOL BLOCK

NEW SPORTS BLOCK

FFL 467.700

FFL 468.200

Pupil entrance

6th form building entrance

Visitor entrance

KS3 & KS4 building entrance

Drop Off

Mini-bus

Primary sports block entrance

Sports block changing room access

Community entrance

Plant access

Toilets

Drop Off Area

Sub-station (indicative only)

Fire Service access is required to 15% of the building perimeter (23m).

Existing hydrant location <100m from both buildings

H

TENDRING ROAD

WILLOWFIELD

N

0 10 20 30 40 50m

Scale: 1:500@A1

SITE PLAN KEY:

- Site Boundary
- SEN Site Boundary
- Primary School Building Entrance for students / vistors
- Primary Sports Block Entrance for students
- Sports Block Changing Room Access
- Sixth Form Building Entrance
- KS3 & KS4 Building Entrance
- Delivery Building Entrances
- Community entrance for sports block out of hours use.
- Plant Access
- Pedestrian Grade Concrete Asphalt
- Vehicular Grade Concrete Asphalt
- Concrete to base of bin store
- Acoustic barrier to MUGA 2.5m height
- Proposed Fenceline Refer to security zoning and fencing plan for further details
- +68.700 Levels

Soft Landscape
Note: Refer to soft landscape strategy drawing FS0620-HLM-00-00-DR-L-45-0002

- Proposed grass
- Propsed planting
- Existing Sports Pitch
- Proposed Refurbished All Weather Hockey Pitch
- Existing Tree to be retained
- Proposed Tree 28no. to replace the 25no. existing trees and 3no. groups of trees which are to be removed as a result of the development.
- Existing Vegetation

P03	ISSUED FOR CLIENT ENGAGEMENT MEETING	30/01/2019	IB	HLM
P02	ISSUED FOR DRAFT CP	24/01/2019	IB	HLM
P01	PRELIMINARY ISSUE FOR COMMENT	18/01/2019	LF	HLM
Rev	Description	Date	By	Chk

Caledonian HLM

CLIENT:
CALEDONIAN

PROJECT REF:
SIR FREDERICK GIBBERD SCHOOL

DESCRIPTION:
PROPOSED SITE LAYOUT AROUND BUILDINGS

DOCUMENT REFERENCE No:
FS0620-HLM-00-00-DR-L-00-0004

Ref Orig Zone Level Type Role Classification Chrono No.

SCALE @ A1: 1:500 REV: P03

CONTRACT NUMBER: DATE: 15/01/2019

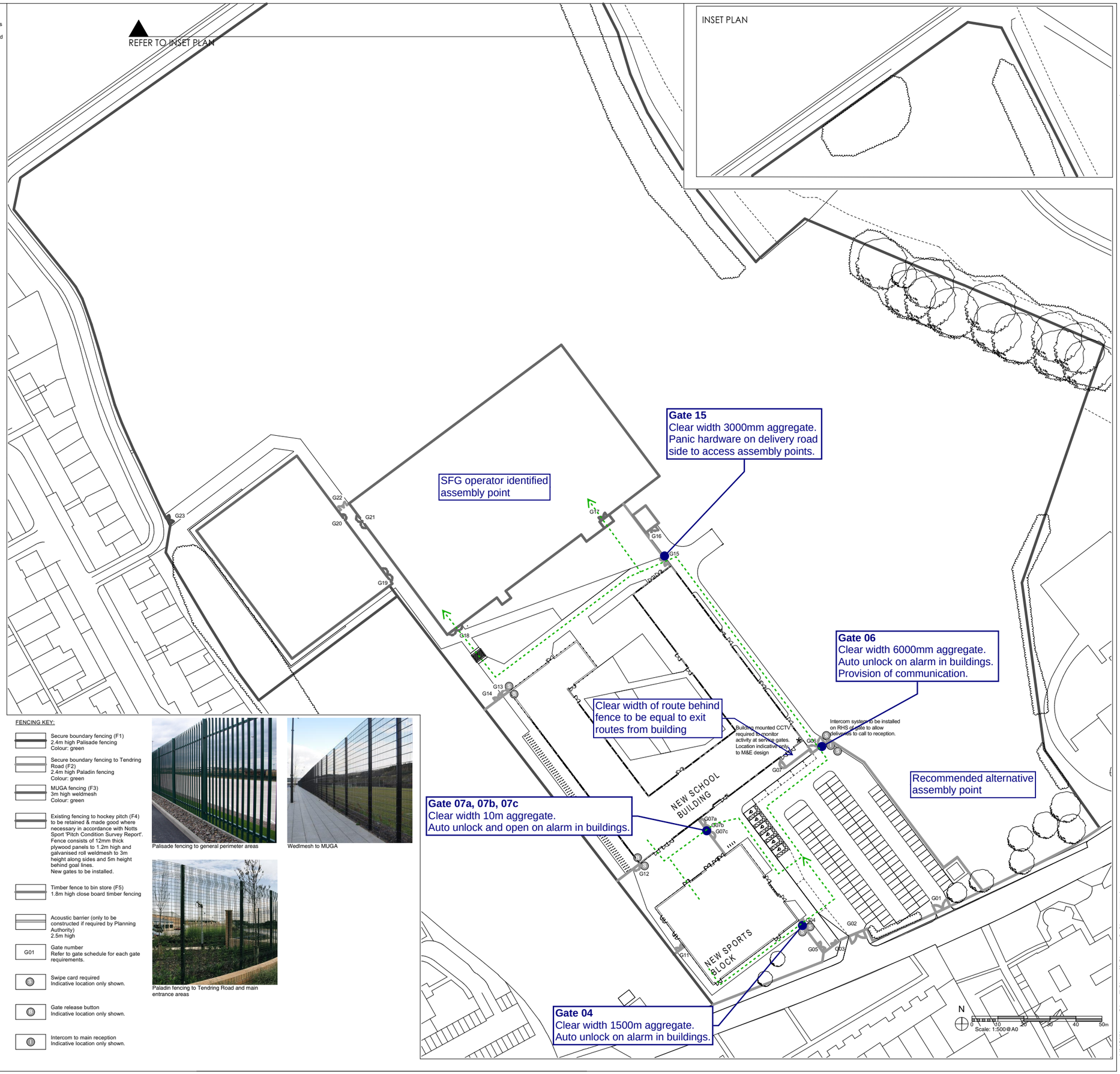
SUITABILITY: S1

Appendix C – External Routes to Assembly Point

GATE SCHEDULE

Note that the fire strategy and muster points have yet to be confirmed by the fire officer. This drawing assumes that muster points will be the all weather hockey pitch and MUGA.
Access from the school main building fire escape points to the muster points will be via path and steps provided between school and the hockey pitch. Access to the muster points from the Sports Block will be via the car park and grass playing fields.

