STRIDE TREGLOWN HEALTHCARE

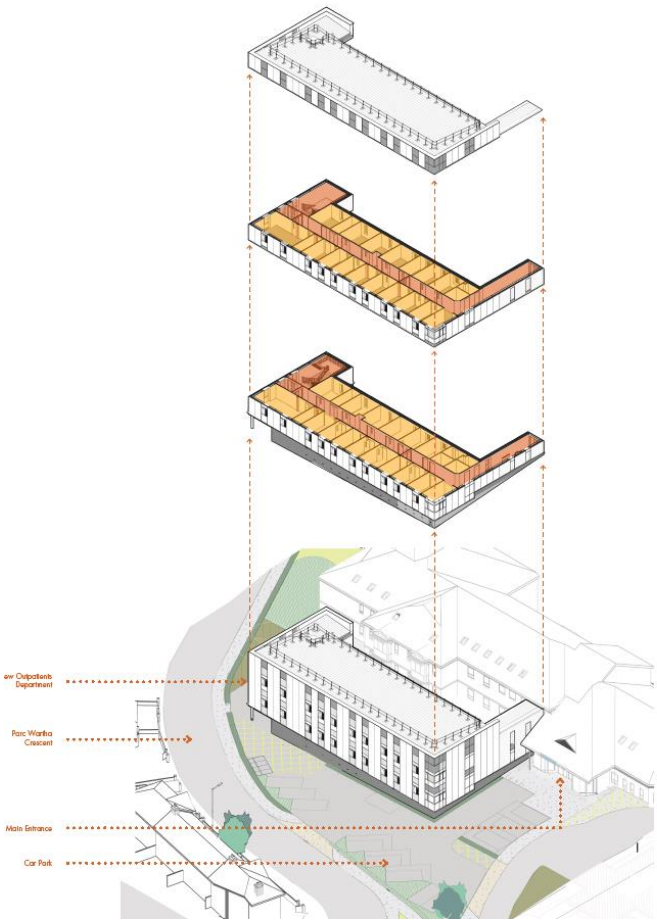
KIER

NHS Royal Cornwall Hospitals NHS Trust

New Outpatient facility: review of fire safety provisions

West Cornwall Hospital Redevelopments Project

RCHT



STRIDE TREGLOWN JOB NO.
154345

PREPARED BY
JOE TREVAIL

CHECKED BY
TBC

DATE
27.10.2021

REVISION
B1

Contents

Revisions

Revision	Description
Rev A 08/06/21	Initial Issue for project team comment, note some diagrams require update to show omission of lift within new building.
Rev A2 08/06/21	Integration of Kier comments and update following Fire team meeting on same date.
Rev B1 17/06/21	LABC comments integrated following review including updated unprotected areas calculation to North façade facing existing building – refer appendix. Relationship between new stair core and existing fire hydrant illustrated in section 6.3
Rev B2 27/10/21	Imagery updated to reflect latest visualisations for Town Planning submission

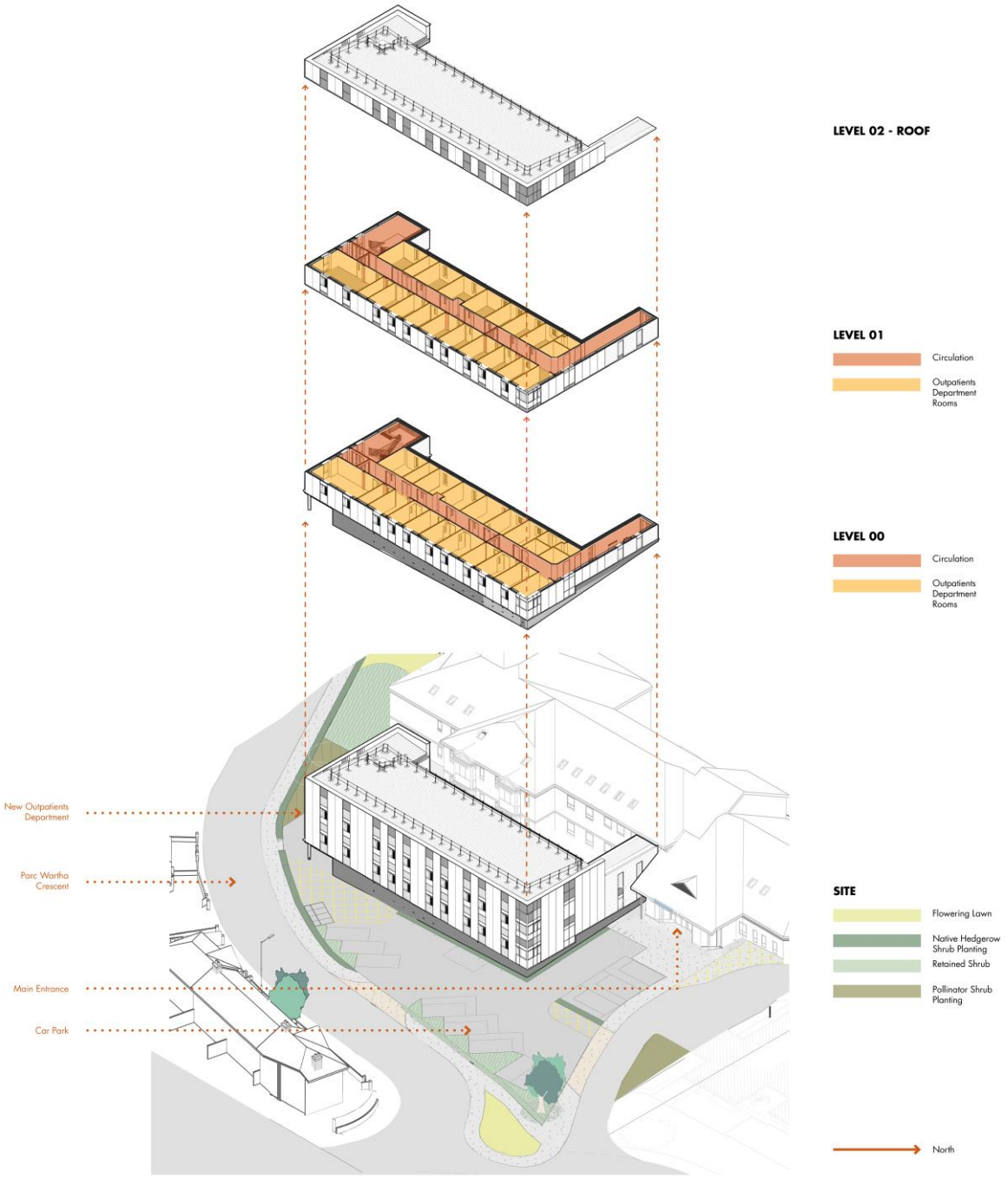
1. Introduction

1.1. Summary

This architectural report reviews the proposed design for the new outpatient facility at West Cornwall Hospital Penzance against Health Technical Memorandum 05-02: Firecode. It also provides an overview to support development of operational plans for the building in use by RCHT fire and safety team.

Category	Design provision
Clinical service and patient dependency	Patients attend the building in an outpatient capacity and are understood to be independent classification as HTM05-02 para 2.19
Maximum estimated number of Out-Patients First Floor (excluding staff and relative)	29 total - Group room limited to 12 Outpatients.
Maximum estimated number of Out-Patients Ground Floor (excluding staff and relative)	25
Number of storeys	2
Height of storey above ground (ADB2 diagram D5)	5.3m
Area of largest floor	390m2
Number of firefighting shafts	0 – as per HTM05-02 table 11.
Number of firefighting lifts	0 – as per HTM05-02 table 11.
Passive means of firefighting	Each floor is proposed as one compartment with no sub-compartments – due to Out patient function, 1000m2 is the maximum on compartment size before sub-compartmentation becomes necessary.
Medical gas provision	No piped medical gas infrastructure provided, all clinical spaces to operate via bottled gas where required.
Fire Test method	BS476 to relevant part
Active means of firefighting	Building is unsprinklered – no sprinklers provided. No misting systems are proposed.

1.2. Building Diagram



1.3. Consultation and Engagement

1.3.1 The following stakeholder engagements have been held to date:

(1) 13/05/21 0900hrs: Initial meeting to review proposals with Alastair Burleigh (Alfor – Trust Fire Approving Engineer),

(2) 26/05/21 1030hrs: Review of proposals: Steve Hill (RCHT), Sarah Williams (LABC)

(3) 01/06/21 1530hrs: Interim design progress review: Terry Nottle, Martin Mellow (both Cornwall Fire and Rescue), Alastair Burleigh (Alfor – Trust Fire Approving Engineer), Doug Lloyd (Kier).

(4) 08/06/21 1630hrs - Interim design review: Martin Mellor Cornwall Fire and Rescue, Doug Lloyd (Kier)

(5) 17/06/21 1030hrs – Stage end review: Steve Hill RCHT, Doug Lloyd (Kier)

1.4. Supporting Documents

1.4.1 This file note is to be read in conjunction with Stride Treglown Fire Assessment Plans which can be located at Appendix A:

- 81002 - Unprotected Area Assessment Existing Building
- 81010 - Designers Fire Assessment - Level B1
- 81011 - Designers Fire Assessment - Level 00
- 81012 - Designers Fire Assessment - Level 01
- 81013 - Designers Fire Assessment - Level 02 (Roof) and Sections

1.5. Exclusions

No existing building fire strategy information has been made available to the design team.

1.6. Building Organisation

Figure 1: Illustration of new building, looking from Site Entrance

Re-provision of Outpatient services at West Cornwall Hospital is proposed by way of new building which interconnects to the existing entrance foyer at West Cornwall Hospital providing a clear unambiguous coherent entrance for Outpatients.

The clinical requirement is provided across two floors which tie back into the existing hospital levels at ground and first. Figure 2 below represents the proposed footprint and point of connection via link corridor:

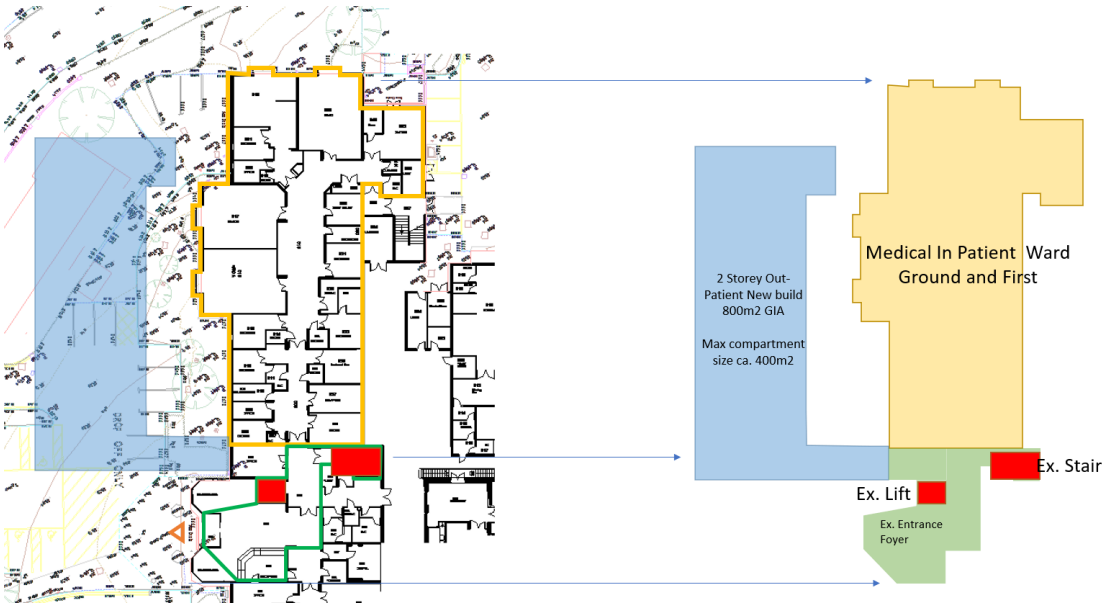


Figure 2: Floor plan in context and diagram

Utilising the existing entrance function, including existing stair core and existing lift which currently serve an existing Inpatient Medical ward on the first floor and existing non-clinical administration functions on level 2 of the existing hospital allows the project to directly increase the proportion of new clinical space provided. Figure 10 identifies the proposed pathway for accessing the upper floors and consequently one of the means of escape.

