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Fire Safety Arrangements Assessment Report

**Temporary Orchard Theatre
Hythe Street, Dartford, DA1**

Dartford Borough Council



Report Issued: November 2023

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1 Executive Summary

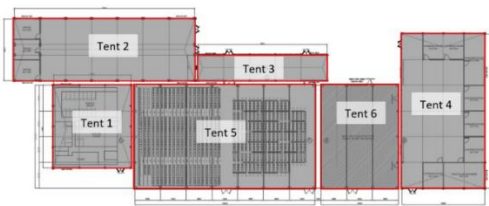
This temporary structure (Orchard Theatre 15 months intended duration) is located off Hythe Street opposite local shops and the existing solid built theatre building which is currently undergoing structural repairs and rectifications.

These kinds of structure are commonly used as outside entertainment venues such as circus shows, weddings and outdoor concerts etc.

The temporary theatre is built with an aluminium frame and canvass materials forming a “tent” like structure which consists of 6 individual structures conjoined into one structure for its intended use of a theatre to accommodate approximately 1000 people.

Note: the design details of the structures are to be determined by the constructors.

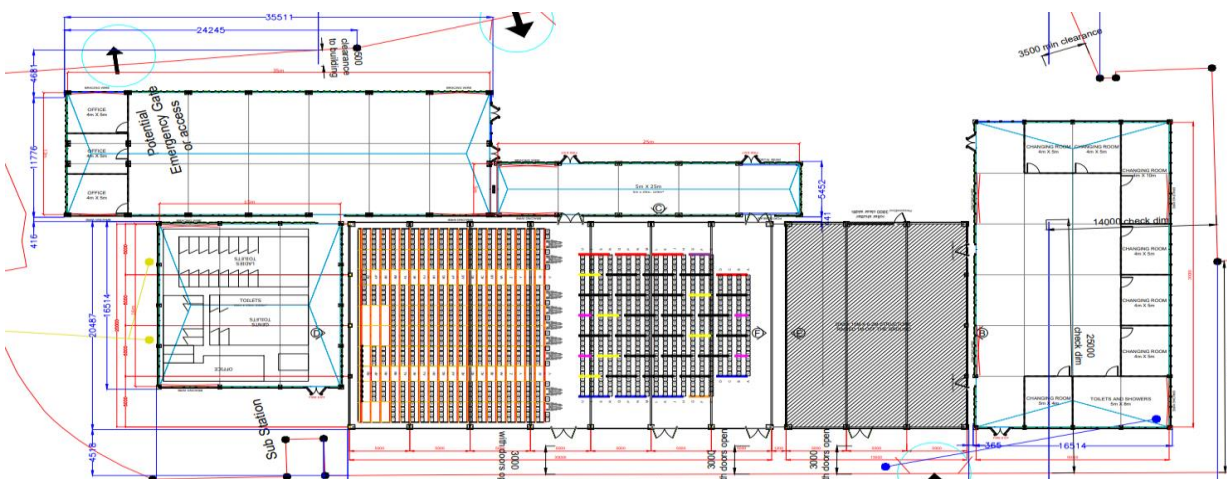
Internally there are ceiling drapes that are being utilised to cover the view to the external roof coverings and framework for aesthetic reasons.



The entire structure is erected on a raised platform over one floor only (single storey), consisting of two main seating areas (one raised), a stage, changing area including individual rooms, toilet area, bar, and reception lobby entrance.

The purpose of this report is to assess the proposed fire safety arrangements of the structure and means of escape are sufficient for the intended occupancy and use of the building.

Note: It is understood that this development will not fully comply with the requirements of building regulations – in particular B3 internal fire spread and B4 external fire spread (roof). (these areas are out of scope of this report).



The findings of this assessment have identified that if the recommendations are followed then the proposed fire safety arrangements along with a robust management plan will consider that the structure will be fit for

purpose and proportionate to the risk profile. All occupants will have enough available exits in the event of a fire without having to navigate through the restricted areas (changing rooms and rear of stage areas).