GATE NO	GATE TYPE	SPEC	HEIGHT (m)	CLEAR WIDTH (m)	FIRE ESCAPE	KEY SUITING
G01	Double leaf vehicular & Fire Tender exit from car park	-	2.4	6.0	N	**Padlock with Master key - manual operation only** Standard slide latch and steel drop bolts to be set in concrete and to be lockable in both open and closed positions. Gate to be open throughout the school day and during any community use out of hours use. Gate to be locked overnight.
G02	Double leaf vehicular & Fire Tender entry to car park	-	2.4	6.0	Y	**Padlock with Master key - manual operation only** Standard slide latch and steel drop bolts to be set in concrete and to be lockable in both open and closed positions. Gate to be open throughout the school day and during any community use out of hours use. Gate to be locked overnight.
G03	Double leaf pedestrian & cyclist	-	2.4	2.0	N	**Padlock with Master key - manual operation only** Standard slide latch and steel drop bolts to be set in concrete and to be lockable in both open and closed positions. Gate to be open throughout the school day and during any community use out of hours use. Gate to be locked overnight.
G04	Single leaf pedestrian fire exit gate	-	2.4	1.5	Y	**Spring loaded with magnetic lock with auto release on fire alarm.** Steel drop bolts to be set in concrete in the gate's open position. Gate to be closed and locked at all times of the day. Swipe card access to be installed to either side of gate for maintenance access. Magnetic lock to release on fire alarm to allow pedestrian access to muster point via car park and playing fields.
G05	Double leaf maintenance access only		2.4	3	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete in both open and closed positions. Gate to be closed and locked at all times of the day.
G06	Double leaf vehicular, maintenance & Fire Tender	-	2.4	6.0	Y	**Fully automated gate with magnetic lock and intercom linked to main reception.** Steel drop bolts to be set in concrete in the gate's open position to ensure gates remain open while vehicles pass through. Gates to be locked at all times of the day. Magnetic lock to release on fire alarm, to allow safe access of fire tender into the site. Intercom to be installed to the RHS of gate for deliveries to call to reception. Swipe card on both sides of gate to allow staff members to open gates for deliveries and accompany deliveries into secure site.
G07	Single leaf pedestrian	-	2.4	1.5	N	**Spring loaded with magnetic lock with auto release on fire alarm.** Steel drop bolts to be set in concrete in the gate's open position . Gates to be on timed control to open at the beginning and end of the day only, to allow student access directly to 6th form entrance. Gate to be closed and locked throughout the rest of the day. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route. Magnetic lock to release on fire alarm to allow pedestrian access to muster point via car park and playing fields.
G08	Single leaf pedestrian & cyclist gates	-	2.4	1.5	Y	**Magnetic lock with auto release on fire alarm.** Steel drop bolts to be set in concrete in the gate's open position to ensure gates remain open while pedestrians & cyclists pass through at beginning and end of day. Gates to be on timed control to open at the beginning and end of the day only, to allow student access directly to KS3 and KS4 entrance. Gate to be closed and locked throughout the rest of the day. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route. Magnetic lock to release on fire alarm to allow pedestrian access to muster point via car park and playing fields.
G09	Single leaf pedestrian & cyclist gates	-	2.4	1.5	Y	**Key Suiting as G08**
G10	Single leaf pedestrian & cyclist gates	-	2.4	1.5	Y	**Key Suiting as G08**
G11	Double leaf pedestrian & maintenance	-	2.4	3.0	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete in both open and closed positions. Gate to be closed and locked at all times of the day.
G12	Single leaf pedestrian & cyclist access to cycle storage area	-	2.4	1.5	N	**Spring loaded gate with magnetic lock** Gate to be open at beginning and end of the day only to allow student access to cycle store. Steel drop bolts to be set in concrete in the gate's open position to ensure gates remain open while pedestrians & cyclists pass through. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route. Swipe card access to south side of gate to allow staff to open gate for PE access.
G13	Double leaf pedestrian, maintenance & cyclist access to cycle storage area	-	2.4	3.0	N	**Spring loaded gate with magnetic lock** Gate to be open at beginning and end of the day only to allow student access to cycle store. Steel drop bolts to be set in concrete in the gate's open position to ensure gates remain open while pedestrians & cyclists pass through at beginning and end of the day. Swipe card access to north side of gate to allow staff to open gate for access to Sports Hall. Release button on building to the north side of the gate.
G14	Double leaf maintenance access only	-	2.4	3	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete in both open and closed positions. Gate to be closed and locked at all times of the day.
G15	Double leaf pedestrian and maintenance vehicle access to playing fields.	-	2.4	3.0	Y	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete in both open and closed positions. Push-bar release to east side of gate to aid fire strategy. Gate to be closed and locked at all times of the day. Controlled supervised access onto grass playing fields only.
G16	Double leaf vehicular & pedestrian access to bin store	-	1.8	4.1	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete in both open and closed positions. Gate to be locked unless bins are being collected.
G17	Existing double leaf gate to Hockey pitch	-	as existing height	as existing width	N	**Padlock with Master key** Existing gate to be retained and remain locked at all times as no longer required.
G18	Double leaf pedestrian and maintenance vehicle access to existing Hockey pitch	-	to match existing fence height	3.0	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete and to be lockable in both open and closed positions. Gates to be locked at all times of the day, with controlled supervised access only. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route.
G19	Double leaf pedestrian and maintenance vehicle access to MUGA	-	3	3.0	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete and to be lockable in both open and closed positions. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route. Gate to be open throughout school day as access is allowed during recess periods.
G20	Single leaf pedestrian access to MUGA	-	3	1.2	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete and to be lockable in both open and closed positions. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route. Gate to be open throughout school day as access is allowed during recess periods.
G21	Double leaf pedestrian to existing Hockey pitch	-	to match existing fence height	3.0	N	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete and to be lockable in both open and closed positions. To have 180° swing capacity to allow gates to be fully opened to ensure gates do not block access route. Gates to be locked at all times of the day, with controlled supervised access only.
G22	Double leaf pedestrian, cyclist and maintenance	-	2.4	3.0	-	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete and to be lockable in both open and closed positions. Gate to be open at beginning and end of the school day to allow student access into the site. Controlled supervised access onto grass playing fields only.
G23	Double leaf pedestrian, cyclist and maintenance	-	2.4	3.0	-	**Padlock with Master key** Standard slide latch with steel drop bolts to be set in concrete and to be lockable in both open and closed positions. Gate to be open at beginning and end of the school day to allow student access into the site.



FENCING KEY:

- Secure boundary fencing (F1)
  2.4m high Palisade fencing
  Colour: green
- Secure boundary fencing to Tendring Road (F2)
  2.4m high Paladin fencing
  Colour: green
- MUGA fencing (F3)
  3m high weldmesh
  Colour: green
- Existing fencing to hockey pitch (F4) to be retained & made good where necessary in accordance with Notts Sport 'Pitch Condition Survey Report'. Fence consists of 12mm thick plywood panels to 1.2m high and galvanised roll weldmesh to 3m height along sides and 5m height behind goal lines.
  New gates to be installed.
- Timber fence to bin store (F5)
  1.8m high close board timber fencing
- Acoustic barrier (only to be constructed if required by Planning Authority)
  2.5m high
- G01 — Gate number
  Refer to gate schedule for each gate requirements.
- S — Swipe card required
  Indicative location only shown.
- B — Gate release button
  Indicative location only shown.
- I — Intercom to main reception
  Indicative location only shown.

Palisade fencing to general perimeter areas

Wedlmesh to MUGA

Paladin fencing to Tendring Road and main entrance areas

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2. This drawing is to be read in conjunction with all other relevant drawings and specifications for this project and apparent inconsistencies brought to the attention of the Project Design Manager.

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NOTES:

Rev	Description	Date	By
P06	GATE SCHEDULE AMENDED FOLLOWING FIRE STRATEGY AND RIDD INPUT	07/03/2019	IB
P05	PLANNING ISSUE	14/02/2019	IB
P04	DRAFT PLANNING	07/02/2019	IB
P03	ISSUED FOR DRAFT CP - GATE SCHEDULE UPDATED	28/01/19	IB
P02	ISSUED FOR DRAFT CP	24/01/2019	IB
P01	PRELIMINARY ISSUE FOR COMMENT	18/01/2019	LT

Caledonian HLM

CLIENT:
CALEDONIAN

PROJECT REF:
SIR FREDERICK GIBBERD SCHOOL

DESCRIPTION:
FENCING PLAN

DOCUMENT REFERENCE No:
FS0620-HLM-00-00-DR-L-25-0001

Ref	Orig	Zone	Level	Type	Role	Classification	Chrono No.

SCALE @ A0: 1:500 | REV: P06
CONTRACT NUMBER: FS0620 | DATE: 03/01/2019
SUITABILITY: S4

Quality Assurance

This report has been prepared for the use by, and takes into account the particular instructions and requirements of our Client. It is not intended for use by any third party, and Design Fire Consultants Ltd shall not be liable for the reliance on or use of the report by any third party.

Revision	Date	Issue Description	Author	Checked
00	05 April 2019	Draft issue for design team comment.	C Howard	Draft
				Draft

Drama Studio Occupant Load
Exit capacity = 60 p
(limited by single exit)

Exit H1 = 1860mm clear
(2260mm structural opening)
Capacity = 516p.

Main Hall Occupant Load
Exit capacity = 516p.

* 6.9m Clear Ceiling Height

Exit H2 = 1860mm clear
(2260mm structural opening)
Capacity = 516p.

* Ventilation compliance achieved with wind catchers

Stair 3 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Escape also used by maximum 195p. on Ground Floor (merging flow)
Final exit must have 1500mm clear width.

PUPIL ENTRANCE

Exit 0.5 = 1682mm clear
(2010mm structural opening)
Capacity = 195p.
(Limited by merging flow at final exit)

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no high-risk rooms

Alternative requires escape door/window leading directly to outside.

