

Design Note

To: Field House Design Team

Cc: .

From: Luis Ruivo, Principal Acoustics Engineer

Date: 11 August 2021

Project: Field House

File ref: NOTE-1013359-5A-LR-20210811-Facade requirements note-Rev00

Façade sound insulation requirements.

1. Introduction.

This design note sets out to summarise and present the façade sound insulation requirements currently set for the scheme, as well as present initial commentary on recommended acoustic enhancement options to be explored with the Design Team as the design develops.

2. Acoustic criteria.

2.1 Standard guidance – BS 8233:2014.

BS 8233:2014 '*Guidance on sound insulation and noise reduction for buildings*' provides guidance for control of noise in and around buildings. The British Standard advises appropriate criteria and limits for different situations including rooms for residential purposes.

The advice for living accommodation (Table 4 of BS 8233:2014) is reproduced below in Table 1. These are desirable internal ambient noise levels for spaces when they are unoccupied. These values are based on the guidelines published by the WHO in *Guidelines for Community Noise*.

Table 1 BS8233 guideline indoor ambient noise levels for dwellings

Activity	Location	Daytime (07:00 to 23:00)	Night-time (23:00 to 07:00)
Resting	Living room	35 dB $L_{Aeq,16 h}$	-
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,16 h}$	30 dB $L_{Aeq,8 h}$

NOTE 4 Regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax, F}$ depending on the character and number of events per night....

As no specific value is provided in BS 8233 for noise from individual events (see Note 4 above), it is common practice to consider the guidance from the World Health Organization '*Night noise guidelines for Europe*'. The WHO document states that for a good night's sleep, a maximum sound level of L_{AFmax} 45 dB should not be exceeded more than 10-15 times per night.

2.2 Kirklees Council requirements.

2.2.1 Planning Condition 13 – General noise break-in control.

Kirklees Council planning condition 13 states that:

'Prior to first occupation of any apartment within the residential use hereby approved, and subject to details to be approved pursuant to condition 3, the sound attenuation works as specified in Table 5 ("Recommended performance of façade elements") of the Acoustics Planning Report (Hoare Lea, Rev 01, 15/05/2019) shall be completed for that apartment and shall be retained thereafter.'

2.2.2 Planning Condition 14 – Overheating ventilation.

Kirklees Council planning condition 13 states that (HL emphasis):

'Prior to first occupation of the residential use hereby approved, a ventilation scheme for apartments that would need to keep windows closed to prevent adverse amenity impacts due to noise shall be submitted to and approved in writing by the Local Planning Authority.

The ventilation scheme shall show how habitable rooms of these apartments shall be provided with sufficient ventilation to help control thermal comfort and avoid overheating during hot weather without the need to open windows. All works forming part of the approved ventilation scheme shall be completed prior to occupation of that apartment and shall be retained thereafter.'

3. Façade sound insulation requirements.

3.1 Initial façade sound insulation recommendations.

An initial façade sound insulation assessment was undertaken and presented in Hoare Lea report *REP-101182-RJ-20190515-Acoustic planning report-Rev01-F*, dated 15 May 2019 to support the planning submission for the scheme.

As open windows are not considered suitable for the scheme based on the results of the noise survey carried out and presented within the same document, the initial façade assessment recommended that alternative means of ventilation, such as passive ventilation or full-house mechanical ventilation be explored and provided initial minimum sound insulation requirements for the building envelope on the basis of a passive ventilation strategy as presented in Table 2 below.

Table 2 Recommended performance of facade elements

Apartment facade	Room	Trickle ventilator	Glazing (including framing system)
Facade unscreened from Dewsbury Ring Road	Bedrooms and living rooms	$D_{ne,w}+C_{tr}$ 45 dB	R_w+C_{tr} 34 dB
Facade screened from Dewsbury Ring Road		$D_{ne,w}+C_{tr}$ 45 dB	R_w+C_{tr} 27 dB

Note: Kirklees Council planning condition 13 makes reference to these performances as a minimum to be installed on site.

3.2 Comment on Kirklees overheating requirement and scheme evolution.

In line with planning condition 14, a suitable means of providing additional ventilation into the habitable rooms of the proposed apartment units needs to be demonstrated without reliance on openable windows, to protect user amenity.

As such the ventilation strategy for the development has evolved since the initial planning submission with full-house mechanical provision being currently proposed to provide both background ventilation and an increased 'boost' operation mode to satisfy Part F requirements to control overheating during the hottest periods of the year. Trickle ventilators are understood not to be sufficient to provide this.