2 Introduction

The primary objective of this fire safety Access & Means of Escape Assessment is to provide specific, clear and concise information on the fire safety requirements relating to the temporary Orchard Theatre, for life safety purposes only. This report does not intend to confirm compliance with the Building Regulations, Regulatory Reform (Fire Safety) Order 2005 or any recognised fire safety guide, unless specifically stated. BS:9999 Fire safety in the design, management, and use of buildings – Code of practice, has been used in the development of this report; where not discussed within this report, the provisions stipulated within the aforementioned fire safety guide are to be installed in full or fully justified through a fire safety assessment.

The information contained within this report is for use by Orchard Theatre staff only; to support those persons in the future development of appropriate fire safety designs, maintenance, testing and inspection programs and to assist in the implementation of effective fire safety management procedures.

This document is not a design Fire Strategy, and the premises are temporary. In the development of this report, documents/site plans provided by the Client and third parties have been reviewed, and recommendations have been considered by reviewing the available information and conducting a site visit of the structure whilst under construction.

The management of fire safety is an essential element in averting loss of life in the event of a fire. Life safety designs in buildings can only be fully effective where it is managed, maintained and tested over the whole life of the building, and staff occupying the premises are appropriately trained to handle incidents and implement effective and tested emergency plans.

3 Scope

3.1 Extent

This fire safety assessment relates to Orchard Theatre temporary structure only, and does not extend to outbuildings or attached buildings, that may be accessed or occupied by Orchard theatre staff or visitors. The site survey undertaken in development of this report was non-intrusive, no materials or components have been tested or certified and no validation that systems are installed as per manufacturer requirements, or any code of practice.

The purpose of the assessment is to look at the proposed fire safety arrangements namely:

- Risk profiling
- Means of escape review
- Means of raising the alarm review
- Evacuation strategy
- Fire safety management
- Access and facilities for fire fighters.
- Liaison with theatre group on their fire safety management plan

3.2 Limitations

This report is a copyright of Oakleaf Surveying Ltd. It applies to the named premises only and must not be used in support of any other premises. If distributed to third parties, it must be distributed in full and without amendment to the content or presentation.

This report is based upon the Client's description of their requirements and is subject to assumptions that Oakleaf Surveying Ltd can reasonably be expected to make in accordance with sound professional principles and experience. The building discussed within this report is existing and the as-built design may differ from the current provisions or advice contained within this report; the intention of this report is to identify a reasonable standard of fire safety with consideration, only, to the Building Regulations and the Fire Safety Order 2005. Note: The advice contained within this report is not absolute and, as with any fire safety consideration, there may be alternative ways to reach the same objective.

Oakleaf Surveying Ltd accepts no liability for the accuracy of the information provided by the Client or other third parties. Oakleaf Surveying Ltd shall not be held responsible or liable for designs or information provided by any other consultants, sub-consultants or sub-contractors, including original designs produced by others which you may adapt, modify or develop in the carrying out of services. This report has been developed on any drawings and information provided by the Client. Any subsequent changes to the premises, system or equipment, including occupants and use of, which are not agreed with Oakleaf Surveying Ltd invalidate this report.

4 Premises

4.1 Premises Description

The Orchard theatre building is a structure that is in place for the 15-month intended period whilst the original theatre building undergoes remediation works, the building is of aluminium framed construction with a fabric covering.

There are a total of six independent sections positioned in a way that they create one structure; each building/section is positioned next the adjacent building with adjoining doors and walkways.

4.2 Accommodation

The building will be used as a theatre for paying members of the public to attend shows and performances by Orchard staff and actors. This would be considered a large place of assembly.

4.3 Occupancy

Occupants of this building will be awake and unfamiliar with the building giving an occupancy characteristic of B.

The fire growth rate is medium. Medium is described in BS 9999:2017 as evenly distributed low to midlevel fire load comprising a mix of combustible materials. Typical examples of this given are offices, lounges, offices, changing rooms, auditoria seating areas, galleries, and car parks.

Risk profile B2 for relevant people occupying the theatre is used for this assessment.

4.4 Evacuation Strategy

The proposed fire evacuation strategy for the structure is to be a simultaneous evacuation based off a “double Knock” from automatic smoke/heat detection with a recommended investigation period of 2 Minutes unless two detectors activate or a MCP (manual call point) is actuated. This will result in the instantaneous sounding of the fire alarm throughout the building and all persons will evacuate immediately on being made aware of the alarm.