In terms of wider geography and context, the turquoise fill below represents the proposed new build footprint:

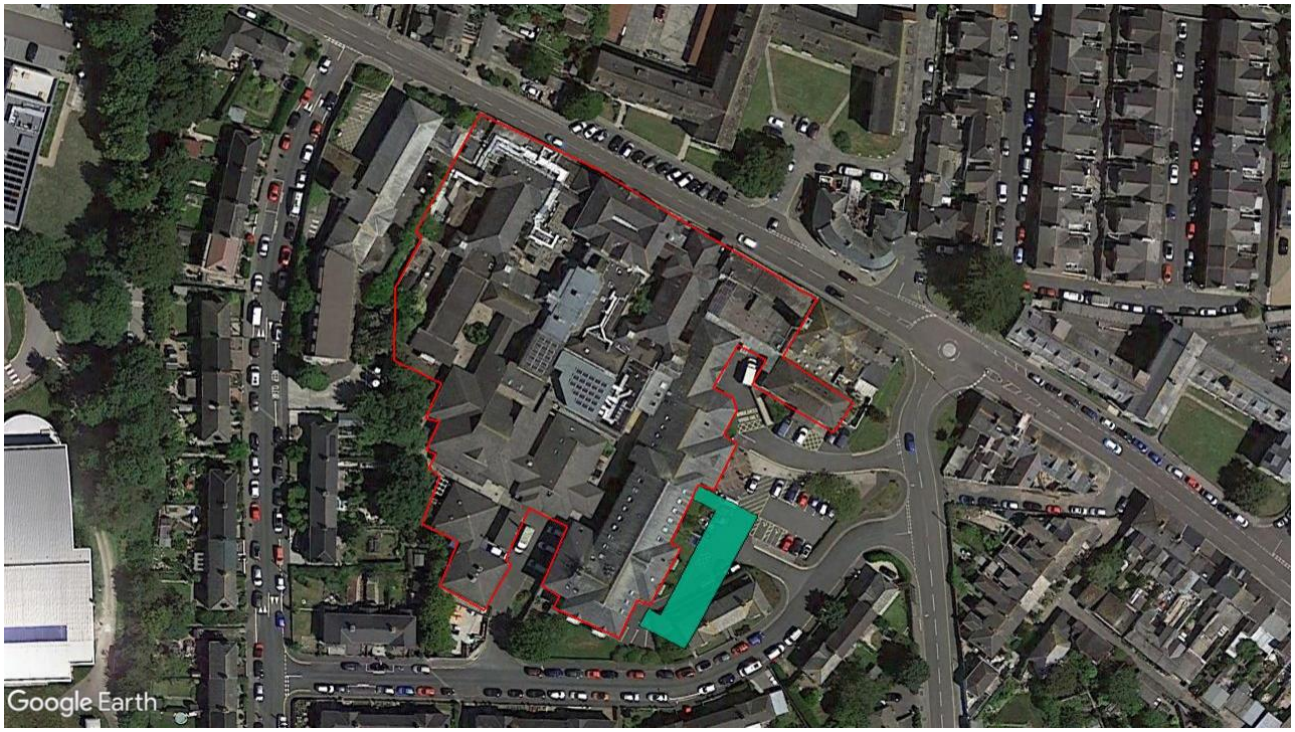


Figure 3: New Build footprint in context

2. Means of Escape

2.1. Compartmentation Overview

2.1.1 Compartmentation is provided to each floor as follows:

- Basement (B1) Compartments: Protected Stair which discharges to outside at this level. Plant under-croft – containing mechanical ventilation plant and pump sets

    1. HTM05-02 places requirements for fire separation to certain hazard areas. It is noted that the plantroom does not accommodate whole site transformers. Ventilation plant and mechanical pump sets are proposed which serve the building. Accordingly, the design does not provide for auto-suppression but does provide for 60Min Fire resistance as required by Table 1 of HTM05-02.

- Level 00 Compartments: Outpatients Clinical Accommodation – Protected Stair and Clinical Accommodation

    1. Due to out-patient functionality no sub-compartments are provide as per HTM 05-02 para 3.25.

    2. It is assumed no more than 7 patients will utilise the Physical Rehabilitation space. Refer Appendix C for summary for the floor.

- Level 01 Compartments: Outpatients Clinical Accommodation, Protected Stair

    1. It is assumed that the Group room on the first floor has a maximum occupancy of Refer Appendix C for summary for the floor.

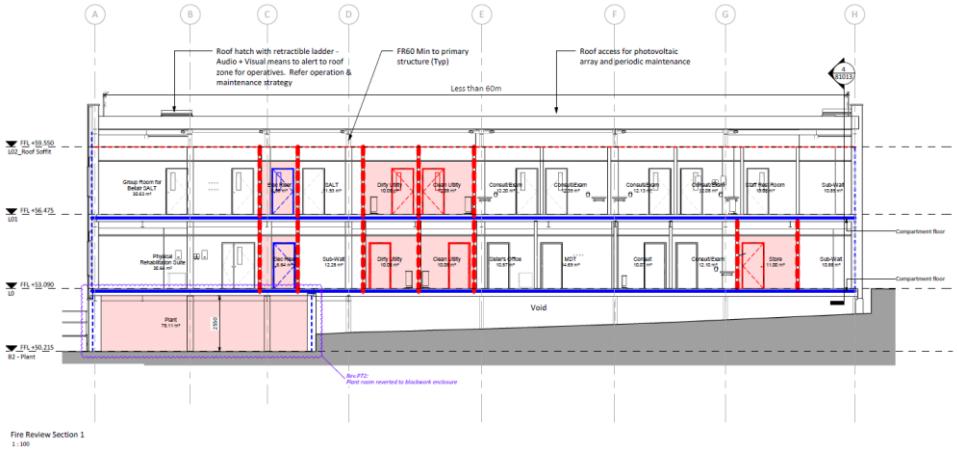


Figure 4: Cross Section – Plant under croft illustrated with Blue Fill

Figure 5: Level 1 Compartmentation Plan (Left)

Figure 6: Level 0 Compartmentation Plan (Right)

2.1.2 Compartmentation is to be provided to 60min Integrity and insulation as required by table B1.

2.2. Compartmentation – Travel distances

2.2.1 The requirement for total horizontal travel distances to an adjoining compartment or stairway is defined by HTM05-02 figure 5. This is provided for through the design – please refer fire plans 81001 and 81002.

2.3. Compartmentation – Sub-Division of Corridor

2.3.1 To maximise building efficiencies and return on investment a single long corridor is proposed to access clinical spaces. This corridor will be subdivided by FD30s doors as recommended by Approved Document B2 para 2.26: *"A corridor providing access to alternative escape routes should be divided by self closing fire doorsets where it is more than 12m long and it connects two or more storey exits"*

To support day-to-day operations the doors provided per floor to subdivide the corridor and help prevent smoke logging will be on hold open overhead magnets linked to fire alarm. Corridors are not proposed to be sub-divided further as additional doors at 12m intervals would create a very small residual corridor length.

2.4. Evacuation – Principles

2.4.1 Vertical evacuation is provided by a new and existing stairwell at either end of the proposed compartment. Evacuation stages referenced are as cited within HTM05-02 paragraph 2.7 a,b&c:

2.7 There are three main stages of evacuation:

a. Stage 1 – horizontal evacuation from the area where the fire originates to an adjoining sub-compartment or compartment;

b. Stage 2 – horizontal evacuation from the entire compartment where the fire originates to an adjoining compartment on the same floor. Subsequent additional horizontal evacuation to adjacent compartments may be undertaken (thereby putting additional fire resistance between the building occupants and the threat) prior to undertaking vertical evacuation; and

c. Stage 3 – vertical evacuation to a lower floor, or to the outside.

(1) The newly provided escape stair will discharge to an external footpath. Where within 1.8m, of the building, the façade of the building will be fire protected as required by approved document B2. A new disabled refuge with EVCS is to be provided to the new protected stair core as indicated below.

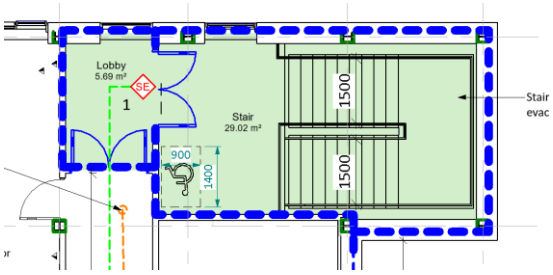


Figure 7: New Disabled Refuge to new stair core

(2) Horizontal evacuation is provided for by a 2m wide corridor including handrail within the new building.

(3) The existing stairwell provides 1300mm clear width between handrails and currently forms part of stage 3 evacuation for the existing Inpatient medical ward. The existing EVCS and disabled refuge within the existing lobby are to be utilised.

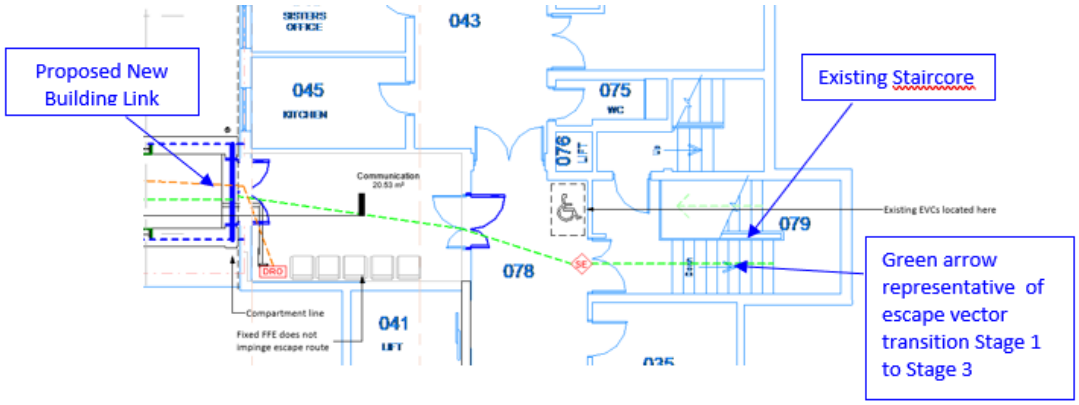
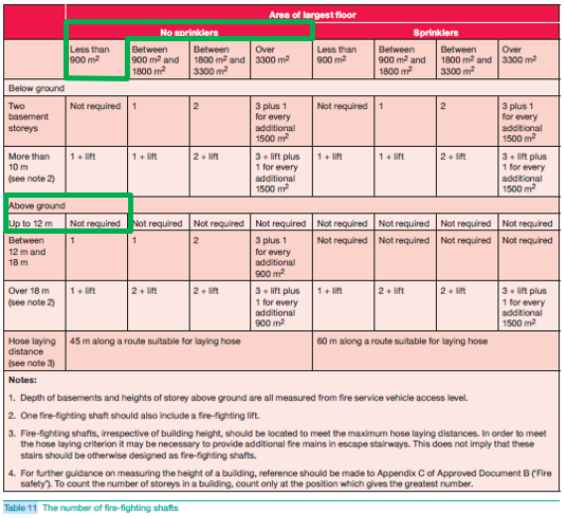


Figure 8: Existing Staircore & lobby interface with new building. Existing stair is proposed to be utilised as stage 3 evac from the new building

2.4.2 Determined by area of largest floor and building height in accordance with Table 11 of 05-02 and Approved Document B2 Diagram D2 (storey height) no Firefighting lifts are provided as not required by HTM05-02 Table 11 for this building organisation without sprinklers.



	Area of largest floor							
	No sprinklers				Sprinklers			
	Less than 900 m²	Between 900 m² and 1800 m²	Between 1800 m² and 3300 m²	Over 3300 m²	Less than 900 m²	Between 900 m² and 1800 m²	Between 1800 m² and 3300 m²	Over 3300 m²
Below ground								
Two basement storeys	Not required	1	2	3 plus 1 for every additional 1500 m²	Not required	1	2	3 plus 1 for every additional 1500 m²
More than 10 m (see note 2)	1 + lift	1 + lift	2 + lift	3 + lift plus 1 for every additional 1500 m²	1 + lift	1 + lift	2 + lift	3 + lift plus 1 for every additional 1500 m²
Above ground								
Up to 12 m	Not required	Not required	Not required	Not required	Not required	Not required	Not required	Not required
Between 12 m and 18 m	1	1	2	3 plus 1 for every additional 900 m²	Not required	Not required	Not required	Not required
Over 18 m (see note 2)	1 + lift	2 + lift	2 + lift	3 + lift plus 1 for every additional 900 m²	1 + lift	2 + lift	2 + lift	3 + lift plus 1 for every additional 1500 m²
Hose laying distance (see note 3)	45 m along a route suitable for laying hose				60 m along a route suitable for laying hose			

Notes:

1. Depth of basements and heights of storey above ground are all measured from fire service vehicle access level.
2. One fire-fighting shaft should also include a fire-fighting lift.
3. Fire-fighting shafts, irrespective of building height, should be located to meet the maximum hose laying distances. In order to meet the hose laying criterion it may be necessary to provide additional fire mains in escape stairways. This does not imply that these stairs should be otherwise designed as fire-fighting shafts.
4. For further guidance on measuring the height of a building, reference should be made to Appendix C of Approved Document B ('Fire safety'). To count the number of storeys in a building, count only at the position which gives the greatest number.