Alternatives to this would comprise the introduction of louvred systems within the façade to provide a larger free path area for passive ventilation, but given the spatial and heritage constraints upon the site, this is understood to be impractical.

Therefore, the provision of mechanical services ventilation remains the more robust method of addressing the need for providing an overheating control strategy throughout the site in order to comply with the requirements of planning condition 14.

3.3 Proposed façade sound insulation requirements.

3.3.1 Enhanced glazing configurations.

The minimum sound insulation requirements for the glazed elements on the scheme based on the current drawings are presented in a marked-up appendix to this note, for added clarity.

It is important to note that the standard guidance documents provide cumulative internal noise levels to be achieved within habitable spaces, ie from external noise break-in and building services plant contributions (where present).

On the basis of the above, it may be prudent to enhance the current glazing specification to ensure external noise break-in is sufficiently controlled via the building envelope in order to enable the building services selections to achieve realistic noise contributions within habitable spaces given the expectable increased operation duties during overheating operation and spatial constraints within each residential unit.

Any enhancements to the minimum sound insulation performance of the glazed elements would at this stage be expected to be achievable through thermal double glazing configurations without resorting to acoustic laminate glazing, although these are subject to a detailed updated assessment once proposed sections, elevations, general arrangement and reflected ceiling plan drawings become available.

Confirmation is also requested on whether any heritage constraints imposed upon the scheme require the installation of sash windows, as the performance through these elements can be limited

3.3.2 Control of noise break-in via façade louvres.

It is understood that the current proposals comprise routing support and extract ducting via the external façade and not via louvres above the windows due to heritage constraints. Consideration to the acoustic integrity of this detail will need to be made as the design develops and more information becomes available such that the acoustic integrity of the façade is not compromised via this route.

3.4 Commercial unit clarification request.

The scope of works and design aspirations for the ground floor commercial unit should be confirmed in order to determine a suitable minimum sound insulation performance for the access door and windows to this space.

Should the base-build be intended to accommodate high levels of amplified music within the unit, this will have implications on the building envelope and internal separating floor design to residences above.



Planning stage minimum glazing sound insulation requirements.