The evacuation strategy does not rely on intervention by others (e.g. the fire and rescue service) the management will need to ensure that all users of the building are aware of the fire evacuation strategy and their obligations. This includes assisting people with disabilities to make their way to a place of safety.

This evacuation strategy should be formalised and tested prior to any occupation. It is understood that the same management set up in regard to trained staff will implement these procedures and the policy will be adjusted to accommodate the temporary structure.

GEEPS - A General Emergency Evacuation Plan is a plan that highlights a building’s layout, evacuation procedures, equipment and communication devices used in an emergency. While they are useful for all visitors, GEEPs are designed to give visitors with restricted mobility, or those who can’t evacuate unaided, the information they need to do so safely and effectively.

Recommendation: There is provision for wheelchair users within the building and their escape has to be considered. Therefore, the responsible person will need to ensure that a personal emergency evacuation plan (GEEP- PEEP) for any vulnerable employee or visitor is in place to ensure that they can be evacuated from the building.

4.5 Fire Detection and Alarm systems

The building’s automatic fire detection and alarm system is recommended to be installed to an L2 category, this will give advanced warning in view of the buildings construction and recommended by BS 5839 Part 1: 2017 and BS 9999: 2017.

The location of the fire alarm control indicating equipment is required to be located adjacent the Fire and Rescue access point to the building with a suitable zone plan located adjacent the control panel.

Due to the complexity of six adjoined separate buildings with various rooms and areas that are present within the theatre the above mentioned L2 category system along with a PAVA (public address voice alarm) and visual alarm devices VADs/Beacons is recommended to give advanced warning to mitigate the lack of structural fire protection.

It will be necessary for the fire detection and warning system to be linked to other systems and equipment as required, ensuring operations or activations in fire situations as follows:

- All MCP’s should be fitted as standard with protective covers, this will reduce unwanted fire signals.
- Theatre sound system/PA system interfaced into the fire alarm system - to turn off upon fire alarm activation.
- Visual alarm device located in the orchestra room.

4.6 Means of escape

At present the main seating area (theatre and public area) has provision for 5 exits from the 2 seating areas all twin doors measuring 1200mm wide, other areas such as the bar, WC lobby, and reception area will be calculated separately:

Seating in rows have the widths between chairs more than the recommended distance for the number of seats in a row which is acceptable:

Table D.1 Number of seats in a row

Seatway width	Maximum number of seats in a row	
	Gangway on one side	Gangway on two sides
mm		
300 to 324	7	14
325 to 349	8	16
350 to 374	9	18
375 to 399	10	20
400 to 424	11	22
425 to 449	12	24
450 to 474	12	26
475 to 499	12	28
500 or more	12	Limited by the travel distance (see Table D.2)

1. Seating area (public) 5 x 1200mm doors – $1200/4.1 = 292$ people per door -

5 x doors at 292 gives provision for 1460 people.

Note: where the exit width is over 1050 the calculation is $1200/4.1$

For the purpose of this assessment the number chosen for the seating area is the total number of seats available which is 1138 people including wheelchair spaces.

Having discounted the largest exit, the total exit capacity is – 1168 people.

Other areas:

1. Bar and reception area (public) 5 x 1200mm doors – $1200/4.1 = 292$ people per door
5 x doors at 292 gives provision for 1460 people.

Having discounted the largest exit, the total exit capacity is – 1168 people.

2. Changing areas and rear of stage 3 x 1200mm doors – $1200/4.1 = 292$ people per door
3 x doors at 292 gives provision for 876 people.

Having discounted the largest exit, the total exit capacity is – 584 people.

This number is far greater than the standard occupancy based on the floor space factor therefore is considered acceptable exit provision.

Travel Distances:

All areas within the structure are considered to be within the accepted travel distances

The travel distances for this structure are as per the below table:

Area	Single direction	Twos way travel
Bar area (open floor areas)	18m	45m
Changing areas and toilets	20m	50m
Theatre Seating in rows	15m	32m

Note: the single direction travel distance from the single rows stops in the gangway as people can traverse the seating areas which is effectively considered two-way travel. This is considered acceptable and within the guidance of annex D of BS:9999

Escape routes should be kept clear at all times. Storage of goods and equipment could block exits and provide an unwanted fire load and potential source of ignition.