External Wall to provide 60minutes fire resistance (integrity), 15minutes fire resistance (insulation) from inside.

Refer to page 5 for extent of unprotected openings allowable.

TD = 43m

Lockers in corridors must be non-combustible.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk rooms.

TD = 15m

LRC Occupant Load = 60 p
(limited by inward opening door)

TD = 33m

Stair 1 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
No escape by Ground Floor occupants
Final exit to have 1500mm clear width.

KS3 AND KS4 ENTRANCE

Exit 0.1 = 2x 1582mm clear
(2x1910mm structural opening)
Capacity = 878p.

MAIN ENTRANCE

Exit 0.2 = 1582mm clear
(1910mm structural opening)
Capacity = 439p.

SIXTH FORM ENTRANCE

Exit 0.3: 1682mm clear
(2010mm structural opening)
Capacity = 467p.

Stair 2 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
No escape by Ground Floor occupants
Final exit to have 1500mm clear width.

Stair 4 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
No escape by Ground Floor occupants
Final exit to have 1500mm clear width.

TD = 31m

Exit DH1 = 1582mm clear
(1910mm structural opening)
Capacity = 439p.

Dining Hall Occupant Load = 439p.
(additional door at 800mm required to achieve 577 p.)

Exit DH2 = 2086mm clear
(2485mm structural opening)
Capacity = 579p.

Exit 0.4 = 1682mm clear
(2010mm structural opening)
Capacity = 467p.

PUPIL ENTRANCE

KITCHEN ACCESS

PLANT ACCESS

D&T DELIVERIES

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of:
- Limited travel distance
- Automatic detection & alarm
- Protected route

Alternative requires escape door/window leading directly to outside.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of:
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk or protected rooms.

TD = 27m

Exit SH6 = 1782mm clear
(2110mm structural opening)
Capacity = 495p.

SPORTS BLOCK PUPIL ENTRANCE

Pupil Changing
Exit capacity = 60p.
(per room, limited by door swing)

Activity Studio
Exit capacity = 60p.
(limited by door swing)

* 4.5m Clear Ceiling Height

* Daylight compliance achieved with roof lights

* Ventilation compliance achieved with wind catchers

Drama Studio
Exit capacity = 439p.
(discounting largest exit)

* 4.5m Clear Ceiling Height

* Daylight compliance achieved with roof lights

Exit AS1 = 1582mm
(1910mm structural opening)
Capacity = 439p.

CHANGING ROOM ACCESS

COMMUNITY ENTRANCE TO SPORTS BLOCK

Exit SH5 = 1860mm clear
(2110mm structural opening)
Capacity = 516p.

External Wall to provide 60minutes fire resistance (integrity), 15minutes fire resistance (insulation) from inside.

Refer to page 5 for extent of unprotected openings allowable.

TD = 30m

Sports Hall Occupant Load
Exit capacity = 848p.
(Exit to corridor discounted)

* 7.5m Clear Ceiling Height

* Daylight compliance achieved with roof lights

* Ventilation compliance achieved with wind

Exit SH1 = 1528mm clear
(2485mm structural opening)
Capacity = 424p.

Exit SH2 = 1528mm clear
(2485mm structural opening)
Capacity = 424p.

PLANT ACCESS

Ground Floor Occupant Load - School
Exit capacity General = 1628 p. (2x467p + 439p + 195p + 60p)
(includes drama studio & LRC)
Exit capacity Dining Hall = 439p. (in addition to general)
Exit capacity Main Hall = 516p. (in addition to general)

Ground Floor Occupant Load - Sports Hall
Exit capacity General = 1467p (individual room limits apply)

Fire Strategy Notes:

The following notes outline the key fire safety measures relevant to concept fire strategy. Note that this list is not exhaustive and reference must be made to the fire strategy report, issued separately in due course.

- Minimum Category L2 detection & alarm system required.
- Detectors required in ceiling voids >800mm deep.
- Simultaneous evacuation one block only (school or sports block) on single-stage alarm.
- Alert signal relay to main school panel for fire in sport block.
- Two-way communications point required between refuges and fire alarm panel in school (not required in sport block).
- Internal wall and ceiling linings to be Class 0 in circulation and escape routes and large rooms, Class 1 in small rooms.
- All elements of structure are to protected such that they achieve a 60minute period of fire resistance (R) from all sides. This includes loadbearing walls, floors, loadbearing walls, columns, beams.
- Floors are to be protected to the underside and top-side so that they achieve a 60 minute period of fire resistance (REI).
- External walls are required to achieve a fire resistance of 60 minutes (E) and 15 minutes (I) from the inside.
- Roof and supporting structure is not require to be fire resisting, unless also used for means of escape (such as roof-top plant).
- Compartment floors are not required.
- Fire stopping is required for all penetrations through fire resisting walls, with performance matching the fire resistance of the wall.
- Fire stopping is required through floor penetrations where enclosing plant room and science laboratories.
- Cavity barriers are required in all voids with dimension >20m.
- Cavity barriers are required within cavities of external walls at every floor level, at the junction with compartment walls and around all windows/doors.
- Access for fire service vehicles to be enabled for 15% of the building perimeter. Carrying capacity at least 12.5tonnes.
- New hydrant required if existing hydrant is located >100m from the new buildings.

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance

DESIGN FIRE CONSULTANTS

Project No: 1226
Sketch No: SK004.1
Date: 22 Feb 2019
Author: RBM

SFG School
Full CP - Fire Strategy Review

GROUND FLOOR

L00 FIRE PLAN

1:200

Stair 3 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Exit 1.3 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no high-risk rooms

Lockers in corridors must be non-combustible.

External Wall to provide 60minutes fire resistance (integrity), 15minutes fire resistance (insulation) from inside.

Refer to page 5 for extent of unprotected openings allowable.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no additional high-risk rooms

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk rooms.

Exit 1.1 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Stair 1 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Stair 4 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Exit 1.4 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk or protected rooms.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no additional high-risk rooms

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of:
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk rooms.

Exit 1.2 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Stair 2 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Roof access/escape to be confirmed.
Assume cherry picker access or hatch within 60m of all areas of the roof.

Level 01 Occupant Load
Exit capacity = 1182p. (maximum Level 01 only)
Maximum capacity of Level 01 & Level 02 = 1576 p.
Where Level 01 = 1182 p., Level 02 must not exceed 394p.

Fire Strategy Notes:

The following notes outline the key fire safety measures relevant to concept fire strategy. Note that this list is not exhaustive and reference must be made to the fire strategy report, issued separately in due course.

- Minimum Category L2 detection & alarm system required.
- Detectors required in ceiling voids >800mm deep.
- Simultaneous evacuation one block only (school or sports block) on single-stage alarm.
- Alert signal relay to main school panel for fire in sport block.
- Two-way communications point required between refuges and fire alarm panel in school (not required in sport block).
- Internal wall and ceiling linings to be Class 0 in circulation and escape routes and large rooms, Class 1 in small rooms.
- All elements of structure are to protected such that they achieve a 60minute period of fire resistance (R) from all sides. This includes loadbearing walls, floors, loadbearing walls, columns, beams.
- Floors are to be protected to the underside and top-side so that they achieve a 60 minute period of fire resistance (REI).
- External walls are required to achieve a fire resistance of 60 minutes (E) and 15 minutes (I) from the inside.
- Roof and supporting structure is not require to be fire resisting, unless also used for means of escape (such as roof-top plant).
- Compartment floors are not required.
- Fire stopping is required for all penetrations through fire resisting walls, with performance matching the fire resistance of the wall.
- Fire stopping is required through floor penetrations where enclosing plant room and science laboratories.
- Cavity barriers are required in all voids with dimension >20m.
- Cavity barriers are required within cavities of external walls at every floor level, at the junction with compartment walls and around all windows/doors.
- Access for fire service vehicles to be enabled for 15% of the building perimeter. Carrying capacity at least 12.5tonnes.
- New hydrant required if existing hydrant is located >100m from the new buildings.