 Minimum $R_w + C_{tr}$ 34 dB glazing

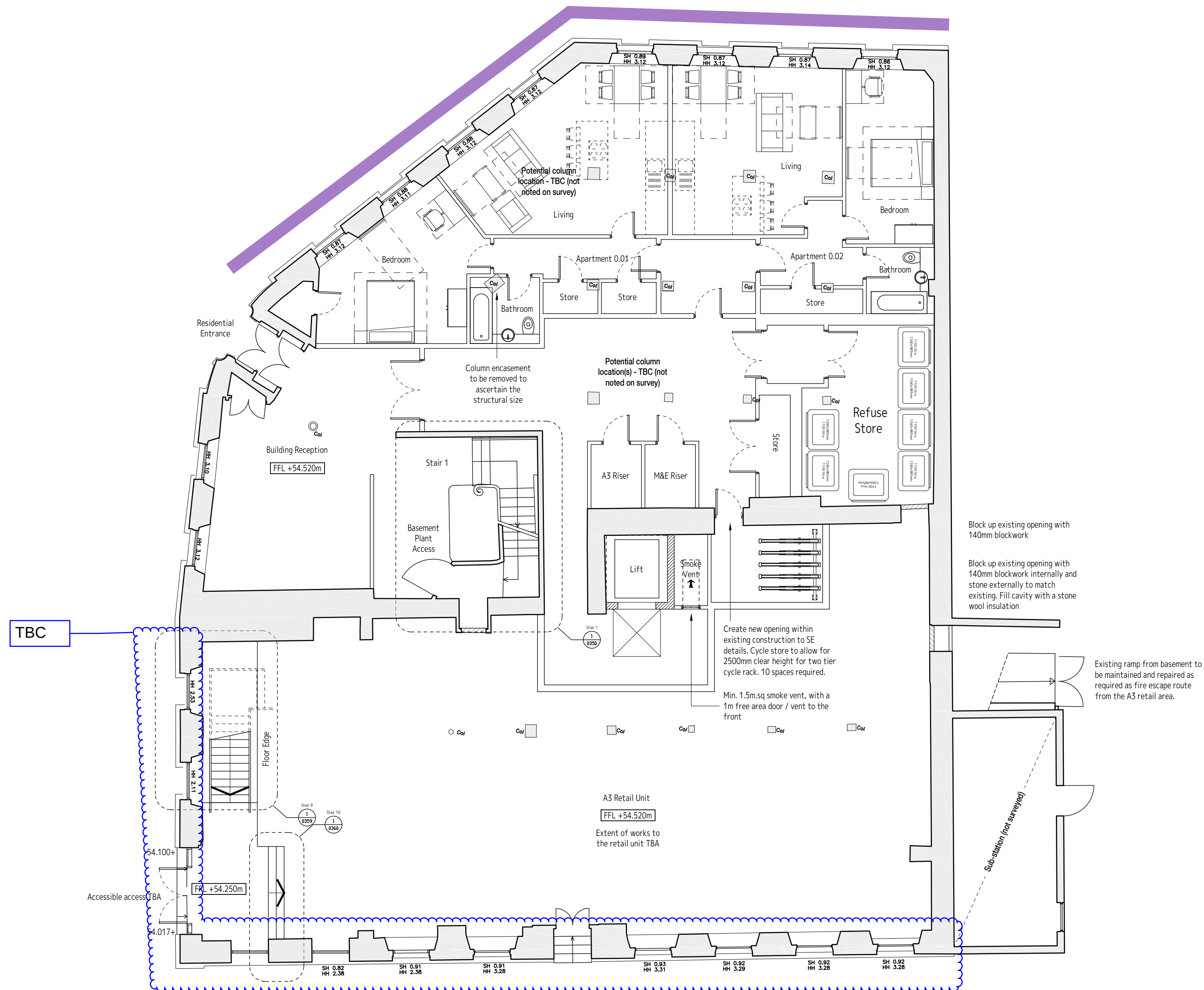
 Minimum $R_w + C_{tr}$ 27 dB glazing

Sketch mark up.

10/08/2021

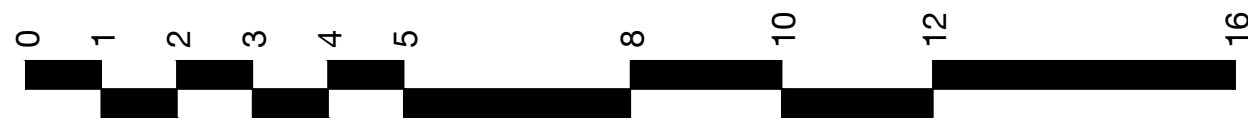
APPENDIX

Disclaimer: These sketches are purely illustrative and prepared during design phase to be discussed. They are not for construction and they are not replacing the full set of drawings.



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Note: Information shown on this drawing is taken from Tower Geomatics Survey data TG-190114/201 to 208, June 2019. Refer to their original information for description of items.



