HIGHGATE NEWTOWN COMMUNITY CENTRE

ACOUSTIC EMPLOYER'S REQUIREMENTS

Acoustics Report A973 R05A

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Report for:

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Contents

1 Introduction

Ion Acoustics is appointed to advise RCKa Architects, McBains and the London Borough of Camden on the redevelopment of the Highgate Newtown Community Centre (HNCC).

The proposed scheme will involve the demolition of most of the existing community centre and the construction of a new community centre with new residential accommodation.

The site plan is shown in Figure 1 below. The scheme comprises four blocks:

Block A – A new residential block

Block B – The new community centre including the community hall

Block C – Two new town houses converted within the shell of the retained Gospel Hall

Block D – A new mixed-use block, adjoining Block B with a Gym for the community centre on the ground floor also with a ground floor studio flat and residential accommodation above.

The scheme has been granted planning permission with a Section 73 amendment (reference 2018/5774/P) granted in March 2019 for various changes. The planning conditions relating to noise are provided in Appendix A.

This report sets out the acoustic employers requirements for the scheme. The acoustic requirements for the scheme marked-up drawings in Appendix B.

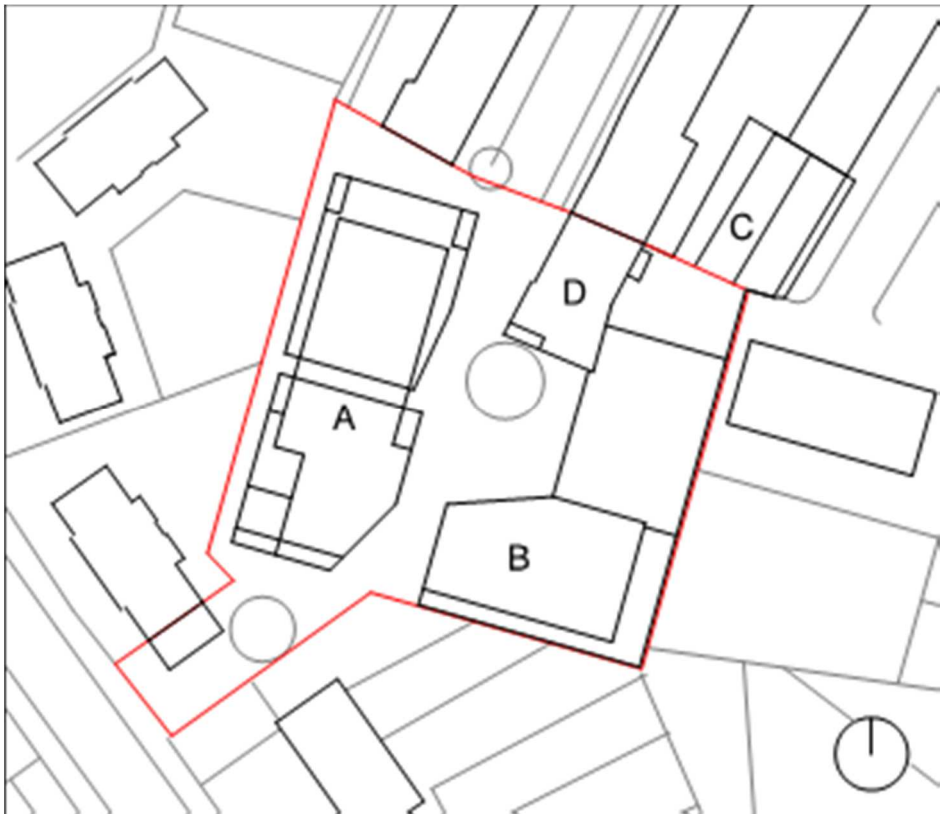


Figure 1 – Site Plan showing block numbers

2 Blocks A1 & A2 Residential

The marked-up drawings attached in Appendix B show the acoustic requirements for separating walls, partitions and corridor ceilings in Blocks A1 and A2 to comply with Building Regulations E1, E2, & E3. Also shown are the maximum permitted noise levels within the living rooms and bedrooms to comply with planning condition No. 24.

Planning Condition (No 23) requires sound insulation standards between residential and commercial accommodation to be 10dB better than those stated for requirement E1 but this does not apply to Blocks A1 and A2 as there is no commercial accommodation. In Block A1 and A2 therefore the Employer's Requirement is to comply with Parts E1, E2 and E3 of the Building Regulations to achieve the new-build airborne and impact sound insulation standards of Approved Document E. These and other Employer's Requirements relating to Blocks A1 and A2 are detailed below.