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance

DESIGN FIRE CONSULTANTS

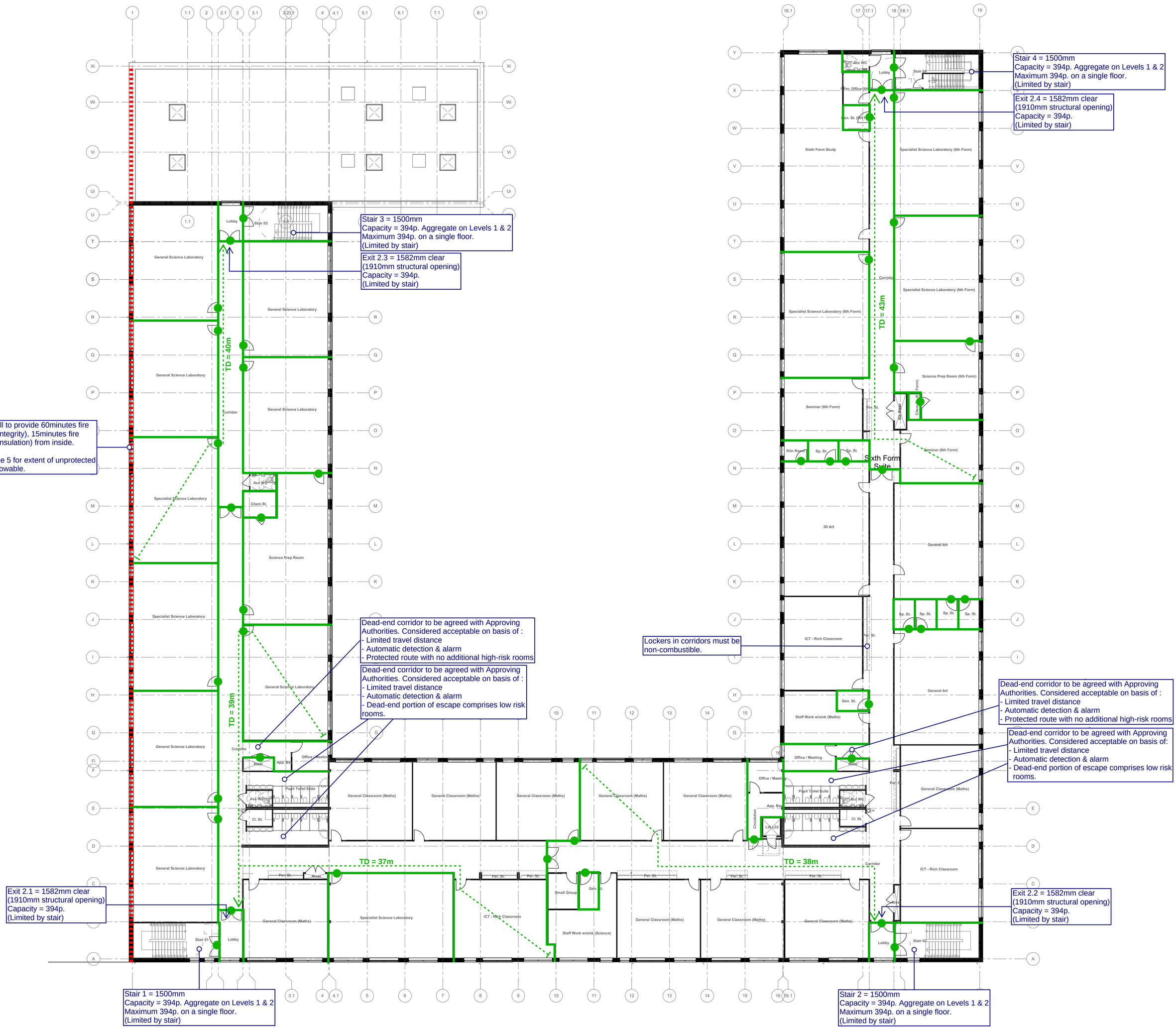
Project No: 1226
Sketch No: SK004.1
Date: 22 Feb 2019
Author: RBM

SFG School
Full CP - Fire Strategy Review

FIRST FLOOR

L01 FIRE PLAN

1:200



Level 02 Occupant Load
Exit capacity = 1182p. (maximum Level 02 only)
Maximum capacity of Level 01 & Level 02 = 1576 p.
Where Level 02 = 1182 p., Level 01 must not exceed 394p.

Fire Strategy Notes:

The following notes outline the key fire safety measures relevant to concept fire strategy. Note that this list is not exhaustive and reference must be made to the fire strategy report, issued separately in due course.

- Minimum Category L2 detection & alarm system required.
- Detectors required in ceiling voids >800mm deep.
- Simultaneous evacuation one block only (school or sports block) on single-stage alarm.
- Alert signal relay to main school panel for fire in sport block.
- Two-way communications point required between refuges and fire alarm panel in school (not required in sport block).
- Internal wall and ceiling linings to be Class 0 in circulation and escape routes and large rooms, Class 1 in small rooms.
- All elements of structure are to protected such that they achieve a 60minute period of fire resistance (R) from all sides. This includes loadbearing walls, floors, loadbearing walls, columns, beams.
- Floors are to be protected to the underside and top-side so that they achieve a 60 minute period of fire resistance (REI).
- External walls are required to achieve a fire resistance of 60 minutes (E) and 15 minutes (I) from the inside.
- Roof and supporting structure is not require to be fire resisting, unless also used for means of escape (such as roof-top plant).
- Compartment floors are not required.
- Fire stopping is required for all penetrations through fire resisting walls, with performance matching the fire resistance of the wall.
- Fire stopping is required through floor penetrations where enclosing plant room and science laboratories.
- Cavity barriers are required in all voids with dimension >20m.
- Cavity barriers are required within cavities of external walls at every floor level, at the junction with compartment walls and around all windows/doors.
- Access for fire service vehicles to be enabled for 15% of the building perimeter. Carrying capacity at least 12.5tonnes.
- New hydrant required if existing hydrant is located >100m from the new buildings.

Fire Strategy Key

Fire Resisting Compartmentation
60 minutes
30 minutes

Fire Doors
FD30S / FD30

Escape Components
Escape path
TD = XXm Maximum travel distance

DESIGN FIRE CONSULTANTS

Project No: 1226
Sketch No: SK004.1
Date: 22 Feb 2019
Author: RBM

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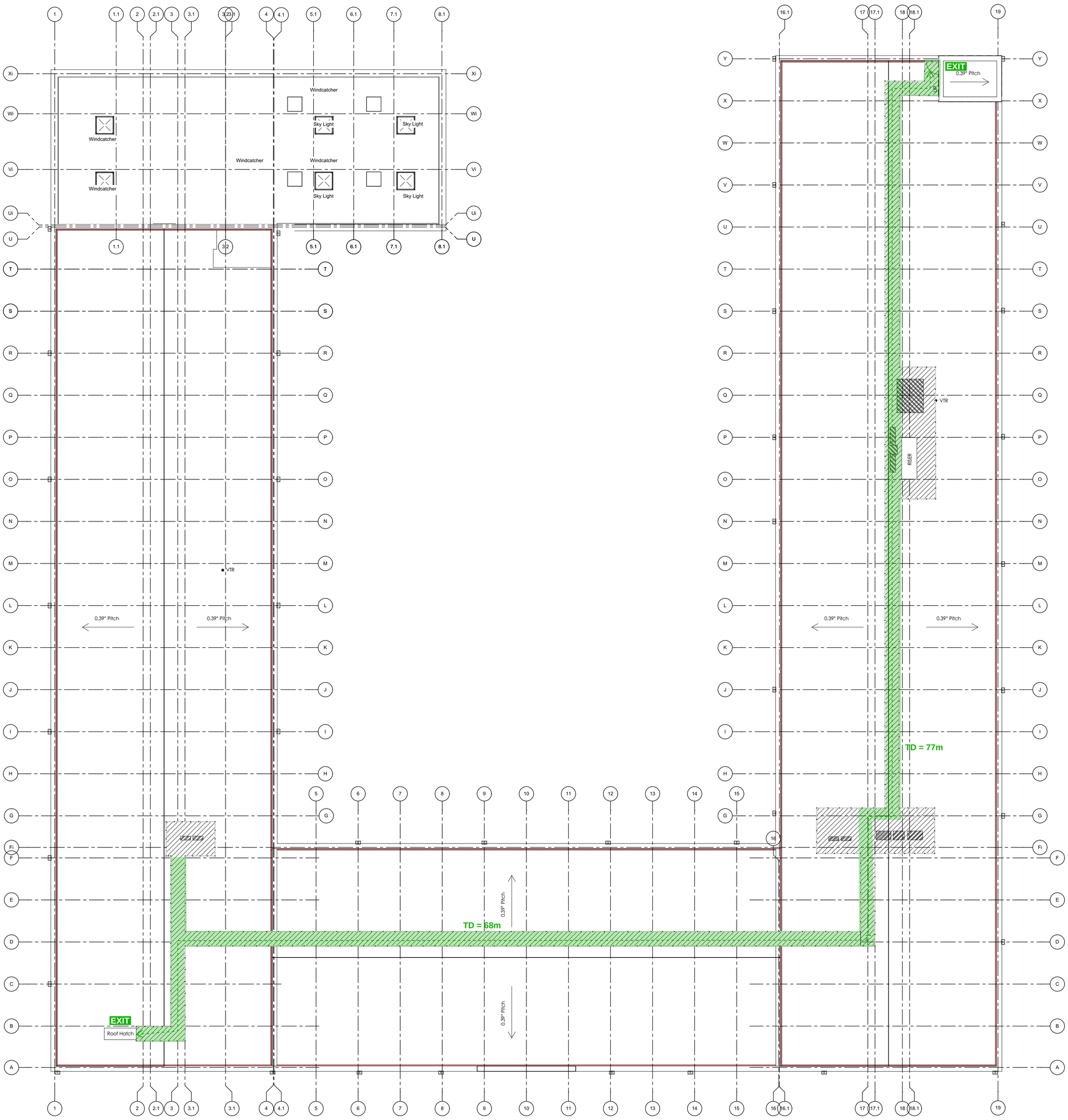
Full CP - Fire Strategy Review