Table 11 The number of fire-fighting shafts

Figure 9: Firecode requirements relative to proposed building size and no. of storeys

1. It is noted that the existing lift within the existing building is not currently suitable for firefighting as indicated by existing signage (figure 8 below)

2. The serviceability of the existing lift is currently being reviewed to identify any risks to operation of the outpatient's service and existing medical wards. This review will establish if any remedial works or existing deficiencies are present which may require resolving to enable usage for by the proposed patient pathway.

2.4.3 Cause/effect and inter-relationship between fire zones subject to development with MEP designers and Trust Fire Team.

Figure 10: Signage to existing lift (Left) Figure 11: Existing Disabled refuge within existing lobby (Right)

2.5. Evacuation – Upper Floor:

Stage 1 evacuation is possible in two direction before stage 3 evacuation is necessary utilising either existing or newly provided stair cores as illustrated by green arrows in the below diagram.

Note, stage 2 evacuation would be possible towards the existing hospital subject to local policy.

Figure 12: Means of escape from first floor

2.6. Evacuation – Ground Floor

To the new staircore, as a co-ordination with existing site topography, stage 3 vertical evacuation is necessary to a split level via the new staircase which discharges to an external egress path. Alternatively, stage 1, 2 & 3 evacuation are possible subject to local policy via progressive horizontal evacuation to the existing hospital.

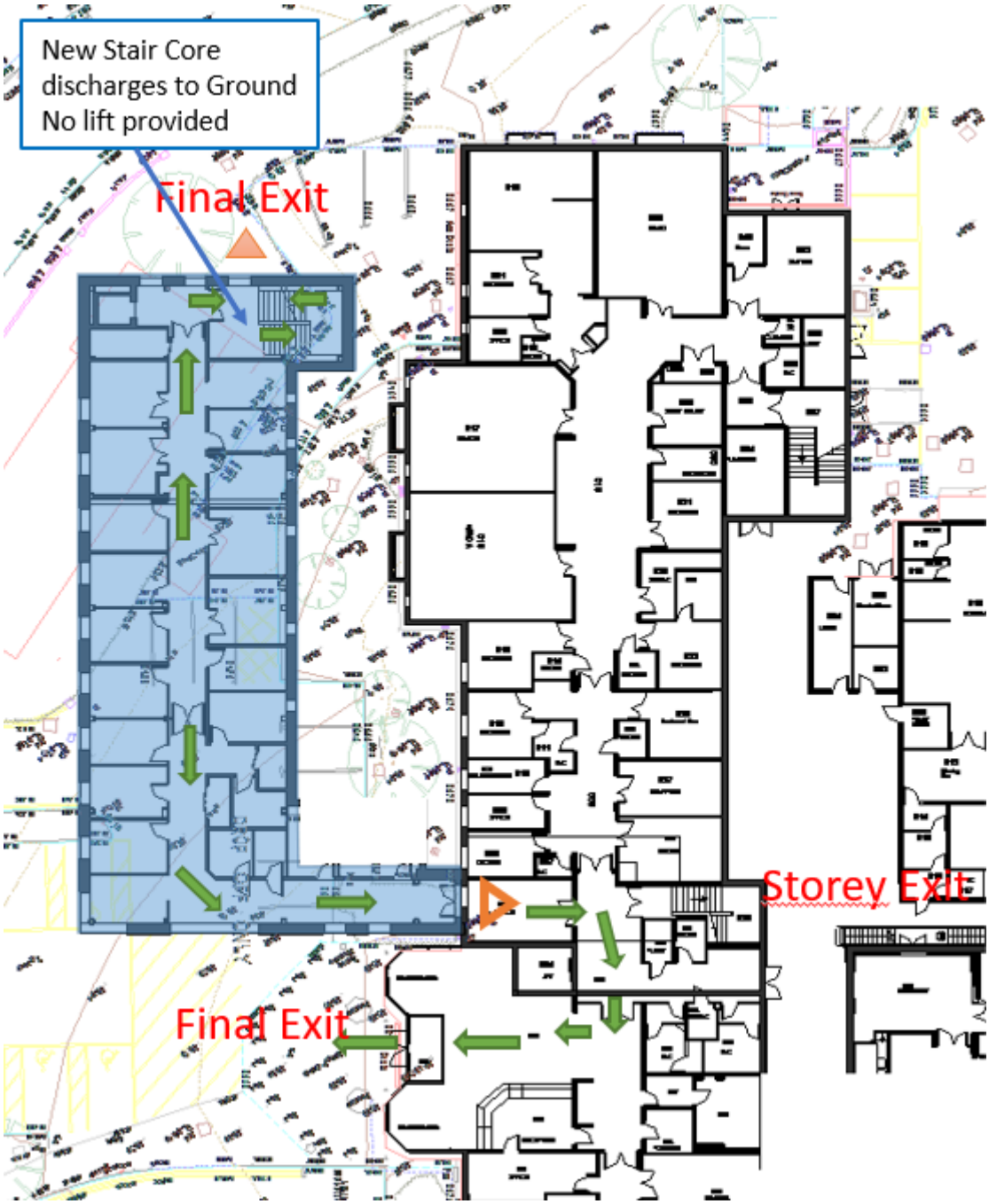


Figure 13: Means of escape from ground floor

2.7. Evacuation – Basement

Note – MEP design is subject to development at the time of writing.

A provisional allowance has been made for two means of escape provided on adjacent facades of the building. Details to be developed.

Refer Electrical engineers design for details of alarm and warning systems.

2.8. Evacuation – Roof Space

Periodic maintenance of Photo Voltaic array and of gutters only is provisioned through the design to a flat or pitched roof with essential safety devices as required by HSG33. Access is granted by way of a roof hatch, with collapsible stair/companion way, which is to land in the proposed new protected stair core.

One means of access/egress is required as the maximum permissible travel distance across the roof is less than 60m.

Due to the positioning of this hatch and landing point for the collapsible ladder maintenance is only proposed outside of operational hours.

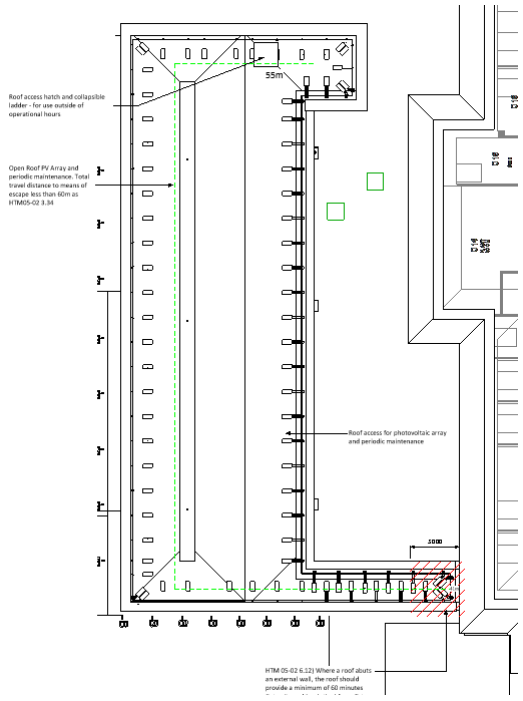


Figure 14: Illustration showing 42m travel distance to access hatch from far end of building.

3. Fire Safety Systems

3.1. Fire Detection and Alarm System

Fire Alarm designer to provide summary.

3.1.1 External roof areas to be provided with audio/visual means of alert to operatives – as a non acute site without a helipad alternative means of warning to mitigate disturbance is not proposed.

Figure 15: Diagram of upper floor utilising existing escape core

4. Internal Fire Spread

4.1.1 To support department for health modern methods of construction requirements a prefabricated primary steel superstructure is proposed. Floor systems will consist of reinforced concrete – final system type to be confirmed.

4.1.2 60 min integrity and insulation to BS 476 (relevant part) will be provided to elements of structure as indicated by Table 5 of HTM05-02 and Table B1.

	Minimum period of fire resistance provided by elements of structure	
	Unsprinklered	Sprinklered
Single-storey healthcare buildings	30 minutes	30 minutes
Healthcare buildings with storeys up to 12 m above ground or basements no more than 10 m deep	60 minutes	30 minutes* (60 minutes in respect of basements*)
Healthcare buildings with storeys over 12 m above ground or basements more than 10 m deep	90 minutes	60 minutes*
Healthcare buildings with storeys over 30 m	Not permitted	90 minutes*
Notes:		
* The reduction in fire resistance is conditional upon a life safety sprinkler system installed and maintained in line with BS EN 12845.		
Elements of structure in relation to basements include the ground-floor slab.		
Where one side of a basement is (due to the slope of the ground) open at ground level, giving an opportunity for smoke venting and access for fire-fighting, it may be appropriate to adopt the standard of fire resistance applicable to above-ground structures for elements of structure in that storey.		
In order to reduce the fire resistance to elements of structure, the whole building must be protected by a sprinkler installation design.		

Table 5 Fire resistance of elements of structure

4.1.3 Both Intumescent and Boarded (Encasement) systems are proposed.

(1) Intumescent generally where primary steelwork is exposed.

(2) Boarded (Encasement) systems internally, e.g. British Gypsum Firecase & Glassroc boards all in accordance with BG test data. This may also include independent linings as tested by British Gypsum to provide protection to columns.

5. External Fire Spread

5.1.1 As the upper floor is above 5m from firefighting access level, HTM05-02 table 8 requires 60min Fire resistance from the external walls.

Height to the top floor	Minimum period of fire resistance
Not more than 5 m	30 minutes
Over 5 m	60 minutes

Notes:

1. The minimum period of fire resistance relates to integrity and load-bearing capacity. The minimum provision for insulation is 15 minutes unless the external wall is less than 1000 mm from a boundary or adjacent building, when the requirement for insulation should be the same as that for integrity and load-bearing capacity.
2. An external wall that is also an element of structure should comply with Table 5.

Table 8 Minimum period of fire resistance of external walls

(1) Fire resisting, non-combustible composite metal panels are proposed to form the exterior surface of the new building excepting for permissible unprotected glazed areas.
Manufactured by Euro panel, the proposed Eurobond F5 Extra has been tested and certified to provide 60min integrity and insulation.

fire performance

All Europanel composite panels offer high levels of fire resistance and have been tested and approved by the Loss Prevention Certification Board (LPCB) and Underwriters Laboratories (UL). The following table details the panel specifications and fire performance achieved.

Product	Panel thickness (mm)	Fire resistance (minutes)		Maximum unsupported length (m)	LPS 1181 Grade
		Insulation	Integrity	LPS 1208	
Europanel S5 (Satinline) F5 (Flat)	75	30	30	3.0	EXT-A30
	75	30	60	3.0	EXT-A30
	100	30	30	5.5	EXT-A30
	100	30	60	4.5	EXT-A30
	125	30	30	5.5	EXT-A30
	125	60	60	4.5	EXT-A60
	125	60	90	4.0	EXT-A60
	150	30	30	5.5	EXT-A30
	150	60	60	5.5	EXT-A60
	150	90	90	5.0	EXT-A60
	150	90	120	5.0	EXT-A90
	175	30	30	5.5	EXT-A30
	175	60	60	5.5	EXT-A60
	175	60	30	5.0	EXT-A60
	175	90	120	5.0	EXT-A90
	200	90	120	5.0	EXT-A90
	240	90	120	5.0	EXT-A90
Europanel S5 extra (Satinline) F5 extra (Flat) G12, G30, G50	75	30	30	3.0	EXT-A30
	75	60	60	3.0	EXT-A60
	100	30	30	7.5	EXT-A30
	100	60	60	6.0	EXT-A60
	125	30	30	7.5	EXT-A30
	125	60	60	6.0	EXT-A60
	125	90	90	5.5	EXT-A90
	150	30	30	7.5	EXT-A30
	150	60	60	7.5	EXT-A60
	150	90	90	7.5	EXT-A90
	150	120	120	7.5	EXT-A120
	175	30	30	7.5	EXT-A30
	175	60	60	7.5	EXT-A60
	175	90	90	7.5	EXT-A90
	175	120	120	7.5	EXT-A120
	200	30	30	7.5	EXT-A30
	200	60	60	7.5	EXT-A60
	200	90	90	7.5	EXT-A90
	200	120	120	7.5	EXT-A120
	240	120	120	7.5	EXT-A120

Non-Combustible Core

All panels have stone wool cores which are non- combustible as defined by the Building Regulations applicable to all parts of the United Kingdom and the Republic of Ireland. This includes materials classified as Class A1 in accordance with BS EN 13501-1: 2002 Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests, when tested to BS EN 13501-1:2002.

Fire performance spans are subject to wind load verification.

All panels can be installed horizontally or vertically.