External Routes to Place of Safety

The external Route to a place of safety must be safe to use at all times and not have a slippery surface. A hardstanding will be required externally around the building to ensure escape for wheelchair users can be independent and is not affected by traversing across soft landscape.

It should be confirmed that where this path is adjacent to doors and windows they will not project/obstruct the exit width, these exits must be suitable signed and illuminated and lead to a place of total safety.

Observations:

There are seating areas designated for persons with the use of mobility vehicles located to the front of the main raised seating area, there are two exits – one to each side of this designated row.



Management procedures are recommended to be created and adhered to for disabled members of the public who may be in attendance, staff will be required to assist in an evacuation from this area. Generic PEEPs should be created to consider wheelchair users and the relevant means to evacuate these individuals with the assistance of trained and competent fire wardens.

Inner rooms:

The changing areas lead on to a circulation space with alternative exits, these rooms could be considered inner rooms.

Inner rooms occur when there is a (inner) room off a (outer) room and the only route for escape is through the outer room. The main area off the changing rooms operate as a circulation space (access room) and which then discharges into the final exits. All inner rooms are considered acceptable with an L2 fire alarm system installed and the rooms having open ceilings:

- the access room is protected by an automatic smoke detection that either operates an alarm that is immediately audible in the inner room, to a sound pressure level in accordance with the minimum recommended in BS 5839-1, or gives an immediate visual alarm conforming to BS EN 54-23 in the inner room if the ambient noise levels are so great as to make an alarm inaudible.

Internal fire spread (linings)

It is proposed that all fabrics and linings for this structure have been treated and are classed as non combustible. These linings should satisfy the requirements of B2 (1) and come with a test certificate conversant to the application and use of the materials installed.

The interior wall and ceiling surfaces in the building may have a significant influence on how fast a fire may develop. Building Regulations require that internal linings adequately resist the spread of flame over their surfaces and that, if ignited, should have either a heat release rate or a rate of fire growth which is reasonable in the circumstances. It is particularly important that in circulation spaces, where the rapid spread of fire is most likely to prevent occupants from escaping, the surface linings are restricted, by making provision for them to have low rates of heat release and surface spread of flame.

Surface finishes and floor coverings should not comprise of materials that might propagate surface spread of flame and/or fire or adversely affect the means of preventing such propagation.

Classification for surface spread of flames should be in accordance with BS476- 7:1997, when tested in accordance with BS 479- 6:2009; or BS EN 13501- 12009. Refer to the below table which lists the required classification for linings.

Classification of Linings:

Location	National class ^{B)}	European class ^{C), D)}
Small room of area not exceeding 4 m ² in a residential building and 30 m ² in a non-residential building and domestic garages not exceeding 40 m ²	3	D-s3, d2
Other rooms (including garages)	1	C-s3, d2
Circulation spaces within dwellings	1	C-s3, d2
Other circulation spaces ^{D)} including the common areas of flats	0	B-s3, d2

NOTE Linings which can be effectively tested for "surface spread of flame" are rated for performance by reference to the method specified in BS 476-7:1987, under which materials or products are classified 1, 2, 3 or 4, with Class 1 being the highest. Class 0 is better than Class 1. It is not identified in any BS test standard. A Class 0 product is either:

- a) composed throughout of materials of limited combustibility; or
- b) a material having a Class 1 surface spread of flame and which has a fire propagation index (I) of not more than 12 and a sub-index (i_v) of not more than 6.

The fire propagation index is established by reference to the method specified in BS 476-6.

European classifications are described in BS EN 13501-1:2007+A1.

^{A)} Recommendations are given in Clause 33 for linings of concealed voids.

^{B)} The national classifications do not automatically equate with the equivalent classifications in the European column, therefore products cannot typically assume a European class, unless they have been tested accordingly.

^{C)} When a classification includes "s3, d2" this means that there is no limit set for smoke production and/or flaming droplets/particles.