2.1 Building Regulations Requirement E1

Requirement E1 of the Building Regulations states: *"Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from adjoining buildings."*

To satisfy Requirement E1, the sound insulation between houses and between flats, and between common areas and the flats, must achieve the numerical standards stated in Approved Document E to the Building Regulations. The numerical standards from Approved Document E are shown in Table 1 below together with the enhanced standards required by the planning condition. Pre-completion testing will be required to demonstrate that the on-site requirements have been achieved. The separating wall constructions are shown in the marked-up drawings in Appendix A.

Table 1 – Sound Insulation Standards for Blocks A1 and A2

Element	Sound Insulation Requirements
	Approved Document E Requirement (New Build)
New Build Separating walls	≥45 dB $D_{nT,w}+C_{tr}$ airborne
New-Build Separating floors	≥45dB $D_{nT,w}+C_{tr}$ airborne ≤62dB $L'_{nT,w}$ impact

Airborne sound describes sounds which travel through the air before entering the structure such as voices and televisions. Impact sound describes sounds which occur as a result of a direct impact on the structure such as footsteps. For airborne sound, the higher the $D_{nT,w}+C_{tr}$ value, the better the sound insulation whereas for impact sound insulation, the converse is true; the lower the $L'_{nT,w}$ value, the better the impact sound insulation.

One way of achieving this is to use Robust Details constructions[1]. The party walls and floors selected for the residential parts during the client's design stage generally comply with Robust Details. These are described in this report to show the current design. Therefore, for Blocks A1

[1] www.robustdetails.com

and A2, the contractor will have the option of registering the development with Robust Details and following their accreditation process, thus generally avoiding pre-completion tests. Alternatively the constructions could be used with appropriate modifications. Pre-completion testing would then be needed to demonstrate compliance.

The separating wall and floor constructions are discussed below.

2.2 Party Wall

The party walls generally comprise lightweight twin-stud constructions as per Robust Detail E-WS-5. This is shown below in Figure 2.

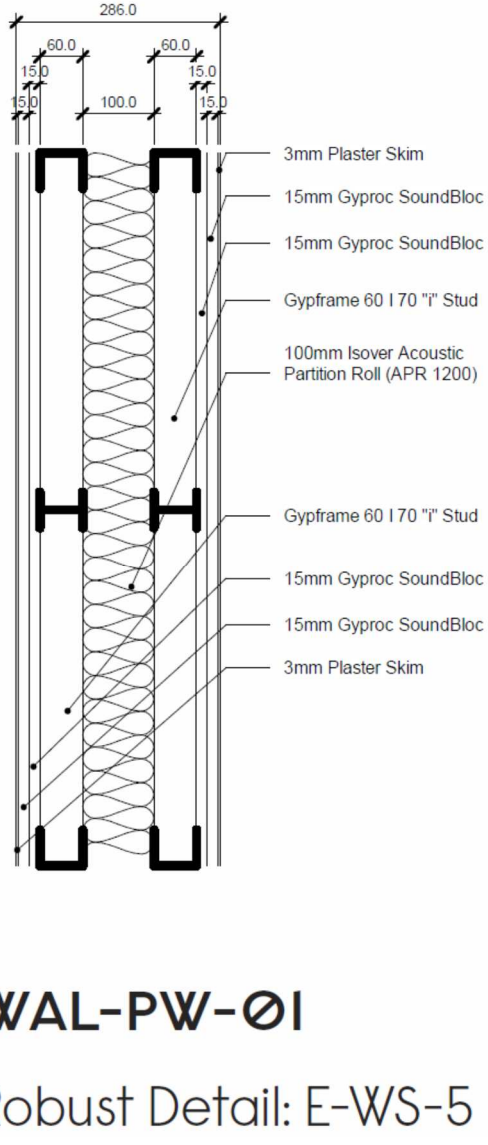


Figure 2 – Robust Detail E-WS-5

2.3 Wall Linings

There are some instances in block A2 where the lift shaft is adjacent to a living room. The lift shafts are concrete shear walls. To reduce noise from the lifts, an independent plasterboard wall lining is required comprising 12.5mm plasterboard on independent metal studs which must not touch the lift shaft. A mineral fibre quilt 50mm thick should be provided in the cavity.

2.4 Entrance Doors to Flats

Requirement E1 also applies to the walls separating the flats from the common parts including the corridors. However Approved Document E recognises that the sound insulation in many cases will be limited by the entrance door. In Section 2.26 ADE states: "*Ensure that any door has good perimeter sealing (including the threshold where practical) and a minimum mass per unit area of 25 kg/m^2 or a minimum sound reduction index of 29 dB R_w*". Therefore the door to each flat shall be specified to achieve 29 dB R_w. Generally the use of acoustically rated door sets (ie a door and frame) will ensure a more reliable performance.