* joint stitched on both sides at 3m centres

** panel joint stitched on both sides at 300mm centres

*** 0.7mm steel faces to both sides

Figure 16: Extract from Eurobond (Europanel) technical guidance document

5.2. Space separation

5.2.1 Requirements for space separation have been developed based on BRE 187 methodology where the proposed building faces the existing. HTM05-02 figure 20 has formed the basis of assessment for the other facades.

5.2.2 Quantitative analysis of the existing façade unprotected area has been undertaken as illustrated in appendix B. This has informed positioning of a notional boundary between the newly proposed and existing buildings which consequently has driven calculations for permissible unprotected areas from the North Façade.

5.3. Surfaces of Roofs

5.3.1 BRoof T4 certified Garland bitumen membrane as RCHT standard specification.

6. Access and facilities for fire-and-rescue service

6.1.1 No verification of the serviceability and available pressure to the existing fire hydrants has been undertaken at this time.

6.2. Fire Hydrant – within site curtilage

6.2.1 To maintain access across the construction process, reprovision of an existing fire hydrant, which would otherwise be inaccessible due to the site hoarding, is necessary.

6.2.2 The proposed location for the hydrant shall be within 18m of the proposed dry-riser inlet as indicated below.

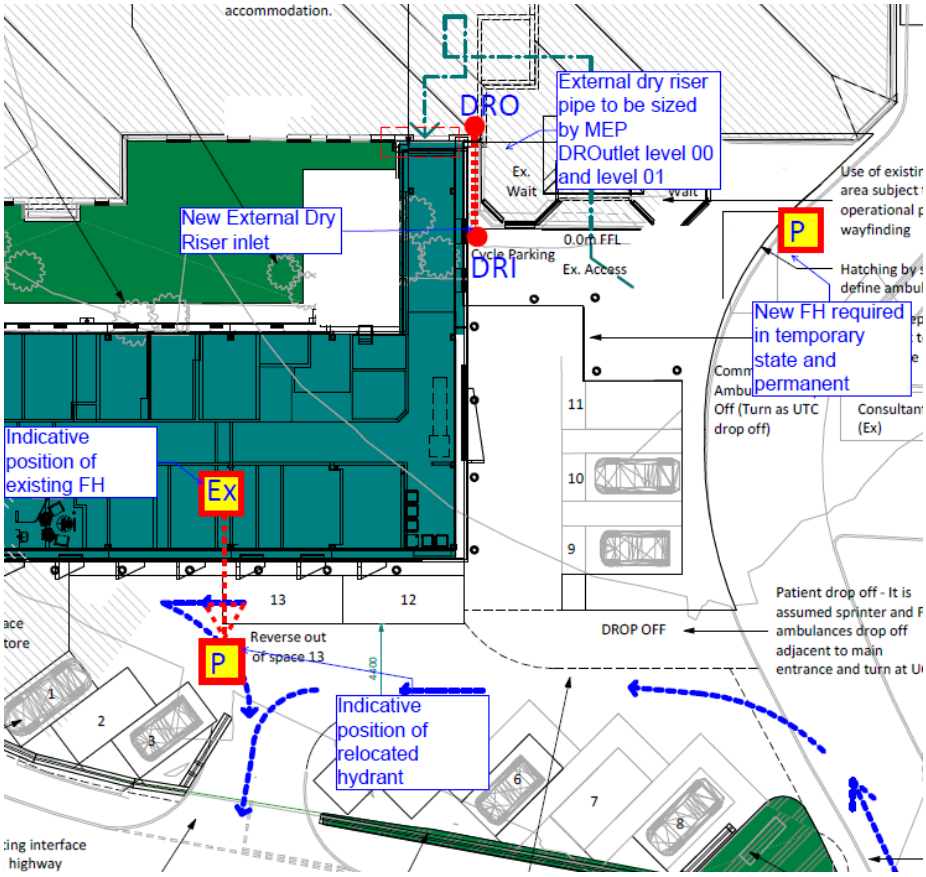


Figure 17: Works to relocate existing hydrant and overview of the Dry Riser system

6.2.3 Improved firefighting hose coverage will be possible by a new Dry Riser system which will serve ground and first floor.

(1) The dry riser outlet (DRO) will be positioned within the existing breakthrough on both floors and shall be protected to facilitate firefighting by way of a safe zone for the brigade to muster and connect into.

6.3. Fire Hydrant – outside site curtilage

(1) An existing hydrant has been identified by topography=ical and utilities survey in the road to the South West of the new stair core. Figure 17 shows context and dimensional relationship to the new stair core:

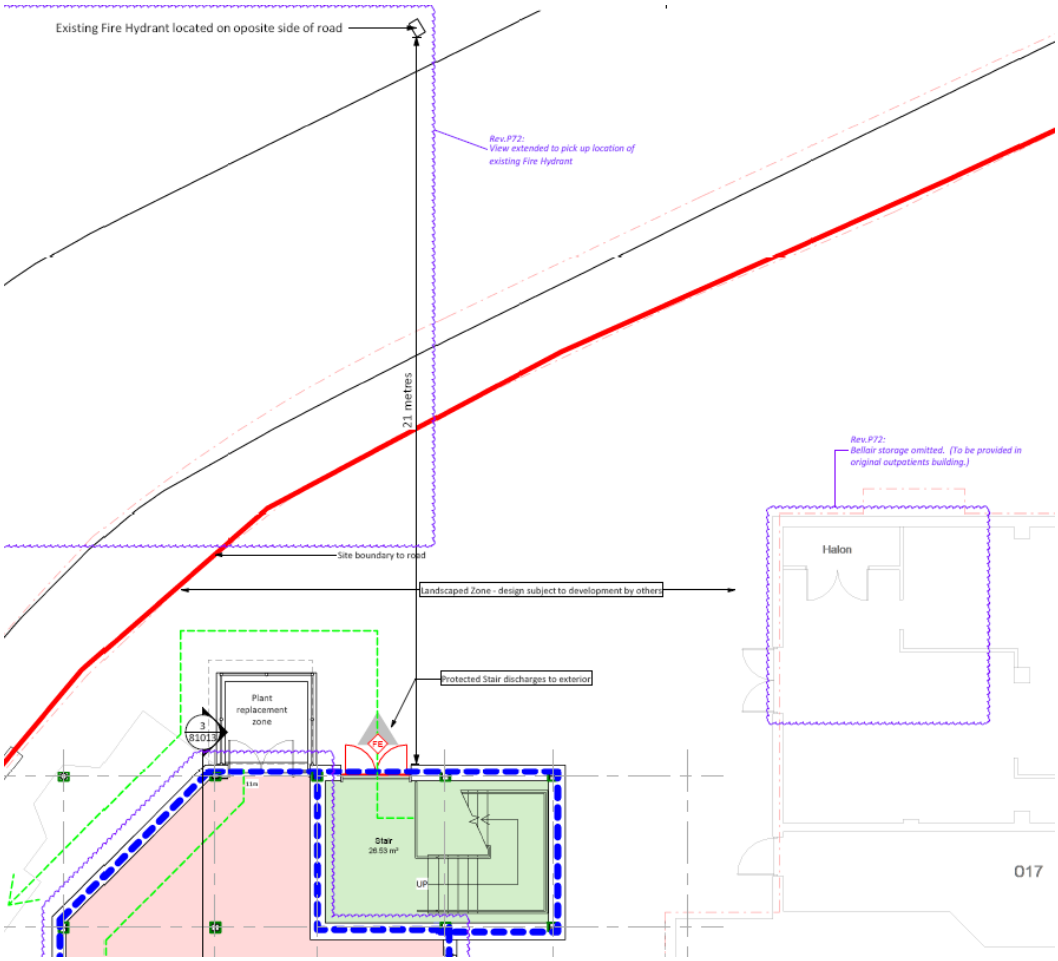


Figure 18: Relationship between new stair and existing hydrant outside of site

6.4. Access around the building

6.4.1 Assuming a total floor area of between 8000 and 16000m2, the below analysis indicates that 50% of the perimeter of the hospital is accessible as required by HTM05-02 Table 9:

Floor Area 8600m2
Hospital is predominately single storey with some areas two storey, therefore assume between 8000-16000m2
Perimeter 765m

Figure 19: Total Floor Area

Perimeter accessible
= 440m

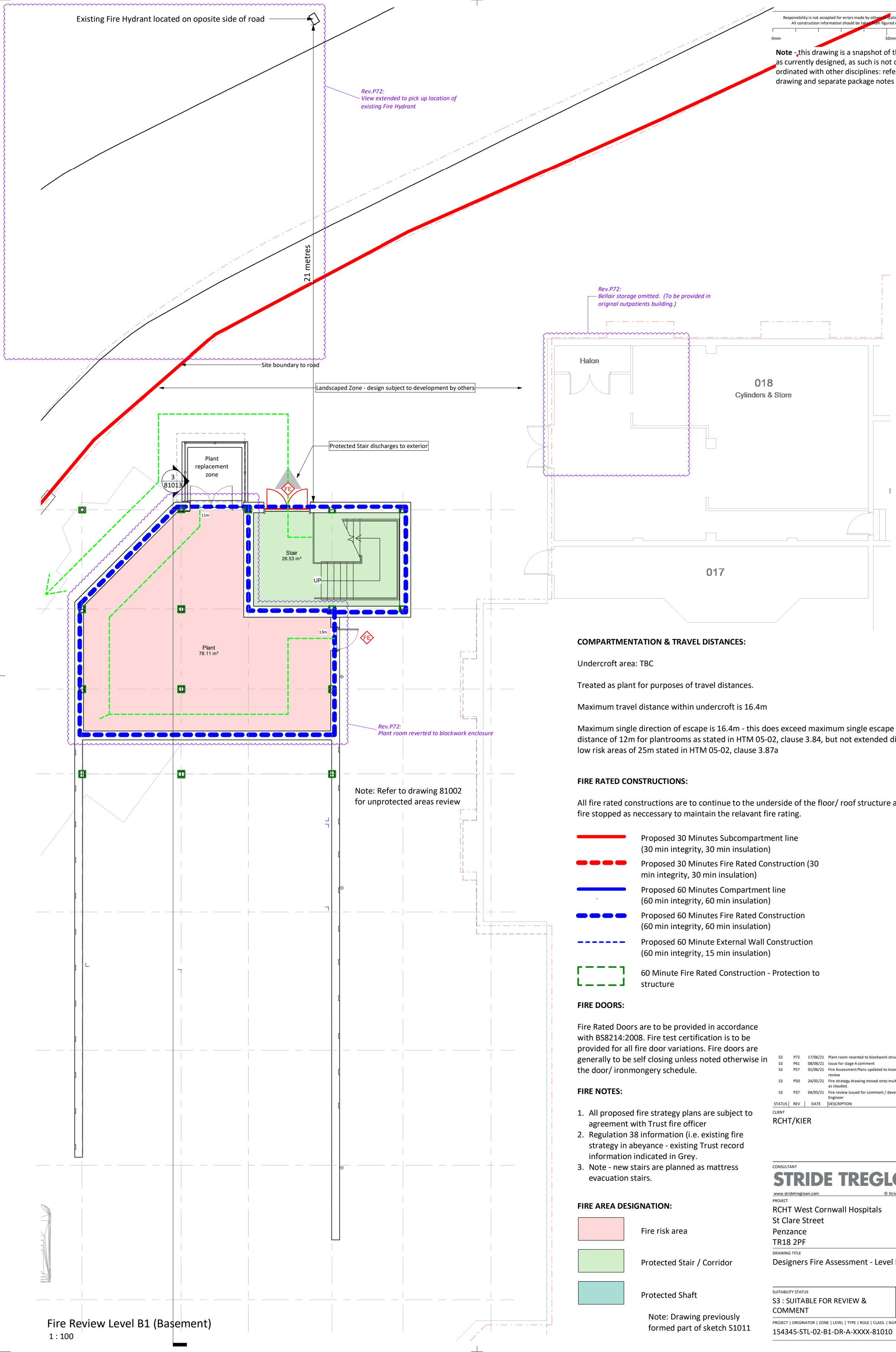
440/765= >50% of perimeter is accessible.

Figure 20: Perimeter that can be accessed

7. Appendix A – Fire plans

0mm 50mm

Note - this drawing is a snapshot of the scheme as currently designed, as such is not co-ordinated with other disciplines: refer notes on drawing and separate package notes



Fire Review Level B1 (Basement)
1 : 100

COMPARTMENTATION & TRAVEL DISTANCES:

Undercroft area: TBC

Treated as plant for purposes of travel distances.

Maximum travel distance within undercroft is 16.4m

Maximum single direction of escape is 16.4m - this does exceed maximum single escape travel distance of 12m for plantrooms as stated in HTM 05-02, clause 3.84, but not extended distance for low risk areas of 25m stated in HTM 05-02, clause 3.87a

FIRE RATED CONSTRUCTIONS:

All fire rated constructions are to continue to the underside of the floor/ roof structure and be fire stopped as neccessary to maintain the relavant fire rating.