Minimum facade requirements

Minimum R_w+C_{tr} 34 dB glazing

Minimum R_w+C_{tr} 27 dB glazing

HOARE LEA 

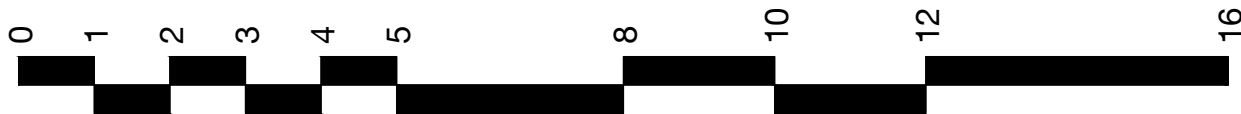
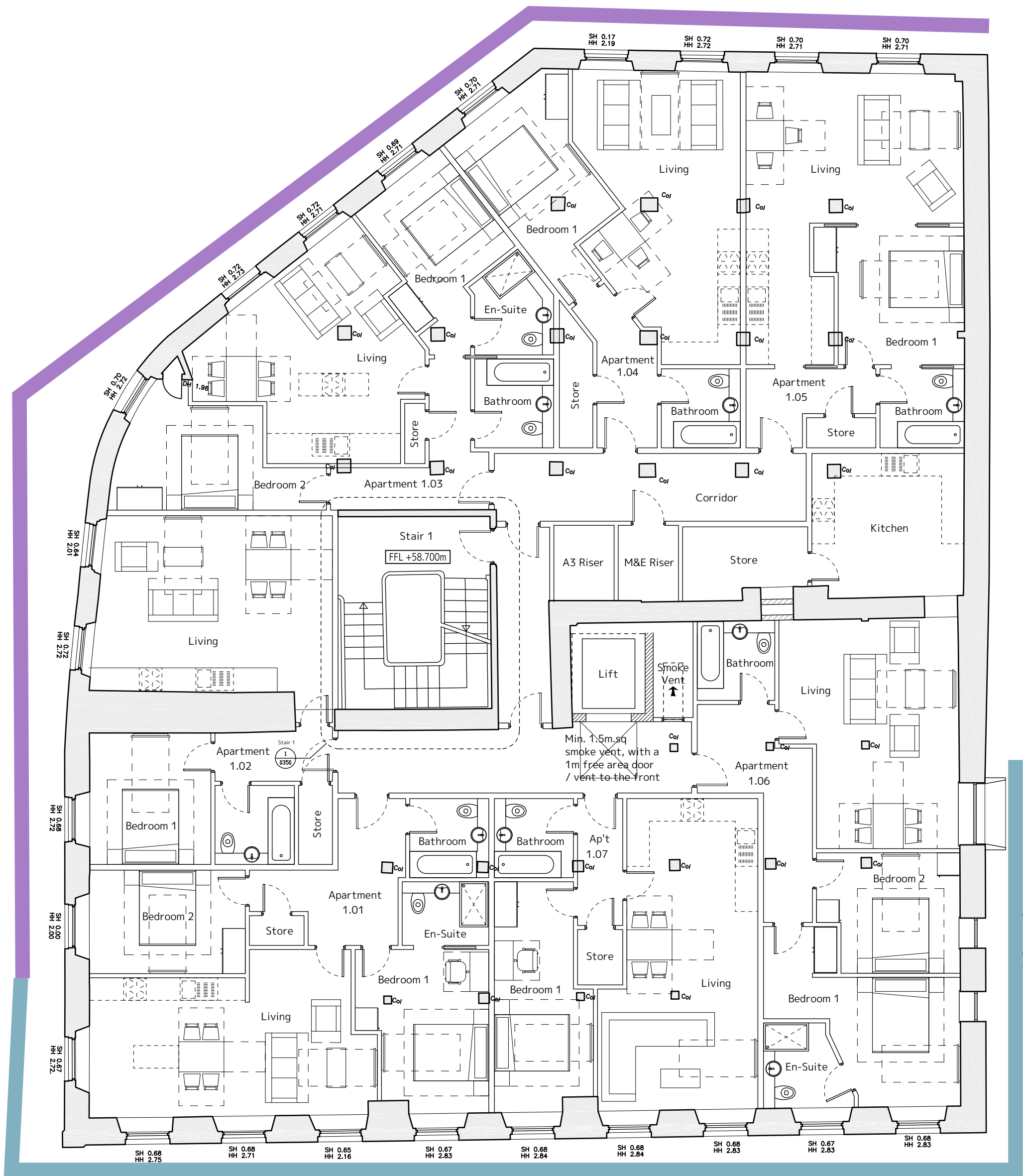
Sketch mark up.

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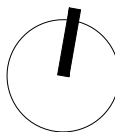


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REVISIONS			
A	19/07/21	UJ	ML
General update following review of scheme			



Notes

This drawing is based on the latest structural information received to date. The scheme is subject to design development, and any change to suit the structural solution will potentially have an effect to information shown on these GA's.

This drawing is to be read in conjunction with all relevant Structural, M&E Consultant Drawings and DLA Series 200 drawings for GA Plans, Sections, Elevations and Fire Strategies.

This drawing is subject to Approved Inspector and Local Authority comments / approvals and associated detail design development.

Door locations and widths shown are based on assumptions to comply with Building Regulations. No specific Client requirements have been shown, and this drawing is subject to the development and incorporation of Client access requirements.

The location of incoming services are to be fully resolved with the M&E Consultant, who will also agree access to SVP's and RWP's. Size, number and location of access points are shown indicative only pending agreement.



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PROJECT
Field House
15 Wellington Road, Dewsbury

TITLE
Proposed First Floor Plan

SCALE	DATE
1:100 @A1	08/08/19

DRAWN	REVIEWED
DK	JO

DLA REF	NUMBER	REVISION
2018-051	0223	A

STATUS
Tender
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Minimum facade requirements

Minimum R_w+C_{tr} 34 dB glazing

Minimum R_w+C_{tr} 27 dB glazing

HOARE LEA 

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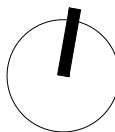


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General update following review of scheme			



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PROJECT
Field House
15 Wellington Road, Dewsbury

TITLE
Proposed Second Floor Plan

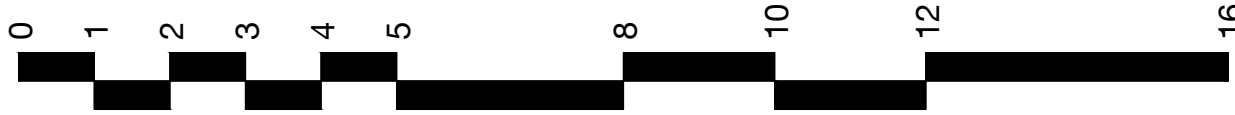
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2018-051	0224	A