L02 FIRE PLAN

1:200

SECOND FLOOR



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Fire Strategy Notes:

The following notes outline the key fire safety measures relevant to concept fire strategy. Note that this list is not exhaustive and reference must be made to the fire strategy report, issued separately in due course.

- Minimum Category L2 detection & alarm system required.
- Detectors required in ceiling voids >800mm deep.
- Simultaneous evacuation one block only (school or sports block) on single-stage alarm.
- Alert signal relay to main school panel for fire in sport block.
- Two-way communications point required between refuges and fire alarm panel in school (not required in sport block).
- Internal wall and ceiling linings to be Class 0 in circulation and escape routes and large rooms, Class 1 in small rooms.
- All elements of structure are to protected such that they achieve a 60minute period of fire resistance (R) from all sides. This includes loadbearing walls, floors, loadbearing walls, columns, beams.
- Floors are to be protected to the underside and top-side so that they achieve a 60 minute period of fire resistance (REI).
- External walls are required to achieve a fire resistance of 60 minutes (E) and 15 minutes (I) from the inside.
- Roof and supporting structure is not require to be fire resisting, unless also used for means of escape (such as roof-top plant).
- Compartment floors are not required.
- Fire stopping is required for all penetrations through fire resisting walls, with performance matching the fire resistance of the wall.
- Fire stopping is required through floor penetrations where enclosing plant room and science laboratories.
- Cavity barriers are required in all voids with dimension >20m.
- Cavity barriers are required within cavities of external walls at every floor level, at the junction with compartment walls and around all windows/doors.
- Access for fire service vehicles to be enabled for 15% of the building perimeter. Carrying capacity at least 12.5tonnes.
- New hydrant required if existing hydrant is located >100m from the new buildings.

Fire Strategy Key

Fire Resisting Compartmentation

60 minutes

30 minutes

Fire Doors

FD30S / FD30

Escape Components

Escape path

TD = XXm Maximum travel distance

DESIGN FIRE CONSULTANTS

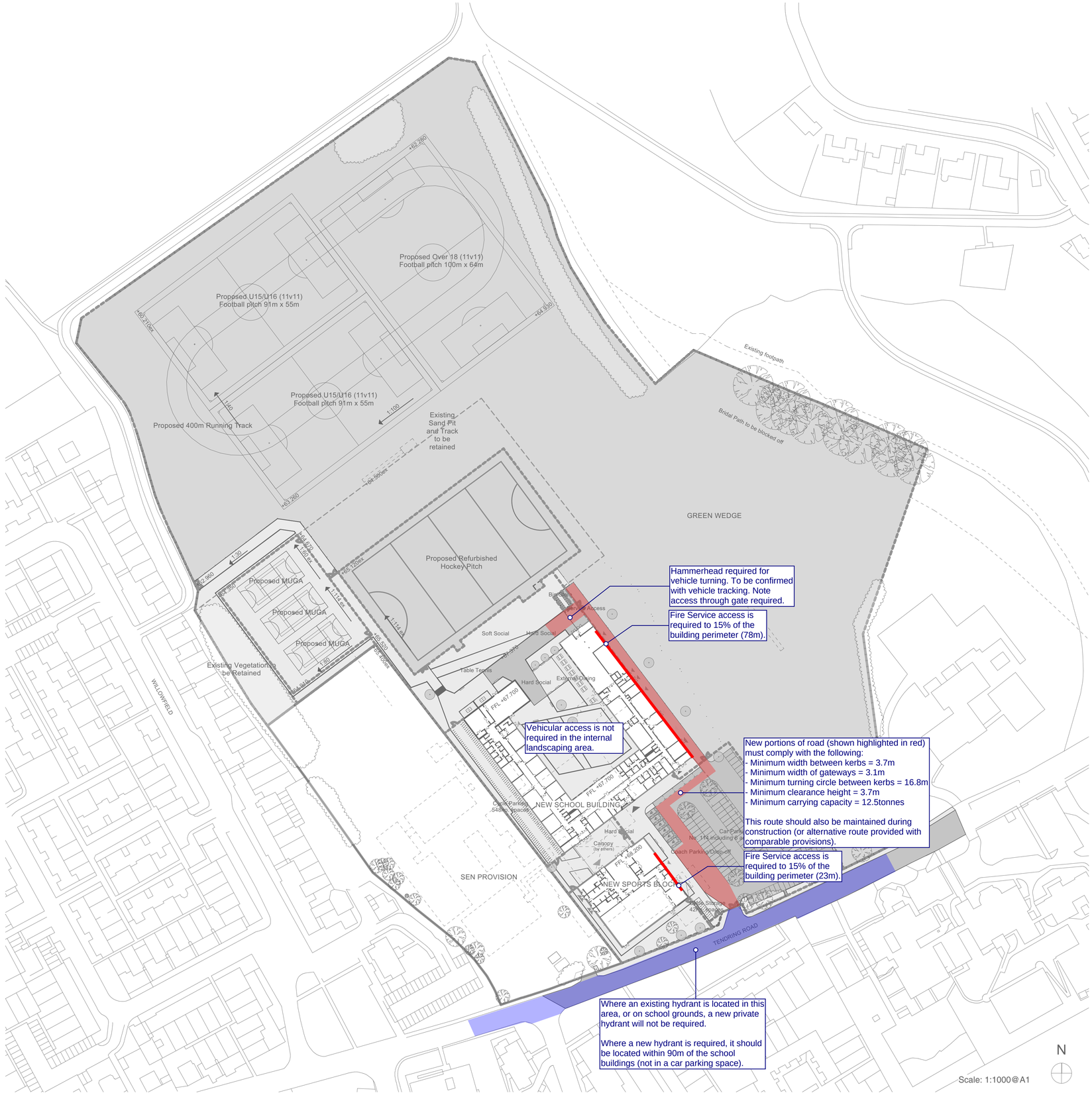
Project No: 1226
Sketch No: SK004.1
Date: 22 Feb 2019
Author: RBM

SFG School

Full CP - Fire Strategy Review

ROOF PLAN

Sir Frederick Gibberd School
Proposed Site Layout
17/12/2018



SITE PLAN KEY:

- Site Boundary/ Boundary Fenceline
- SEN Site Boundary
- Existing School Building Demolished
- Green Wedge Boundary
  ref: Harlow Proposals Map - Emerging LDP May 2018
- Primary School Building Entrance
- Primary Sports Block Entrance
- Sports Block Changing Room Access
- Sixth Form Building Entrance
- KS3 & KS4 Building Entrance
- Delivery Building Entrances
- Community Entrance
- Plant Access
- Pedestrian Grade Concrete Asphalt
- Vehicular Grade Concrete Asphalt
- Porous Concrete Asphalt (MUGA only)
- Proposed grass
- Proposed planting
- Existing Sports Pitch
- Proposed Refurbished Hockey Pitch
- Existing Tree
- Proposed Tree
  23no. to replace the 21no. existing trees and 2no. groups of trees which are to be removed as a result of the development
- Existing Vegetation
- Proposed Secure Fenceline
- Concrete Block Paving (External Dining Area)
- External Seating (Not Funded)
- External Canopy (Not Funded)
- Table Tennis Table (Not Funded)
- External Dining Table (Not Funded)
- +68.700 Levels

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Full CP - Fire Strategy Review

HLM

SIR FREDERICK GIBBERD - CLIENT ENGAGEMENT MEETING / SCHOOL ENGAGEMENT MEETING
PROPOSED SITE CONTEXT

SFG-L-SK-02-CEM 07

Caledonian

Sir Frederick Gibberd School
Proposed Site Layout
17/12/2018

SITE PLAN KEY:

- Site Boundary/ Boundary Fenceline
- SEN Site Boundary
- Existing School Building Demolished
- Green Wedge Boundary
  ref: Harlow Proposals Map - Emerging LDP May 2018
- Primary School Building Entrance
- Primary Sports Block Entrance
- Sports Block Changing Room Access
- Sixth Form Building Entrance
- KS3 & KS4 Building Entrance
- Delivery Building Entrances
- Community Entrance
- Plant Access
- Pedestrian Grade Concrete Asphalt
- Vehicular Grade Concrete Asphalt
- Porous Concrete Asphalt (MUGA only)
- Proposed grass
- Proposed planting
- Existing Sports Pitch
- Proposed Refurbished Hockey Pitch
- Existing Tree
- Proposed Tree
  23no. to replace the 21no. existing trees and 2no. groups of trees which are to be removed as a result of the development
- Existing Vegetation
- Proposed Secure Fenceline
- Concrete Block Paving (External Dining Area)
- External Seating (Not Funded)
- External Canopy (Not Funded)
- Table Tennis Table (Not Funded)
- External Dining Table (Not Funded)
- +68.700 Levels

DESIGN FIRE CONSULTANTS

Project No: 1226
Sketch No: SK004.1
Date: 22 Feb 2019
Author: RBM

SFG School

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LONDON SHEFFIELD GLASGOW BELFAST CARDIFF MANCHESTER JOHANNESBURG ABU DHABI DUBAI

SIR FREDERICK GIBBERD - CLIENT ENGAGEMENT MEETING / SCHOOL ENGAGEMENT MEETING
PROPOSED SITE CONTEXT

SFG-L-SK-02-CEM 07

Caledonian

Drama Studio Occupant Load
Exit capacity = 60 p
(limited by single exit)

Exit H1 = 1860mm clear
(2260mm structural opening)
Capacity = 516p.

Main Hall Occupant Load
Exit capacity = 516p.

* 6.9m Clear Ceiling Height

Exit H2 = 1860mm clear
(2260mm structural opening)
Capacity = 516p.

* Ventilation compliance achieved with wind catchers

Stair 3 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Escape also used by maximum 195p. on Ground Floor (merging flow)
Final exit must have 1500mm clear width.

PUPIL ENTRANCE

Exit 0.5 = 1682mm clear
(2010mm structural opening)
Capacity = 195p.
(Limited by merging flow at final exit)

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no high-risk rooms

Alternative requires escape door/window leading directly to outside.

External Wall to provide 60minutes fire resistance (integrity), 15minutes fire resistance (insulation) from inside.

Refer to page 5 for extent of unprotected openings allowable.

TD = 43m

Lockers in corridors must be non-combustible.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk rooms.

TD = 15m

LRC Occupant Load = 60 p
(limited by inward opening door)

TD = 33m

Stair 1 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
No escape by Ground Floor occupants
Final exit to have 1500mm clear width.

KS3 AND KS4 ENTRANCE

Exit 0.1 = 2x 1582mm clear
(2x1910mm structural opening)
Capacity = 878p.

MAIN ENTRANCE

Exit 0.2 = 1582mm clear
(1910mm structural opening)
Capacity = 439p.

SIXTH FORM ENTRANCE

Exit 0.3: 1682mm clear
(2010mm structural opening)
Capacity = 467p.

Stair 2 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
No escape by Ground Floor occupants
Final exit to have 1500mm clear width.

Stair 4 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
No escape by Ground Floor occupants
Final exit to have 1500mm clear width.

TD = 31m

Exit DH1 = 1582mm clear
(1910mm structural opening)
Capacity = 439p.

Dining Hall Occupant Load = 439p.
(additional door at 800mm required to achieve 577 p.)

Exit DH2 = 2086mm clear
(2485mm structural opening)
Capacity = 579p.

Exit 0.4 = 1682mm clear
(2010mm structural opening)
Capacity = 467p.

PUPIL ENTRANCE

KITCHEN ACCESS

PLANT ACCESS

D&T DELIVERIES

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of:
- Limited travel distance
- Automatic detection & alarm
- Protected route

Alternative requires escape door/window leading directly to outside.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of:
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk or protected rooms.

TD = 27m

Exit SH6 = 1782mm clear
(2110mm structural opening)
Capacity = 495p.

SPORTS BLOCK PUPIL ENTRANCE

Pupil Changing
Exit capacity = 60p.
(per room, limited by door swing)

Activity Studio
Exit capacity = 60p.
(limited by door swing)

* 4.5m Clear Ceiling Height

* Daylight compliance achieved with roof lights

* Ventilation compliance achieved with wind catchers

Drama Studio
Exit capacity = 439p.
(discounting largest exit)

* 4.5m Clear Ceiling Height

* Daylight compliance achieved with roof lights

Exit AS1 = 1582mm
(1910mm structural opening)
Capacity = 439p.

CHANGING ROOM ACCESS

COMMUNITY ENTRANCE TO SPORTS BLOCK

Exit SH5 = 1860mm clear
(2110mm structural opening)
Capacity = 516p.

External Wall to provide 60minutes fire resistance (integrity), 15minutes fire resistance (insulation) from inside.

Refer to page 5 for extent of unprotected openings allowable.

TD = 30m

Sports Hall Occupant Load
Exit capacity = 848p.
(Exit to corridor discounted)

* 7.5m Clear Ceiling Height

* Daylight compliance achieved with roof lights

* Ventilation compliance achieved with wind

Exit SH1 = 1528mm clear
(2485mm structural opening)
Capacity = 424p.

Exit SH2 = 1528mm clear
(2485mm structural opening)
Capacity = 424p.

PLANT ACCESS

Ground Floor Occupant Load - School
Exit capacity General = 1628 p. (2x467p + 439p + 195p + 60p)
(includes drama studio & LRC)
Exit capacity Dining Hall = 439p. (in addition to general)
Exit capacity Main Hall = 516p. (in addition to general)

Ground Floor Occupant Load - Sports Hall
Exit capacity General = 1467p (individual room limits apply)

Fire Strategy Notes:

The following notes outline the key fire safety measures relevant to concept fire strategy. Note that this list is not exhaustive and reference must be made to the fire strategy report, issued separately in due course.

- Minimum Category L2 detection & alarm system required.
- Detectors required in ceiling voids >800mm deep.
- Simultaneous evacuation one block only (school or sports block) on single-stage alarm.
- Alert signal relay to main school panel for fire in sport block.
- Two-way communications point required between refuges and fire alarm panel in school (not required in sport block).
- Internal wall and ceiling linings to be Class 0 in circulation and escape routes and large rooms, Class 1 in small rooms.
- All elements of structure are to protected such that they achieve a 60minute period of fire resistance (R) from all sides. This includes loadbearing walls, floors, loadbearing walls, columns, beams.
- Floors are to be protected to the underside and top-side so that they achieve a 60 minute period of fire resistance (REI).
- External walls are required to achieve a fire resistance of 60 minutes (E) and 15 minutes (I) from the inside.
- Roof and supporting structure is not require to be fire resisting, unless also used for means of escape (such as roof-top plant).
- Compartment floors are not required.
- Fire stopping is required for all penetrations through fire resisting walls, with performance matching the fire resistance of the wall.
- Fire stopping is required through floor penetrations where enclosing plant room and science laboratories.
- Cavity barriers are required in all voids with dimension >20m.
- Cavity barriers are required within cavities of external walls at every floor level, at the junction with compartment walls and around all windows/doors.
- Access for fire service vehicles to be enabled for 15% of the building perimeter. Carrying capacity at least 12.5tonnes.
- New hydrant required if existing hydrant is located >100m from the new buildings.