- Proposed 30 Minutes Subcompartment line (30 min integrity, 30 min insulation)
- Proposed 30 Minutes Fire Rated Construction (30 min integrity, 30 min insulation)
- Proposed 60 Minutes Compartment line (60 min integrity, 60 min insulation)
- Proposed 60 Minutes Fire Rated Construction (60 min integrity, 60 min insulation)
- Proposed 60 Minute External Wall Construction (60 min integrity, 15 min insulation)
- 60 Minute Fire Rated Construction - Protection to structure

FIRE DOORS:

Fire Rated Doors are to be provided in accordance with BS8214:2008. Fire test certification is to be provided for all fire door variations. Fire doors are generally to be self closing unless noted otherwise in the door/ ironmongery schedule.

FIRE NOTES:

1. All proposed fire strategy plans are subject to agreement with Trust fire officer
2. Regulation 38 information (i.e. existing fire strategy in abeyance - existing Trust record information indicated in Grey.
3. Note - new stairs are planned as mattress evacuation stairs.

FIRE AREA DESIGNATION:

- Fire risk area
- Protected Stair / Corridor
- Protected Shaft

Note: Drawing previously formed part of sketch S1011

STATUS	REV	DATE	DESCRIPTION
S3	P72	17/06/21	Plant room reverted to blockwork structure
S3	P61	08/06/21	Issue for stage 4 comment
S3	P57	01/06/21	Fire Assessment Plans updated to incorporate VE and issued for review
S3	P50	24/05/21	Fire strategy drawing moved onto multiple sheets. Amendments as clouded.
S3	P37	04/05/21	Fire review issued for comment / development with Fire Engineer

CLIENT
RCHT/KIER

REVISED BY
Anna Porter

CHECKED BY
Joe Trevail

ORIGINATOR NO
154345

CONSULTANT
STRIDE TREGLOWN

PROJECT
RCHT West Cornwall Hospitals
St Clare Street
Penzance
TR18 2PF

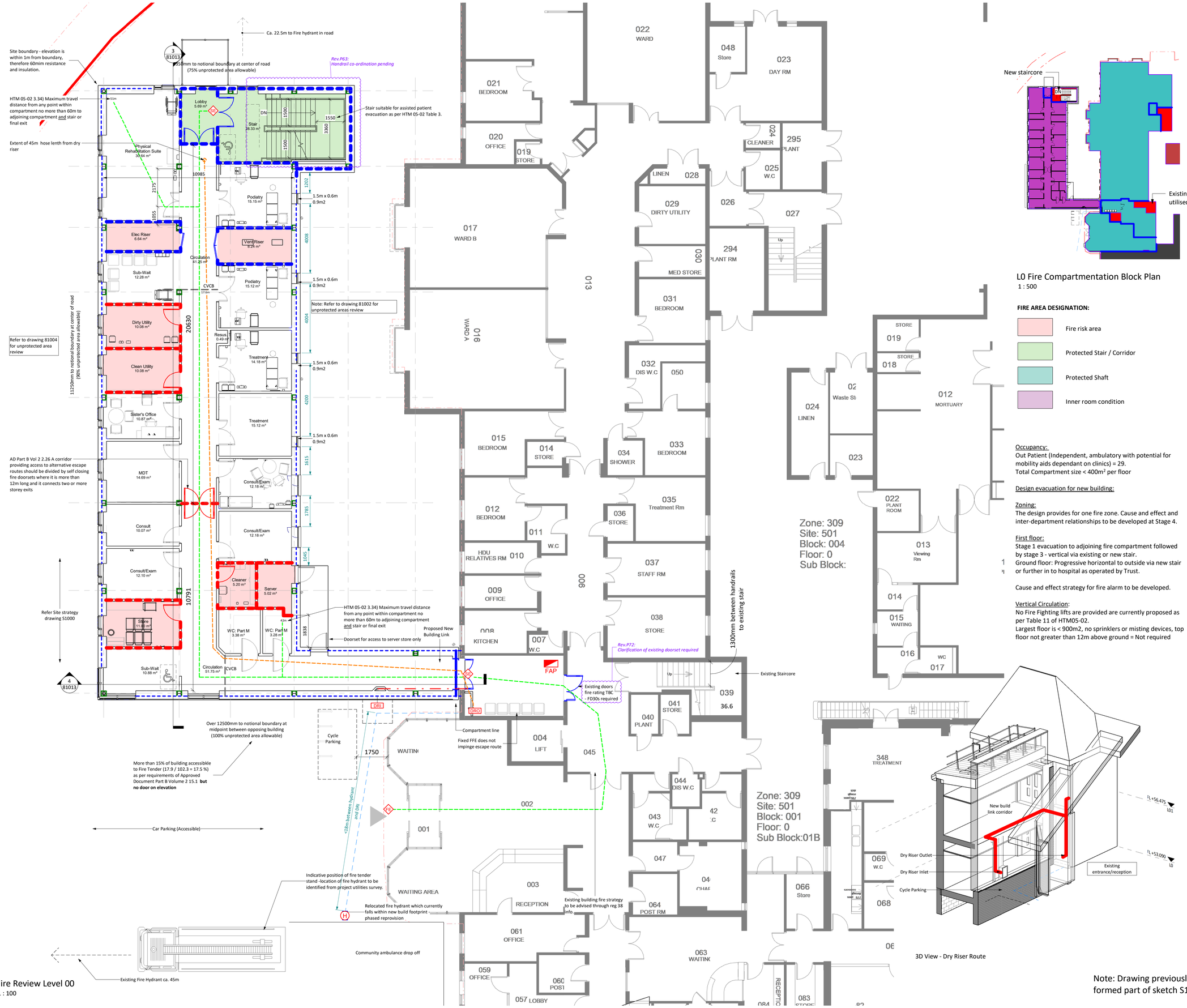
DRAWING TITLE
Designers Fire Assessment - Level B1

SUITABILITY STATUS
S3 : SUITABLE FOR REVIEW & COMMENT

SCALE
1 : 100 @ A2

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
154345-STL-02-B1-DR-A-XXXX-81010

REVISION
P72



Fire Review Level 00
1 : 100

L0 Fire Compartmentation Block Plan
1 : 500

FIRE AREA DESIGNATION:

- Fire risk area
- Protected Stair / Corridor
- Protected Shaft
- Inner room condition

Occupancy:
Out Patient (Independent, ambulatory with potential for mobility aids dependant on clinics) = 29.
Total Compartment size < 400m² per floor

Design evacuation for new building:

Zoning:
The design provides for one fire zone. Cause and effect and inter-department relationships to be developed at Stage 4.

First floor:
Stage 1 evacuation to adjoining fire compartment followed by stage 3 - vertical via existing or new stair.
Ground floor: Progressive horizontal to outside via new stair or further in to hospital as operated by Trust.

Cause and effect strategy for fire alarm to be developed.

Vertical Circulation:
No Fire Fighting lifts are provided are currently proposed as per Table 11 of HTM05-02.
Largest floor is < 900m2, no sprinklers or misting devices, top floor not greater than 12m above ground = Not required

3D View - Dry Riser Route

Note: Drawing previously formed part of sketch S1011

Note - this drawing is a snapshot of the scheme as currently designed, as such is not co-ordinated with other disciplines: refer notes on drawing and separate package notes

COMPARTMENTATION & TRAVEL DISTANCES:

OPD compartment area: 375 m² (GF)
Number of patients: 25 (GF)

No subcompartment required based on area or patient numbers (HTM 05-02, clause 3.25)

Maximum travel distance within compartment is 52m - this does not exceed maximum travel distance of 60m as stated in HTM 05-02, clause 3.34

Maximum single direction of escape for non in-patient accommodation is 7.1m - this does not exceed maximum travel distance of 18m as stated in HTM 05-02, clause 3.30

FIRE RATED CONSTRUCTIONS:

All fire rated constructions are to continue to the underside of the floor/ roof structure and be fire stopped as neccessary to maintain the relavant fire rating.

- Proposed 30 Minutes Subcompartment line (30 min integrity, 30 min insulation)
- Proposed 30 Minutes Fire Rated Construction (30 min integrity, 30 min insulation)
- Proposed 60 Minutes Compartment line (60 min integrity, 60 min insulation)
- Proposed 60 Minutes Fire Rated Construction (60 min integrity, 60 min insulation)
- Proposed 60 Minute External Wall Construction (60 min integrity, 15 min insulation)
- 60 Minute Fire Rated Construction - Protection to structure

FIRE SYMBOLOGY:
Additional symbols are included in order to illustrate other relevant protective measures:

- Disabled Refuge Space
- 49m Travel distance
- DRI Dry Riser Inlet
- DRO Dry Riser Outlet
- WRI Wet Riser Inlet
- WRO Wet Riser Outlet
- H **Fire Hydrant**
- FB **Fire Barrier** (Within void)
- FE Final Exit
- SE Storey Exit

FIRE DOORS:

Fire Rated Doors are to be provided in accordance with BS8214:2008. Fire test certification is to be provided for all fire door variations. Fire doors are generally to be self closing unless noted otherwise in the door/ ironmongery schedule.

FIRE NOTES:

1. All proposed fire strategy plans are subject to agreement with Trust fire officer
2. Regulation 38 information (i.e. existing fire strategy in abeyance - existing Trust record information indicated in Grey.
3. Note - new stairs are planned as mattress evacuation stairs - the requirement for reciprocal means of escape through the new building is subject to confirmation and is contingent upon the exisiting fire safety and patients' evacuation plans

STATUS	REV	DATE	DESCRIPTION
S3	P72	17/06/21	Plant room reverted to blockwork structure
S2	P63	08/06/21	Updates following fire review meeting 210608
S3	P61	08/06/21	Issue for stage 4 comment
S3	P57	01/06/21	Fire Assessment Plans updated to incorporate VE and issued for review
S3	P50	24/05/21	Fire strategy drawing moved onto multiple sheets. Amendments as clouded.
S3	P37	04/05/21	Fire review issued for comment / development with Fire Engineer

CLIENT
RCHT/KIER

REVISED BY
Anna Porter

CHECKED BY
Joe Trevail

ORIGINATOR NO
154345

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
RCHT West Cornwall Hospitals
St Clare Street
Penzance
TR18 2PF

DRAWING TITLE
Designers Fire Assessment - Level 00

SUITABILITY STATUS
S3 : SUITABLE FOR REVIEW & COMMENT

SCALE
As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
154345-STL-02-00-DR-A-XXXX-81011

REVISION
P72

L1 Fire Compartmentation Block Plan
1 : 500

FIRE AREA DESIGNATION:

- Fire risk area
- Protected Stair / Corridor
- Protected Shaft
- Inner room condition

Note: Drawing previously formed part of sketch S1011

0mm 50mm 100mm

Note - this drawing is a snapshot of the scheme as currently designed, as such is not co-ordinated with other disciplines: refer notes on drawing and separate package notes

COMPARTMENTATION & TRAVEL DISTANCES:

OPD compartment area: 360 m² (FF)
Number of Outpatients: 29 (FF)

No subcompartment required based on area (HTM 05-02, clause 3.25) but patients number does exceed 30. Assumtion made that this refers largely to inpatients - confirmation required from Trust Fire Officer / Building Control.

Maximum travel distance within compartment is 49m - this does not exceed maximum travel distance of 60m as stated in HTM 05-02, clause 3.34

No single direction of escape elements of circulation.

FIRE RATED CONSTRUCTIONS:

All fire rated constructions are to continue to the underside of the floor/ roof structure and be fire stopped as neccessary to maintain the relavant fire rating.

- Proposed 30 Minutes Subcompartment line (30 min integrity, 30 min insulation)
- Proposed 30 Minutes Fire Rated Construction (30 min integrity, 30 min insulation)
- Proposed 60 Minutes Compartment line (60 min integrity, 60 min insulation)
- Proposed 60 Minutes Fire Rated Construction (60 min integrity, 60 min insulation)
- Proposed 60 Minute External Wall Construction (60 min integrity, 15 min insulation)
- 60 Minute Fire Rated Construction - Protection to structure

FIRE SYMBOLOGY:
Additional symbols are included in order to illustrate other relevant protective measures:

Disabled Refuge Space
49m Travel distance

DRI Dry Riser Inlet
DRO Dry Riser Outlet
WRI Wet Riser Inlet
WRO Wet Riser Outlet
H **Fire Hydrant**
FB **Fire Barrier** (Within void)
FE Final Exit
SE Storey Exit

FIRE DOORS:

Fire Rated Doors are to be provided in accordance with BS8214:2008. Fire test certification is to be provided for all fire door variations. Fire doors are generally to be self closing unless noted otherwise in the door/ ironmongery schedule.