^{D)} Large rooms such as open plan offices, shops display areas and factories need not be regarded as circulation spaces even though there are circulation routes in them.

BS 9999: 2017 Table 33

Classification of Linings DCLG guidance for Theatres:

All fabrics, curtains, drapes and similar features should either be non-combustible or be of durably or inherently flame-retardant fabric. Any fabrics used in escape routes, other than foyers, entertainment areas or function rooms should be non combustible. Drapes and curtains should not be provided across escape routes or exits.

flammability of fabrics for curtains and drapes (including nets and linings):
BS 5867-2;66

- burning behaviour (ignitability and flame spread) of curtains and drapes: BS EN 1101(ignitability)84 and BS EN 1102 (flame spread);85

Where curtains, drapes and hangings are temporarily installed, for instance for a play with a limited run of three months, temporarily flame-retarded fabrics are acceptable provided checks are made to ensure that the treatment is maintained.

Refuse Storage

Areas should be identified and preferably accessed from outside the building. The possibility of arson should be considered when locating refuse stores.

4.7 Management

Fire safety in buildings is a balance between the technical systems within the building and how the building is used and managed. It is not possible to rely solely on the technical provisions in the building, an active role on the part of fire safety management is essential. It is therefore necessary that the building is used as intended in this report and that the systems are managed appropriately.

As with all buildings, there will be standard fire safety management requirements for the day to day operation of the building. It is a fundamental assumption that features described within this fire strategy will require management and maintenance throughout the life of the building. In this building it will be the responsibility of the building management to ensure that all fire protection systems are monitored and maintained on a regular basis (in line with what is recommended by a fire risk assessment which will be carried out to satisfy the RR(FSO).

This section is written on the understanding that all members of staff have received training in general fire precautions and a suitable number of staff have been trained as fire marshals. This is based on the original management policy for the permanent theatre.

Fire Wardens/Marshals should be well versed in their requirements for the evacuation of the disabled/mobility vehicle users to the front of the raised seating area to assist in an emergency evacuation scenario.

It is recommended that drills are carried out where the (GEEP) and any person requiring a (PEEP) that is place are included in these drills.

The revised management plan should also have an awareness that members of the public who need assistance will need to know who to notify – such as accompanying adult or carer.

5 Legislation and Guidance

5.1 Regulatory Reform (Fire Safety) Order 2005

Legislation applicable to premises in England and Wales, the Regulatory Reform (Fire Safety) Order (FSO) 2005, is enforced by the local Fire Authority and places duties on Responsible Persons to ensure premises are safe from fire, so far as is reasonably practicable.

The Fire Safety Order itself does not make reference to any British Standards or guidance documents, although following the recommendations given in a British Standard may be one way of demonstrating compliance with the Fire Safety Order.

The building's Management Team will have responsibility under this order to ensure that fire safety provisions are appropriately managed, maintained and tested over the whole life cycle of the premises.

This fire safety report provides specific information which can support persons undertaking and documenting a suitable and sufficient fire risk assessment.

6 Conclusion

Orchard Temporary theatre is complex in design and does not meet all the requirements of building regulations especially B3 internal fire spread, and B4 external fire spread. However, with a robust management plan in place and if the recommendations of this report are followed then the risks could be mitigated and the use of this structure would be considered acceptable and compliant with the Regulatory reform fire safety order 2005.

7 Recommendations

It is recommended that a review of the means of escape provisions and the fire safety management plan against this report is undertaken to determine if the provisions stated are fit for purpose, in particular the management and planned evacuation and drills for people with the use of mobility vehicles.

Where there are significant alterations to the premises structure, layout, use of and/or occupancy type, this fire safety report/strategy may require a full review. This review should be undertaken by a competent person.