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance

DESIGN FIRE CONSULTANTS

Project No: 1226
Sketch No: SK004.1
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Full CP - Fire Strategy Review

GROUND FLOOR

L00 FIRE PLAN

1:200

Stair 3 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Exit 1.3 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no high-risk rooms

Lockers in corridors must be non-combustible.

External Wall to provide 60minutes fire resistance (integrity), 15minutes fire resistance (insulation) from inside.

Refer to page 5 for extent of unprotected openings allowable.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no additional high-risk rooms

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk rooms.

Exit 1.1 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Stair 1 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Stair 4 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Exit 1.4 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk or protected rooms.

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of :
- Limited travel distance
- Automatic detection & alarm
- Protected route with no additional high-risk rooms

Dead-end corridor to be agreed with Approving Authorities. Considered acceptable on basis of:
- Limited travel distance
- Automatic detection & alarm
- Dead-end portion of escape comprises low risk rooms.

Exit 1.2 = 1582mm clear
(1910mm structural opening)
Capacity = 394p.
(Limited by stair)

Stair 2 = 1500mm
Capacity = 394p. Aggregate on Levels 1 & 2
Maximum 394p. on a single floor.
(Limited by stair)

Roof access/escape to be confirmed.
Assume cherry picker access or hatch within 60m of all areas of the roof.

Level 01 Occupant Load
Exit capacity = 1182p. (maximum Level 01 only)
Maximum capacity of Level 01 & Level 02 = 1576 p.
Where Level 01 = 1182 p., Level 02 must not exceed 394p.

Fire Strategy Notes:

The following notes outline the key fire safety measures relevant to concept fire strategy. Note that this list is not exhaustive and reference must be made to the fire strategy report, issued separately in due course.

- Minimum Category L2 detection & alarm system required.
- Detectors required in ceiling voids >800mm deep.
- Simultaneous evacuation one block only (school or sports block) on single-stage alarm.
- Alert signal relay to main school panel for fire in sport block.
- Two-way communications point required between refuges and fire alarm panel in school (not required in sport block).
- Internal wall and ceiling linings to be Class 0 in circulation and escape routes and large rooms, Class 1 in small rooms.
- All elements of structure are to protected such that they achieve a 60minute period of fire resistance (R) from all sides. This includes loadbearing walls, floors, loadbearing walls, columns, beams.
- Floors are to be protected to the underside and top-side so that they achieve a 60 minute period of fire resistance (REI).
- External walls are required to achieve a fire resistance of 60 minutes (E) and 15 minutes (I) from the inside.
- Roof and supporting structure is not require to be fire resisting, unless also used for means of escape (such as roof-top plant).
- Compartment floors are not required.
- Fire stopping is required for all penetrations through fire resisting walls, with performance matching the fire resistance of the wall.
- Fire stopping is required through floor penetrations where enclosing plant room and science laboratories.
- Cavity barriers are required in all voids with dimension >20m.
- Cavity barriers are required within cavities of external walls at every floor level, at the junction with compartment walls and around all windows/doors.
- Access for fire service vehicles to be enabled for 15% of the building perimeter. Carrying capacity at least 12.5tonnes.
- New hydrant required if existing hydrant is located >100m from the new buildings.

Fire Strategy Key

Fire Resisting Compartmentation
- 60 minutes
- 30 minutes

Fire Doors
- FD30S / FD30

Escape Components
- Escape path
- TD = XXm Maximum travel distance

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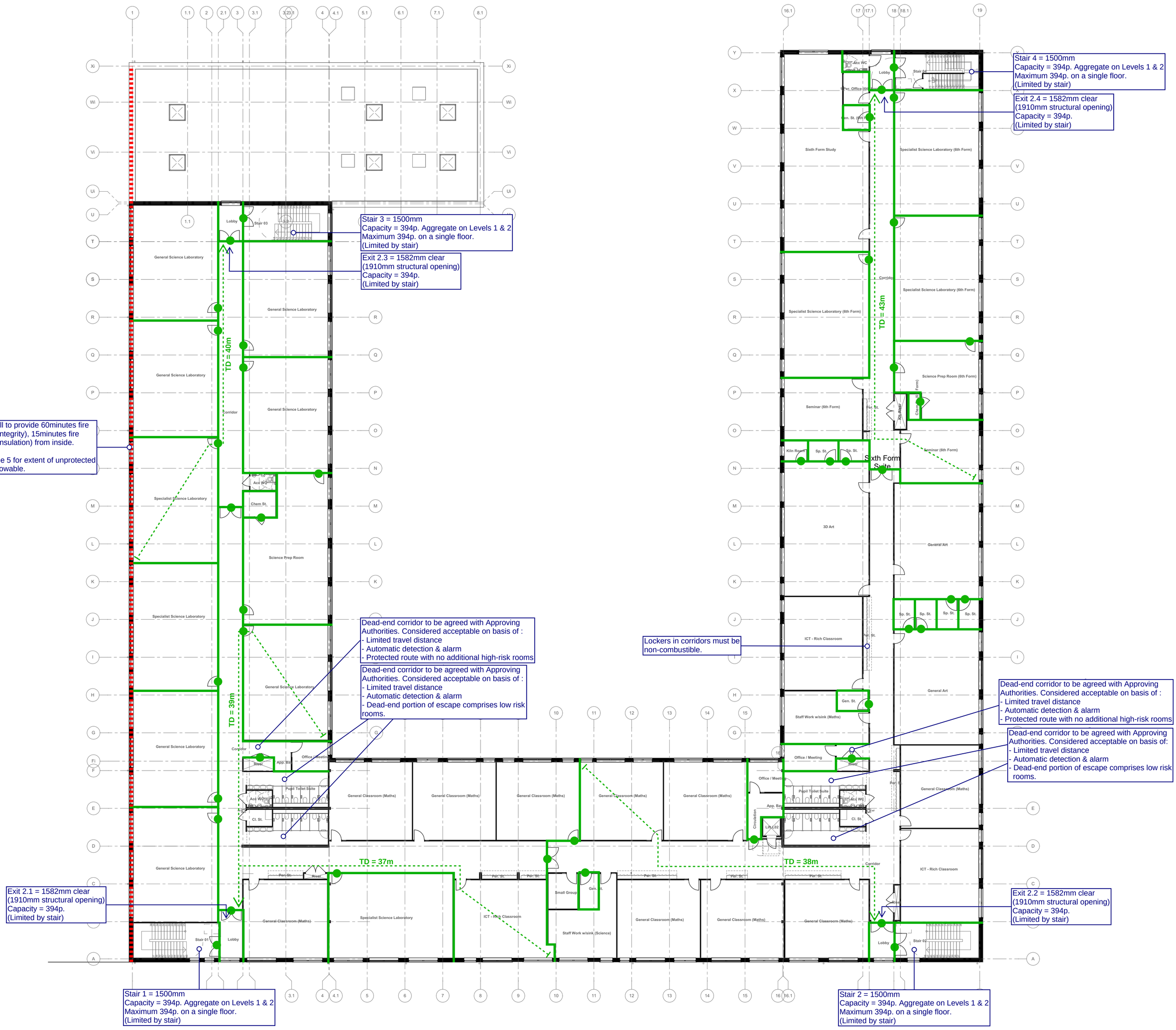
FIRST FLOOR

L01 FIRE PLAN

1:200



Level 02 Occupant Load
Exit capacity = 1182p. (maximum Level 02 only)
Maximum capacity of Level 01 & Level 02 = 1576 p.
Where Level 02 = 1182 p., Level 01 must not exceed 394p.