FIRE NOTES:

1. All proposed fire strategy plans are subject to agreement with Trust fire officer
2. Regulation 38 information (i.e. existing fire strategy in abeyance - existing Trust record information indicated in Grey.
3. Note - new stairs are planned as mattress evacuation stairs - the requirement for reciprocal means of escape through the new building is subject to confirmation and is contingent upon the exisiting fire safety and patients' evacuation plans

STATUS	REV	DATE	DESCRIPTION
S3	P72	17/06/21	Plant room reverted to blockwork structure
S2	P63	08/06/21	Updates following fire review meeting 210608
S3	P61	08/06/21	Issue for stage 4 comment
S3	P57	01/06/21	Fire Assessment Plans updated to incorporate VE and issued for review
S3	P50	24/05/21	Fire strategy drawing moved onto multiple sheets. Amendments as clouded.
S3	P37	04/05/21	Fire review issued for comment / development with Fire Engineer

CLIENT
RCHT/KIER

REVISED BY
Anna Porter

CHECKED BY
Joe Trevail

ORIGINATOR NO
154345

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
RCHT West Cornwall Hospitals
St Clare Street
Penzance
TR18 2PF

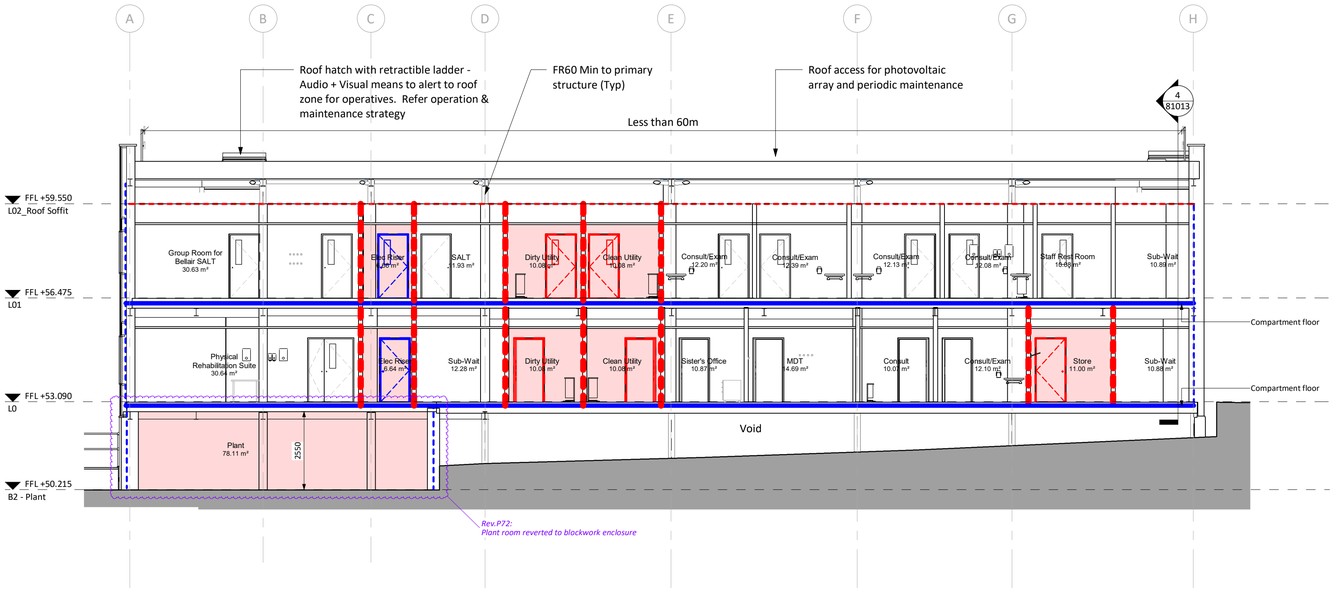
DRAWING TITLE
Designers Fire Assessment - Level 01

SUITABILITY STATUS
S3 : SUITABLE FOR REVIEW & COMMENT

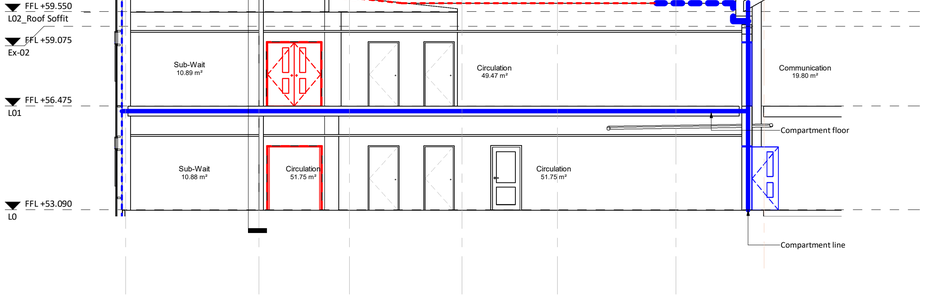
SCALE
As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
154345-STL-02-01-DR-A-XXXX-81012

REVISION
P72



Fire Review Section 1
1 : 100



Fire Review Section 2
1 : 100

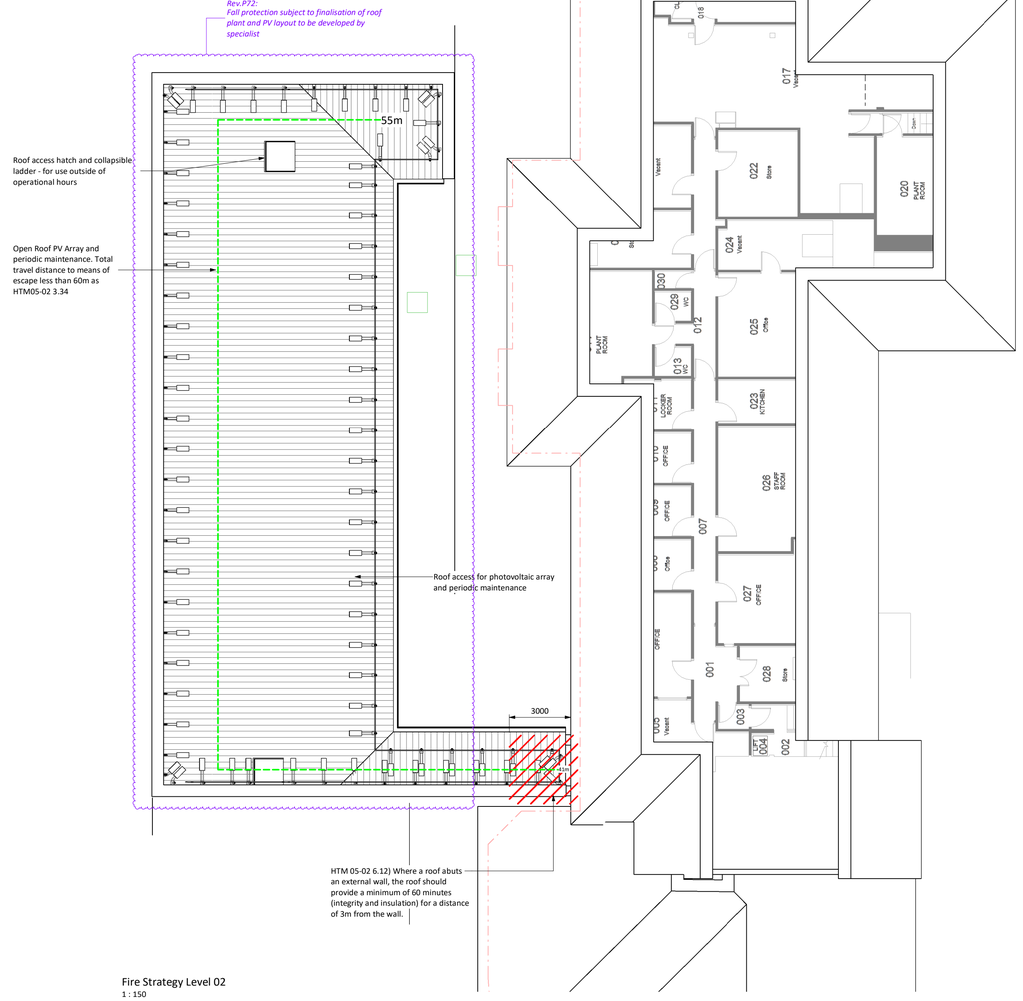
FIRE AREA DESIGNATION:

- Fire risk area
- Protected Stair / Corridor
- Protected Shaft
- Inner room condition

FIRE RATED CONSTRUCTIONS:

All fire rated constructions are to continue to the underside of the floor/ roof structure and be fire stopped as neccessary to maintain the relavant fire rating.

- Proposed 30 Minutes Subcompartment line (30 min integrity, 30 min insulation)
- Proposed 30 Minutes Fire Rated Construction (30 min integrity, 30 min insulation)
- Proposed 60 Minutes Compartment line (60 min integrity, 60 min insulation)
- Proposed 60 Minutes Fire Rated Construction (60 min integrity, 60 min insulation)
- Proposed 60 Minute External Wall Construction (60 min integrity, 15 min insulation)
- 60 Minute Fire Rated Construction - Protection to structure



Fire Strategy Level 02
1 : 150

Note: Drawing previously formed part of sketch S1011

L2 Fire Compartmentation Block Plan
1 : 500

Note - this drawing is a snapshot of the scheme as currently designed, as such is not co-ordinated with other disciplines: refer notes on drawing and separate package notes

COMPARTMENTATION & TRAVEL DISTANCES:

Roof area: 375 m² (GF)

Treated as plant for purposes of travel distances but not enclosed and likely to be only occasional access.

Maximum travel distance if one access hatch unaccessible is 42.6m

Maximum single direction of escape is 9.6m - this does not exceed maximum single escape travel distance of 12m for plantrooms as stated in HTM 05-02, clause 3.84

Maximum travel distance from any point to an exit (access hatch) is 17.2m - this does not exceed the maximum travel distance of 25m within plantrooms where an alternative means of escape is provided as stated in HTM 05-02, clause 3.84

FIRE NOTES:

1. All proposed fire strategy plans are subject to agreement with Trust fire officer
2. Regulation 38 information (i.e. existing fire strategy in abeyance - existing Trust record information indicated in Grey.
3. Note - new stairs are planned as mattress evacuation stairs - the requirement for reciprocal means of escape through the new building is subject to confirmation and is contingent upon the exisiting fire safety and patients' evacuation plans

STATUS	REV	DATE	DESCRIPTION
S3	P72	17/06/21	Plant room reverted to blockwork structure
S3	P61	08/06/21	Issue for stage 4 comment
S3	P57	01/06/21	Fire Assessment Plans updated to incorporate VE and issued for review
S3	P50	24/05/21	Fire strategy drawing moved onto multiple sheets. Amendments as clouded.

CLIENT
RCHT/KIER

REVISED BY
Anna Porter

CHECKED BY
Joe Trevail

ORIGINATOR NO
154345

CONSULTANT
STRIDE TREGLOWN
www.stridetreglown.com

PROJECT
RCHT West Cornwall Hospitals
St Clare Street
Penzance
TR18 2PF

DRAWING TITLE
Designers Fire Assessment - Level 02 (Roof) and Sections

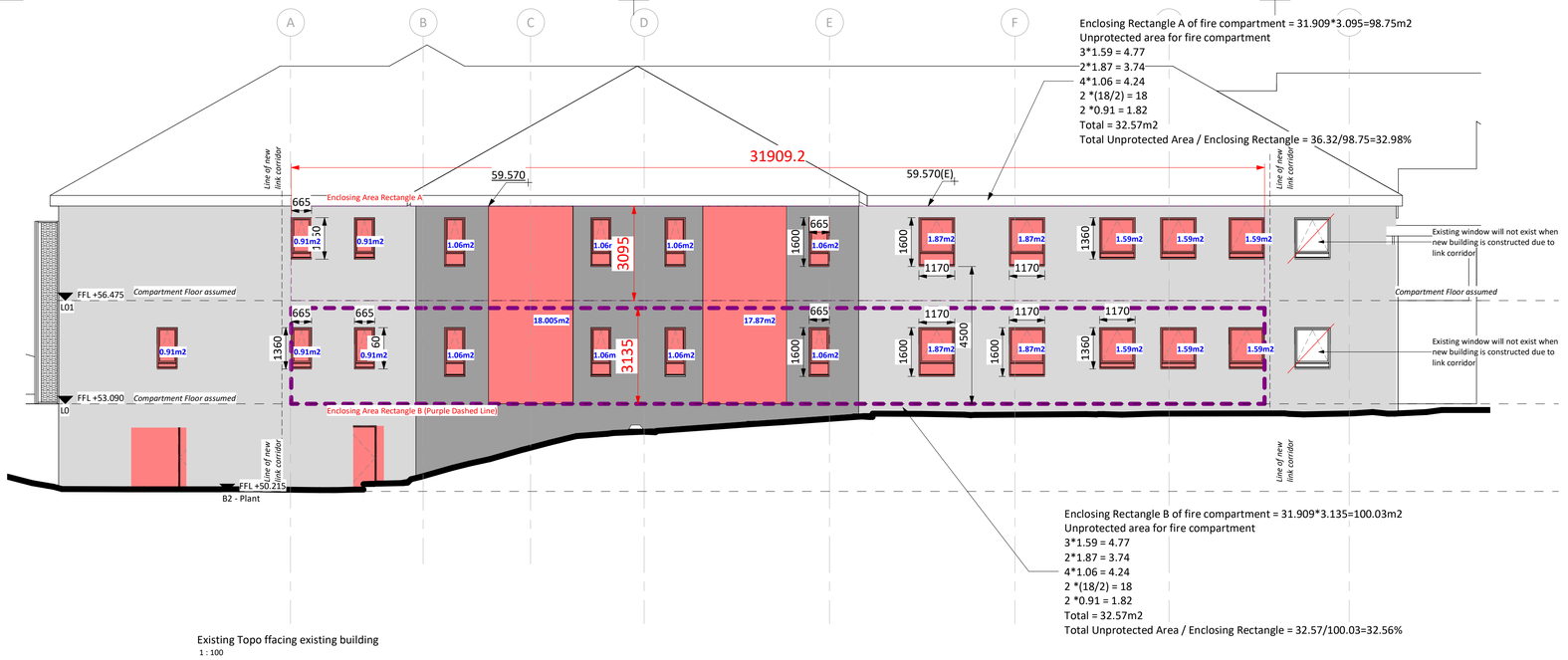
SUITABILITY STATUS
S3 : SUITABLE FOR REVIEW & COMMENT