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Minimum facade requirements

Minimum R_w+C_{tr} 34 dB glazing

Minimum R_w+C_{tr} 27 dB glazing



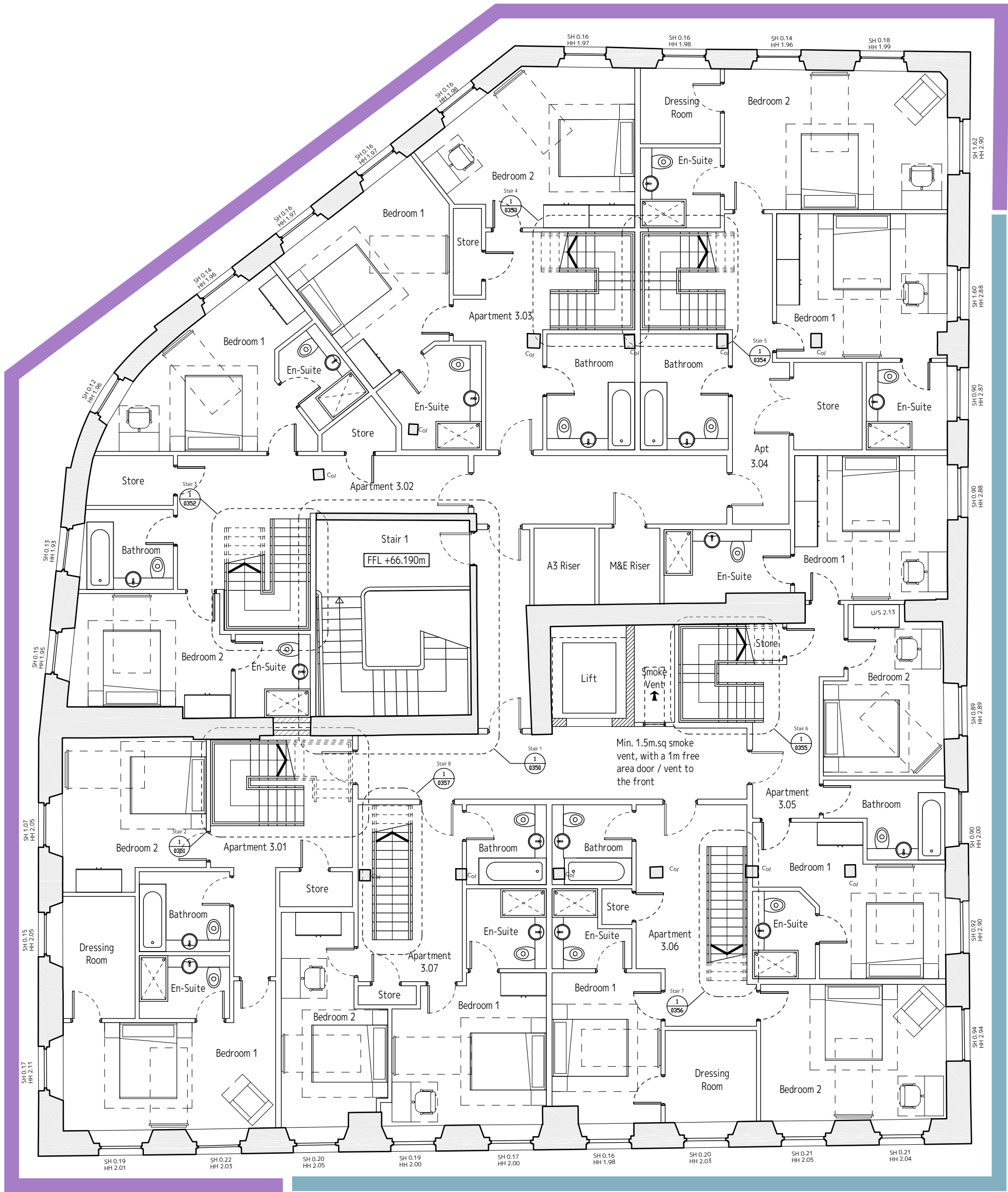
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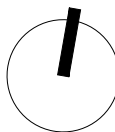


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DLA REF	NUMBER	REVISION
2018-051	0225	A

STATUS
Tender
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