Fire Strategy Notes:

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Fire Strategy Key

Fire Resisting Compartmentation
60 minutes
30 minutes

Fire Doors
FD30S / FD30

Escape Components
Escape path
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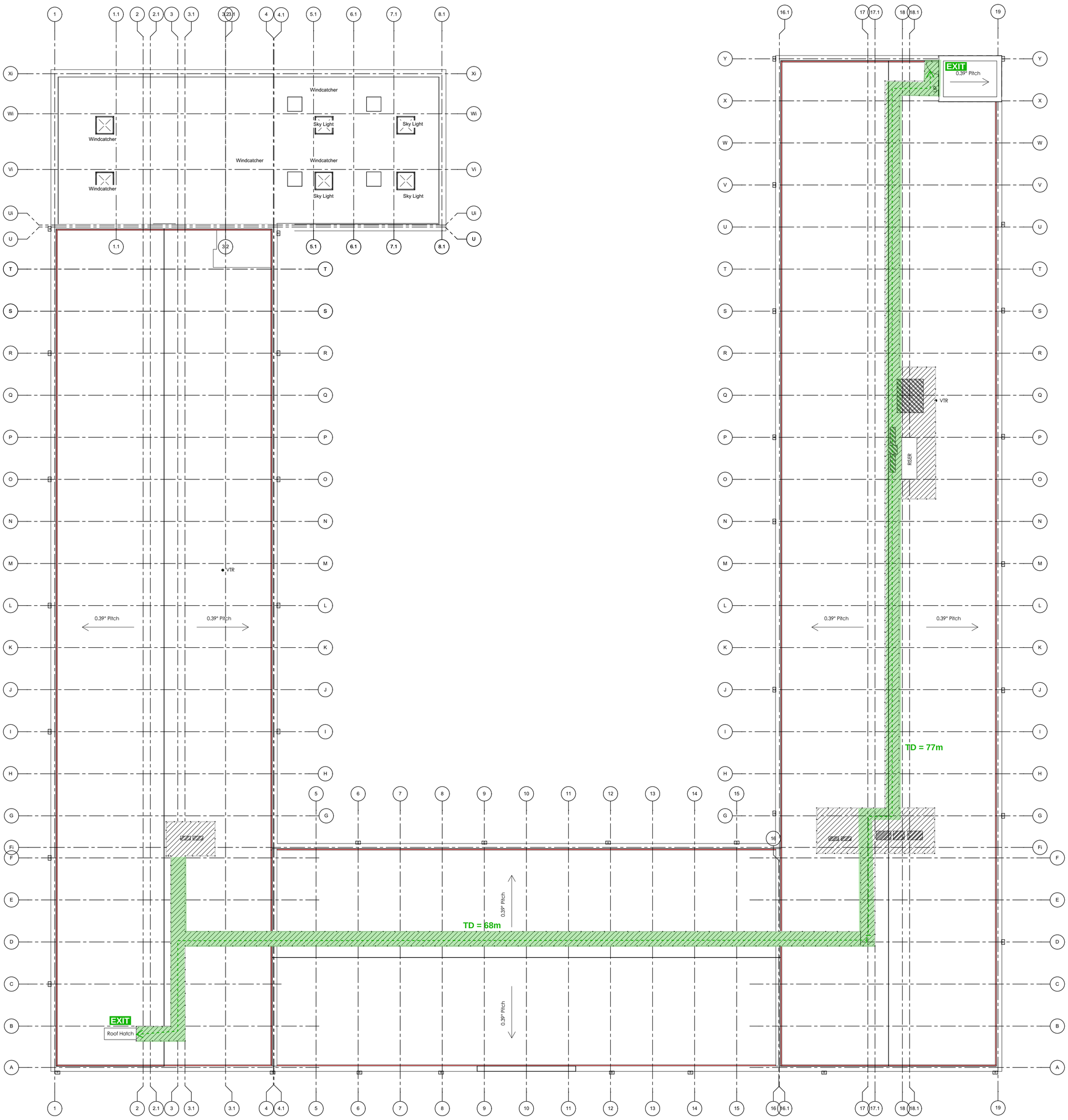
L02 FIRE PLAN

1:200

SECOND FLOOR



3. RF 1:200

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Fire Strategy Key

Fire Resisting Compartmentation

60 minutes

30 minutes

Fire Doors

FD30S / FD30

Escape Components

Escape path

TD = XXm Maximum travel distance

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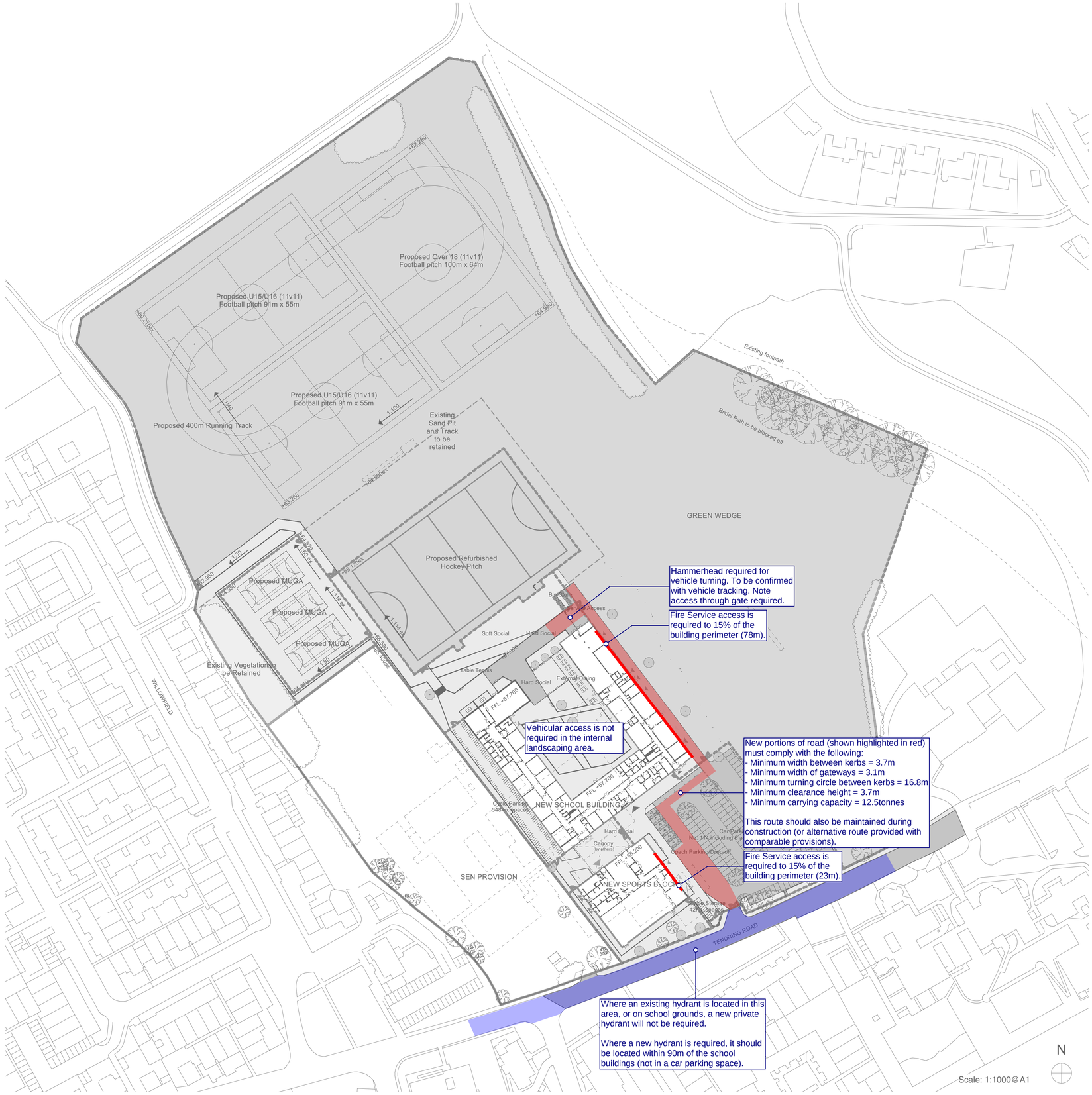
ROOF PLAN

Sir Frederick Gibberd School
Proposed Site Layout
17/12/2018



SITE PLAN KEY:

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- Green Wedge Boundary
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- Sports Block Changing Room Access
- Sixth Form Building Entrance
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- Porous Concrete Asphalt (MUGA only)
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- Proposed planting
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- Existing Tree
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- Existing Vegetation
- Proposed Secure Fenceline
- Concrete Block Paving (External Dining Area)
- External Seating (Not Funded)
- External Canopy (Not Funded)
- Table Tennis Table (Not Funded)
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