SCALE
As indicated @ A1

PROJECT | ORIGINATOR | ZONE | LEVEL | TYPE | ROLE | CLASS. | NUMBER
154345-STL-02-02-DR-A-XXXX-81013

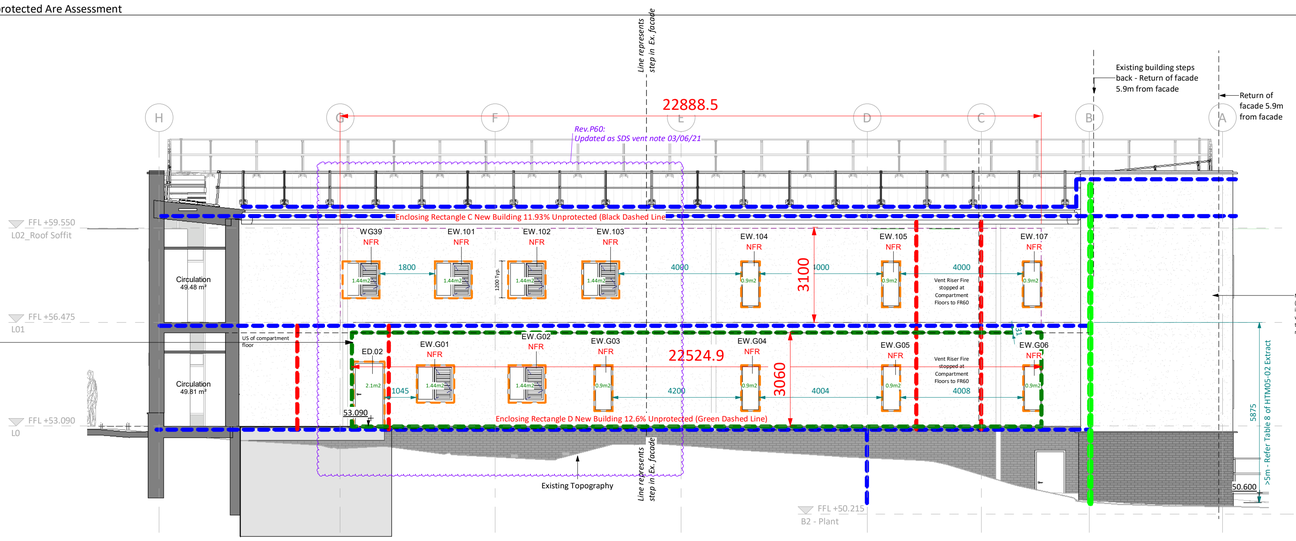
REVISION
P72

8. Appendix B – Space Separation Unprotected Areas review



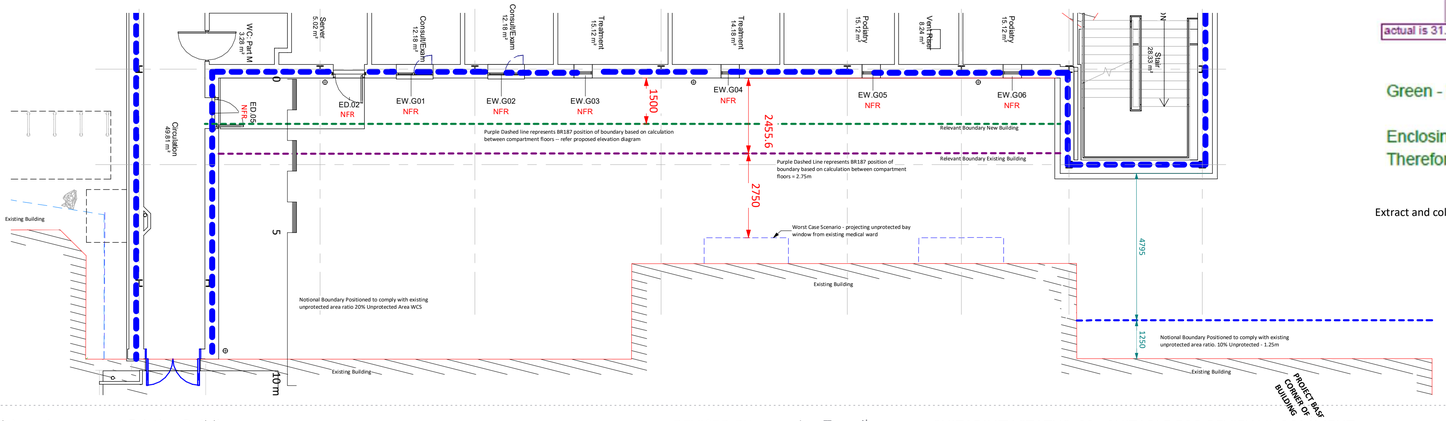
Existing Topo ffacing existing building
1 : 100

1 Existing building elevation Unprotected Are Assessment
1 : 100



2 North West Elevation Fire Protection Requirements
1 : 100

- Enclosing Rectangle between compartment floors
- 22.254 x 3.06 = 68.09m2
- Unprotected Area total = 8.58m2
- Expressed as a ratio of Enclosing rectangle = 12.6%
- Table B from BR187 – Unprotected Area not exceeding 20%, enclosing rectangle width not exceeding 24m = boundary of 1.5m



RESPONSIBILITY IS NOT ACCEPTED FOR ERRORS MADE BY OTHERS FROM SCALING FROM THIS DRAWING. ALL CONSTRUCTION INFORMATION SHOULD BE TAKEN FROM FIGURED DIMENSIONS ONLY.

0mm 50mm 100mm

STATUS	REVISION	DATE	DESCRIPTION
S3	P44	11/05/21	Building Regs issue with elements in abeyance
S3	P46	13/05/21	Based on Kemp Survey v1 and trust record information
S3	P55	28/05/21	Issue for Building Regulations plan check assessment
S0	P56	31/05/21	WIP to support interim cost plan update
S3	P57	01/06/21	Fire Assessment Plans updated to incorporate VE and issued for review
S3	P60	06/06/21	Updated to reflect SDS natural ventilation requirements as Javier email 03/06/21
S3	P69	15/06/21	BR 187 assessment undertaken following LABC review

Cavity Barriers:

- **Compartment** Line of compartment wall behind, junction fully firestopped to same fire rating as wall.
- **Cavity Barrier** Located vertically or horizontally within adjacent cavity. 30 min FR
- **Cavity Barrier** Located vertically or horizontally within adjacent cavity. 60 min FR
- **Cavity Closer** 30 min FR.

6.4 With the exception of unprotected areas, the minimum period of fire resistance provided by external walls should be as in Table 8.

Height to the top floor	Minimum period of fire resistance
Not more than 5 m	30 minutes
Over 5 m	60 minutes

Notes:

1. The minimum period of fire resistance relates to integrity and load-bearing capacity. The minimum provision for insulation is 15 minutes unless the external wall is less than 1000 mm from a boundary or adjacent building, when the requirement for insulation should be the same as that for integrity and load-bearing capacity.
2. An external wall that is also an element of structure should comply with Table 5.

Table 8 Minimum period of fire resistance of external walls

Table B: Enclosing rectangle 6 m high — No enclosing rectangle is <3m high therefore assume worst case as 6m

Width	20%	30%	40%	50%	60%	70%	80%	90%	100%
	Distance from relevant boundary for unprotected percentage not exceeding								
Minimum boundary distance (m)	Figures in brackets for residential, office and assembly uses								
3.0	1.5 (1.0)	2.0 (1.0)	2.5 (1.5)	3.0 (1.5)	3.0 (2.0)	3.5 (2.0)	3.5 (2.5)	4.0 (2.5)	4.0 (3.0)
6.0	2.0 (1.0)	3.0 (1.5)	3.5 (2.0)	4.0 (2.5)	4.5 (3.0)	5.0 (3.0)	5.5 (3.5)	5.5 (4.0)	6.0 (4.0)
9.0	2.5 (1.0)	3.5 (2.0)	4.5 (2.5)	5.0 (3.0)	5.5 (3.5)	6.0(4.0)	6.5 (4.5)	7.0 (4.5)	7.5 (5.0)
12.0	3.0 (1.0)	4.0 (2.0)	5.0 (3.0)	5.5 (3.5)	6.0 (4.0)	7.0 (4.5)	7.5 (5.0)	8.0 (5.0)	8.5 (5.5)
15.0	3.0 (1.5)	4.5 (2.5)	5.5 (3.0)	6.0 (4.0)	7.0 (4.5)	7.5 (5.0)	8.0 (5.5)	8.5 (5.5)	9.0 (6.0)
18.0	3.5 (1.5)	4.5 (2.5)	5.5 (3.5)	6.5 (4.0)	7.5 (4.5)	8.0 (5.0)	9.0 (5.5)	9.5 (6.0)	10.0 (6.5)
21.0	3.5 (1.5)	5.0 (2.5)	6.0 (3.5)	7.0 (4.0)	8.0 (5.0)	8.5 (5.5)	9.5 (6.0)	10.0 (6.5)	10.5 (7.0)
24.0	11.93% 3.5 (1.5)	5.0 (2.5)	6.5 (3.5)	7.5 (4.5)	8.5 (5.0)	9.0 (5.5)	10.0 (6.0)	10.5 (7.0)	11.5 (7.5)
27.0	3.5 (1.5)	5.0 (2.5)	6.5 (3.5)	7.5 (4.5)	8.5 (5.0)	9.5 (6.0)	10.5 (6.5)	11.0 (7.0)	12.0 (7.5)
30.0	3.5 (1.5)	5.5 (2.5)	6.5 (3.5)	8.0 (4.5)	9.0 (5.0)	10.0 (6.0)	11.0 (6.5)	11.5 (7.5)	12.5 (8.0)
40.0	3.5 (1.5)	5.5 (2.5)	32.5% 7.0 (3.5)	8.5 (4.5)	10.0 (5.5)	11.0 (6.5)	12.0 (7.0)	13.0 (8.0)	14.0 (8.5)
50.0	3.5 (1.5)	5.5 (2.5)	7.5 (3.5)	9.0 (4.5)	10.5 (5.5)	11.5 (6.5)	13.0 (7.5)	14.0 (8.0)	15.0 (9.0)
60.0	3.5 (1.5)	5.5 (2.5)	7.5 (3.5)	9.0 (4.5)	11.0 (5.5)	12.0 (6.5)	13.5 (7.5)	15.0 (8.5)	16.0 (9.0)
80.0	3.5 (1.5)	6.0 (2.5)	7.5 (3.5)	9.5 (4.5)	11.5 (5.5)	13.0 (6.5)	14.5 (7.5)	16.0 (8.5)	17.0 (9.5)
100.0	3.5(1.5)	6.0 (2.5)	8.0 (3.5)	9.5 (4.5)	11.5 (6.0)	13.5 (7.0)	15.0 (8.0)	16.5 (8.5)	18.0 (9.5)
120.0	3.5 (1.5)	6.0 (2.5)	8.0 (3.5)	10.0 (5.0)	11.5 (6.0)	13.5 (7.0)	15.5 (8.0)	17.0 (9.0)	18.5 (9.5)
130.0	3.5 (1.5)	6.0 (2.5)	8.0 (3.5)	10.0 (5.0)	11.5 (6.0)	13.5 (7.0)	15.5 (8.0)	17.0 (9.0)	19.0 (10.0)