The following recommended actions are considered necessary to ensure an adequate standard of fire safety has been attained:

- a) Ensure a suitable and sufficient fire risk assessment review is, or has been, undertaken by a competent person and which remains valid.
- b) The evacuation strategy is to be reviewed based on the exit availability and the understanding that people will be escorted to the disabled toilet.
- c) All linings should satisfy the requirements of B2 (1) and come with a test certificate conversant to the application and use of the materials installed.
- d) There is provision for wheelchair users within the building and their escape has to be considered. Therefore, the responsible person will need to ensure that a personal emergency evacuation plan (GEEP- PEEP) for any vulnerable employee or visitor is in place to ensure that they can be evacuated from the building.
- e) Ensure all external walkways are clearly defined and suitable for the numbers of people using them

Wheelchair users within the building and their escape has to be considered. Therefore, the responsible person will need to ensure that a personal emergency evacuation plan (PEEP) for any vulnerable employee and general visitor (GEEP) is in place to ensure that they can be evacuated from the building.

- f) Ensure the roof fabric for the structure and “drapes” within the structure (used as ceilings) are suitably fire resisting and be maintained and treated in-line with the manufacturers recommendations.
- g) Have a suitable fire alarm system installed to BS5839-1 2017 that meets category L2 with control equipment located within the main fire and rescue access point with a suitable zone plan adjacent the control indicating panel.
- h) At the time of the visit there was no provisions for emergency lighting within the temporary structure, shows will be held in darker hours in the evenings which will require the installation of suitable emergency lighting within the building.
Install emergency lighting throughout the structure to BS2566-1 to ensure there is adequate lighting within the escape routes should there be a power failure.

Appendix 1 – Pictures

Fire Service Access

Total floor area is given as less than 2000m², Vehicle access should be provided to small buildings (i.e. buildings up to 2 000 m² with a top storey less than 11 m above ground level) to within 45 m of every point on the projected plan area or “footprint” of the building or to 15% of the perimeter, whichever is the less onerous.

Fire appliance access is provided to 15% of the perimeter, therefore this criteria is met.

The perimeter wall (elevation) to which pumping appliance access is provided has door, not less than 750 mm wide, giving access to the interior of the building.

The access road should be at least in accordance with the table below (requirements highlighted in yellow).

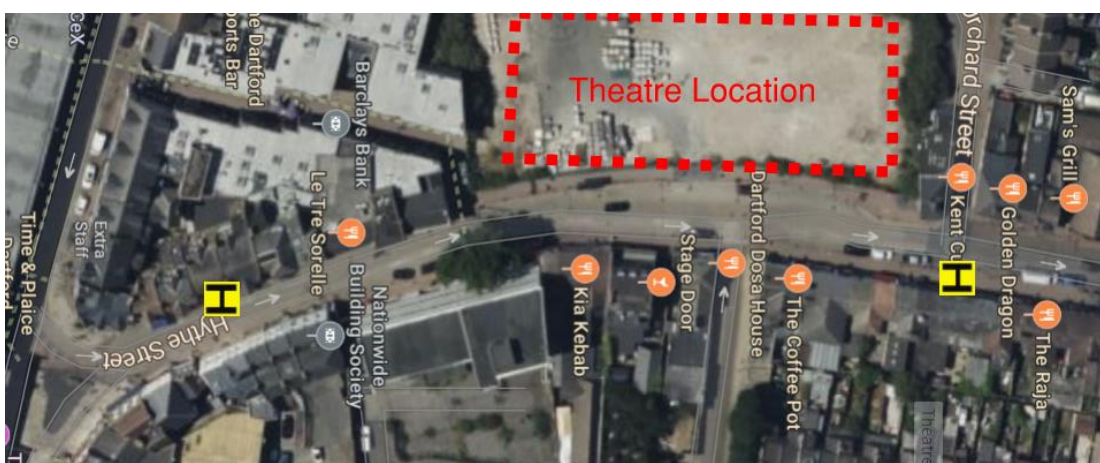
Table 20 Example of measurements for a typical vehicle access route

Appliance type	Min. width of road between kerbs	Min. width of gateways	Min. turning circle between kerbs	Min. turning circle between walls	Min. clearance height	Min. carrying capacity
	m	m	m	m	m	t
Pump	3.7	3.1	16.8	19.2	3.7	12.5
High-reach ^{A)}	3.7	3.1	26.0	29.0	4.0	17.0