Notes

Purple - Existing Building Enclosing rectangle B

actual is 31.909m

Calculated unprotected area expressed as a percentage of enclosing rectangle

Interpolation as introduction to tables - relevant boundary = 2.75m

$$= 2.5 + \left(\frac{32.5-30}{10}\right) * (3.5-2.5) = 2.75m$$

Equation 9

Green - Proposed Building Enclosing rectangle D

Enclosing rectangle between compartment floors = 3.6 x 22.254
Therefore width from Table B = 24m, Percentage not exceeding 20% indicates 1.5m for purpose group

Extract and colour coded markup from Table B of BR187

48 External fire spread

TITLE: Unprotected Area Assessment Existing Building
PROJECT: RCHT West Cornwall Hospitals
CLIENT: RCHT/KIER

REVISED BY: Joe Trevail
CHECKED BY: TBC
ORIGINATOR NO: 154345

SUITABILITY STATUS: S3 : SUITABLE FOR REVIEW & COMMENT
SCALE: As indicated @ A1

PROJECT-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-CLASSIFICATION-NUMBER
154345-STL-02-ZZ-DR-A-XXXX-81002
REVISION: P69

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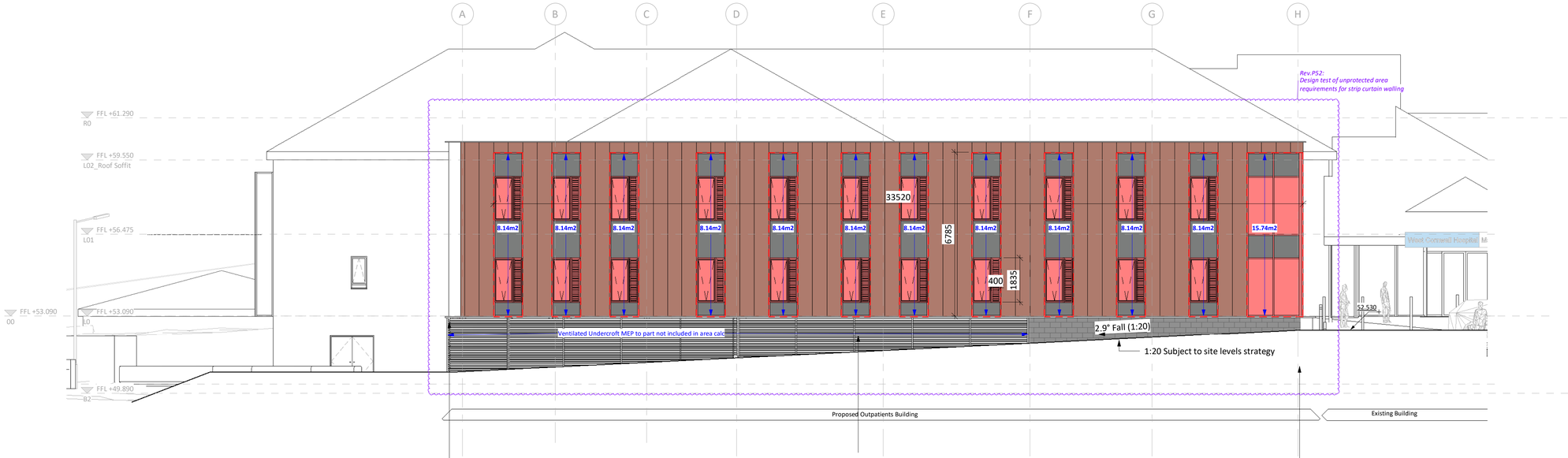
RESPONSIBILITY IS NOT ACCEPTED FOR ERRORS MADE BY OTHERS FROM SCALING FROM THIS DRAWING. ALL CONSTRUCTION INFORMATION SHOULD BE TAKEN FROM FIGURED DIMENSIONS ONLY.

0mm 50mm 100mm

STATUS	REVISION	DATE	DESCRIPTION
S3	P52	20/05/21	Based on Kemp survey v1 - WIP assessment of facade study to test unprotected areas of curtain walling arrangement



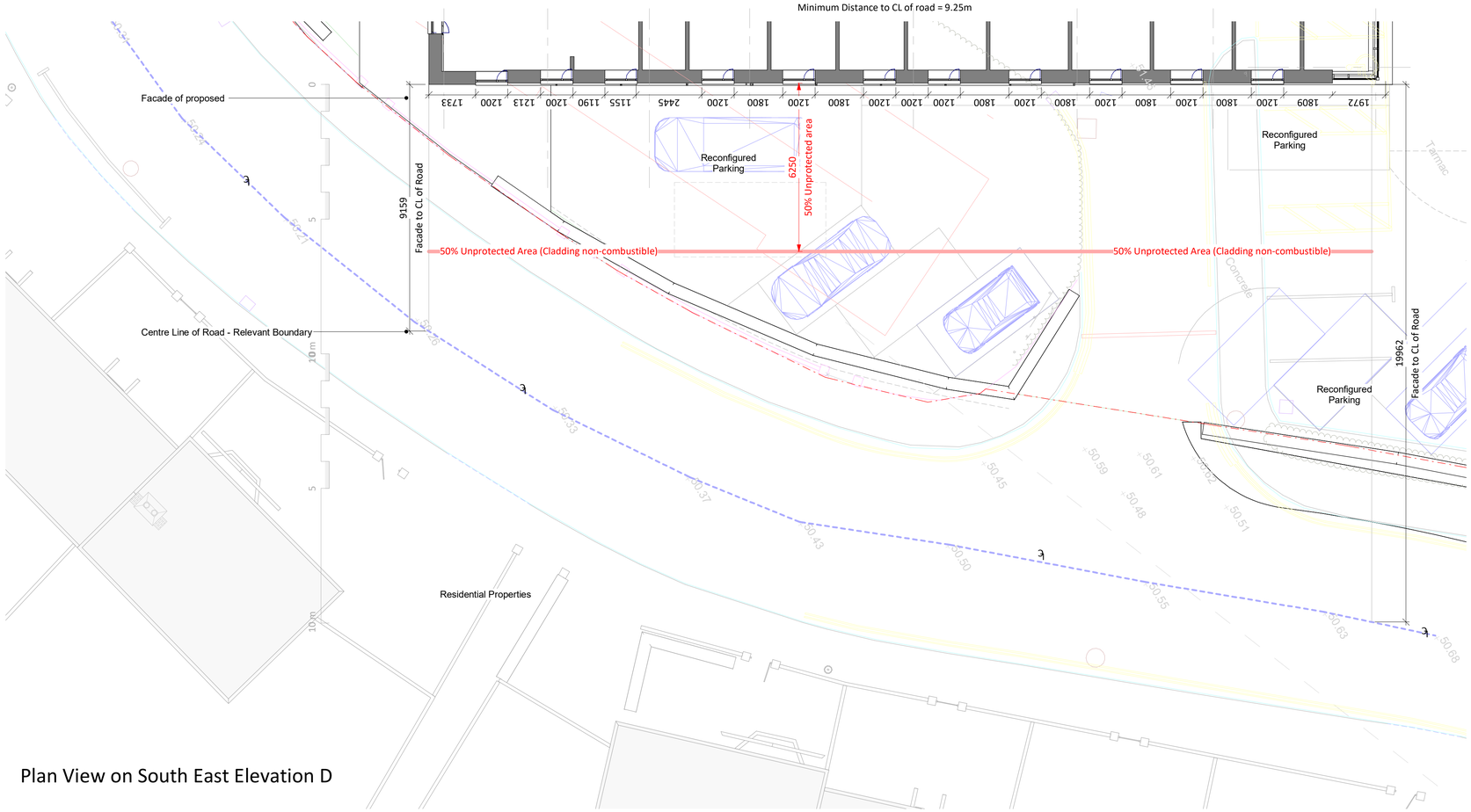
Non-Combustible Cladding Panel with curtain walling infill's.

Total Facade area = 255.0m2 excluding plant undercroft worst case scenario (i.e if included percentage of unprotected decreases).

Total unprotected area/curtain walling with openable vents (Red) = (8.14*11 =89.54)+(15.73)=105.27m2
Percentage of unprotected area = 41.2% Therefore assume tolerance 50%
Therefore Notional Boundary HTM05-02 Figure 20 = 6.25m
Minimum Distance to CL of road = 9.25m

South East Elevation D

1 : 100



Plan View on South East Elevation D

NOTE:
Drawing represents WIP design study testing unprotected area of curtain walling solution.

TITLE: South East Facade Curtain Walling Option study
PROJECT: RCHT West Cornwall Hospitals
CLIENT: RCHT/KIER

REVISED BY: Joe Trevail
CHECKED BY: TBC
ORIGINATOR NO: 154345

SUITABILITY STATUS: S3 : SUITABLE FOR REVIEW & COMMENT
SCALE: 1 : 100 @ A1

PROJECT-ORIGINATOR-ZONE-LEVEL-TYPE-ROLE-CLASSIFICATION-NUMBER
154345-STL-02-ZZ-DR-A-XXXX-81004
REVISION: P52

STRIDE TREGLOWN

9. Appendix C – Occupancy overview

STATUS	REV	DATE	DESCRIPTION
S0	P22	07/04/21	First issue refer notes
S2	P63	08/06/21	Updates following fire review meeting 210608

Drawing Notes:

- Refer drawing S1001-P51 for corresponding GA plans to which this schedule relates - no allowance for UTC works included within this schedule.
- Water appliance numbers are based on information available, detailed consultation with usergroup to be taken.

Approximate Occupancy and Pottable water appliances_S1012

Room Name	Count	Estimated Max No. of occupants assuming room's in use by physical mode of attendance	No of Outpatients	Occupancy Assumptions	Combined water applicances (e.g. CWHB, Sinks etc..) per space subject to detailed consultation with users	Water Commentary
L0						
Circulation	2	0	0	Nominal assuming all clinics in use	0	
Clean Utility	1	4	0	Intermittent	1	CWHB only
Cleaner	1	1	0	1 Intermittent	1	Janitorial Unit inc. hand wash function
Communication	1	0	0		0	
Consult	1	4	1	Assumes Patient + 1 relative/carer and two clinicians (4 Total)	1	CWHB only
Consult/Exam	3	12	3	Assumes Patient + 1 relative/carer and two clinicians (4 Total)	3	CWHB only
Dirty Utility	1	1	0	1 Intermittent	3	CWHB, Slop Hopper, Sink
Elec Riser	1	0	0	NA	0	
Lobby	1	0	0		0	
MDT	1	2	0		0	
Physical Rehabilitation Suite	1	8	7		0	
Podiatry	2	6	2	Assumes Patient + 1 Relative/Carer and two clinicians	2	CWHB only
Resus. T	1	0	0	NA	0	
Server	1	0	0		0	
Sister's Office	1	4	0		0	
Stair	1	0	0		0	
Store	1	1	0		0	
Sub-Wait	2	11	10	5 persons max per sub-wait	0	
Treatment	2	6	2	Assumes Patient + 1 Relative/Carer and up to three clinicians	2	CWHB (e.g. as X0145 ADB brief)
Vent Riser	1	0	0	NA	0	
WC: Part M	2	0	0		4	WC and wash-hand basin
		60	25		17	
L01						
Circulation	2	0	0		0	
Clean Utility	1	4	0	Intermittent	1	CWHB
Communication	1	0	0		0	
Consult	1	4	1	Assumes Patient + 1 relative/carer and two clinicians (4 Total)	1	CWHB
Consult/Exam	6	24	6	Assumes Patient + 1 relative/carer and two clinicians (4 Total)	6	
Dirty Utility	1	1	0	1 Intermittent	3	CWHB, Slop Hopper, Sink
Double Side Consult/Exam	2	8	2	Assumes Patient + 1 relative/carer and two clinicians (4 Total)	2	
Elec Riser	1	0	0		0	
Group Room for Bellair SALT	1	15	12	Assumed 15 persons (H1313-01A)	1	CWHB
Lobby	1	0	0		0	
Podiatry	1	3	1	1 Patient and 2 Clinicians	0	
Resus. T	1	0	0		0	
SALT	2	8	2	Assumes Patient + 1 relative/carer and two clinicians (4 Total)	4	CWHB +# Therapy sink
Staff Rest Room	1	0	0		0	
Stair	1	0	0		0	
Sub-Wait	1	5	5		0	
Vent Riser	1	0	0		0	
WC: Part M	2	0	0		4	WC and wash-hand basin
		72	29		22	