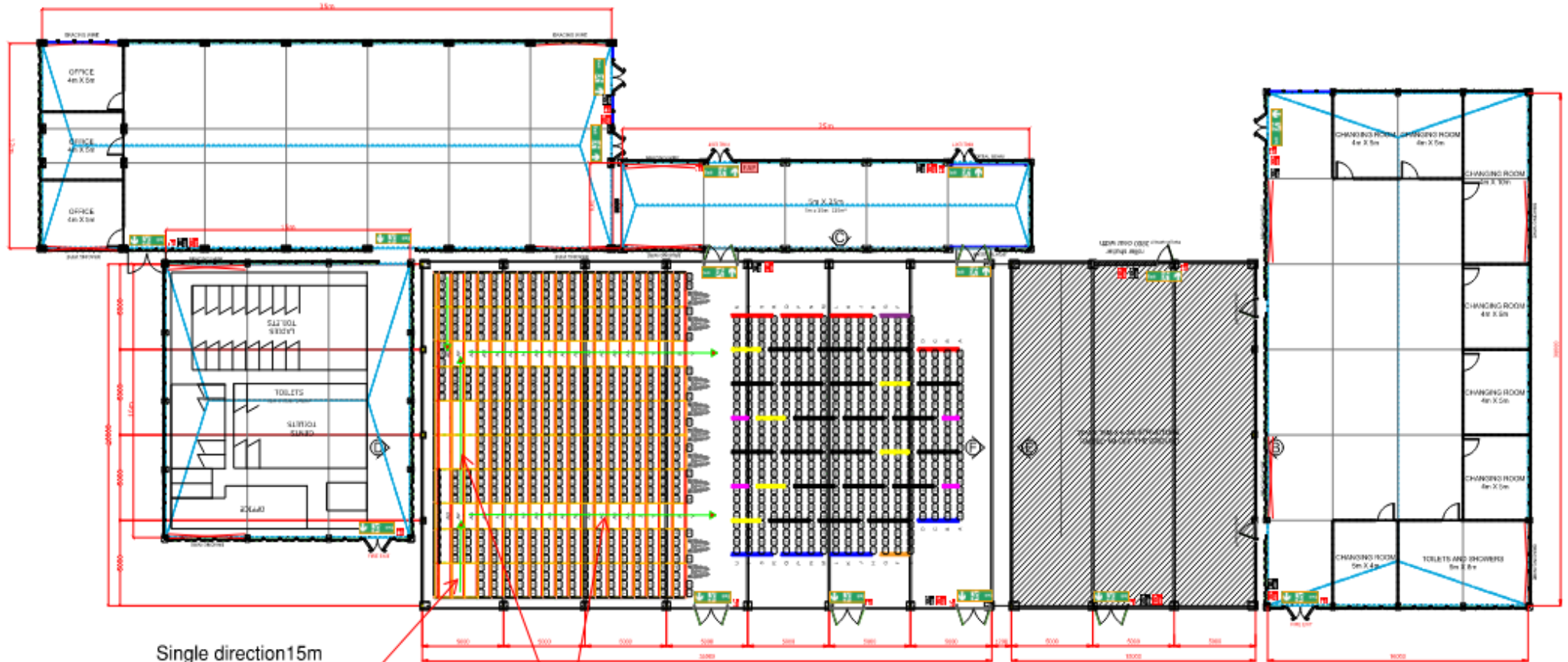
^{A)} Because the weight of high-reach appliances is distributed over a number of axles, their infrequent use of a carriageway or route designed to 12.5 t is not likely to cause damage. It would therefore be reasonable to design the road base to 12.5 t, although structures such as bridges should have the full 17 t capacity.

Approximate location of Hythe Street roadside located fire Hydrants; the proposed entrance is in the middle of the site opposite the junction with “Dartford Dosa Lane” which is within 90m of the indicated Hydrants.

There are numerous entrances to the front side of the building with appliance access within 45m to the furthest point within the structure.





Appendix 2 – Plan Drawing



Single direction 15m travel distance

Two way travel distance 32m

-  C02 Fire extinguisher
-  Water Fire extinguisher
-  Fire Alarm Panel
-  Maintained emergency lighting with signage incorporated
-  Manual Call Point

Fire Alarm system to an L2 standard in accordance with BS-5839 part 1