2.5 Separating Floor

The separating floor comprises a 250mm structural concrete slab with a floating 75mm thick screed which would incorporate underfloor heating. This would be similar to Robust Detail construction E-FC-18 which has a minimum 225mm concrete slab. For impact sound control, it is necessary provide a resilient layer *in addition* to the thermal insulation provided for the underfloor heating. The acoustic resilient layer is typically 6mm thick and can be provided under the thermal insulation. The Robust Detail lists the following products which could be used for E-FC-18:

- Thermal Economics 6mm Iso Rubber and IsoEdge
- Cellecta® YELOfon® HD10+ and E-strip
- Icopal-MONARFLOOR® TRANQUILT® system
- Thermal Economics IsoRubber Base HP3 and IsoEdge
- InstaCoustic InstaLay 65
- Thermal Economics Iso Rubber Code and IsoEdge 6/260
- Regupol Quietlay

Note that to minimise flanking sound transmission, it is essential that separating walls are built directly on the base floor and not on the floating screed. The screed must be broken at each separating wall and an appropriate resilient perimeter detail provided to avoid bridging. The manufacturer's details for the chosen resilient layer and Robust Details recommendations should be followed in all cases.

2.6 Requirement E2

Requirement E2 of the Building Regulations states: *"Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that: (a) internal walls between a bedroom or a room containing a water closet, and other rooms; and (b) internal floors provide reasonable resistance to sound."*

To meet requirement E2, it will be necessary to use partitions which achieve a laboratory sound insulation rating of 40 dB R_w. Note that this is a design requirement only and there is no requirement for on-site testing. Examples of partitions and internal floors which meet the 40 dB R_w requirement are shown in Approved Document E, but this is not an onerous requirement and 40 dB R_w can be achieved by the majority of practical plasterboard constructions.

Part E2 also states: *"Requirement E2 does not apply to: (a) an internal wall which contains a door; (b) and internal wall which separates an ensuite toilet from the associated bedroom; (c) existing walls and floors in a building which is subject to a material change of use."*

Requirement E2 will therefore only apply to the walls between rooms in individual flats, which do not contain doors. The marked-up drawings show the partitions where this applies.

2.7 Requirement E3

Requirement E3 of the Building Regulations states: *"The common internal parts of buildings which contain flats or rooms for residential purposes shall be designed and constructed in such a way as to prevent more reverberation around the common parts than is reasonable."*

"Requirement E3 only applies to corridors, stairwells, hallways and entrance halls which give access to the flat or room for residential purposes."

For hallways and corridors there are two methods of demonstrating compliance: either "Method A" by covering an area greater than, or equal to the floor area with an absorber meeting sound absorption Class C according to BS EN ISO 11654: 1997. Or, "Method B" by calculating the total absorption, taking into account all the room surfaces, and ensuring that 0.25m^2 total absorption area is provided per cubic metre of volume for corridors and hallways.

In this case, the requirement applies to the communal corridors on each floor. It will be most straightforward to provide a ceiling meeting sound absorption class C in these areas. The marked-up drawings show only the areas where absorptive ceilings are required under requirement E3; that is, where there is a corridor which provides direct access to a flat. Since there are no flat entrance doors directly off the stairs, there is no absorption requirement for the stairs in Blocks A1 and A2.

2.8 Noise Levels in Apartments

A planning condition (No 24) requires noise levels within the residential elements to meet the noise standards specified in BS 8233: 2014. These are stated in Table 2 below.

Table 2 – Employer's Requirements for Internal Noise Levels in Residences

Activity	Location	Daytime (07.00 – 23.00)	Night-time (23.00 to 07.00)	Maximum Noise Level from Lifts
Sleeping (daytime resting)	Bedroom	35 dB $L_{Aeq,\ 16\ hour}$	30 dB $L_{Aeq,\ 8\ hour}$	25 dB $L_{Amax,F}$
Resting	Living Room	35 dB $L_{Aeq,\ 16\ hour}$	--	30 dB $L_{Amax,F}$

The daytime and night-time values include noise from the proposed MVHR system. This must be designed to meet the above limits in conjunction with environmental noise immissions from the exterior.

Maximum noise levels for the operation of the lift are also given in BS 8233: 2014. The standard advises that these are upper guideline values and every effort should be made to minimise noise and vibration. A wall lining is proposed for the living rooms to reduce lift noise as per Section 2.3.

3 Block B Community Centre and Community Hall

The attached marked-up drawings in Appendix B show the acoustic Employer's Requirements for Block B.

3.1 BREEAM Requirements

The requirements are selected to achieve appropriate acoustic conditions for the new development and are primarily derived from guidance based on the need to achieve BREEAM acoustic credits in respect of Hea 05 and Pol 05. This is being assessed under BREEAM 2014. The contractor is responsible for meeting these requirements and providing sufficient acoustic evidence for the credits to be awarded (including commissioning testing on completion).

Hea 05

The BREEAM 2014 advice for "Other" buildings types indicates that up to three credits are available: *"Where a suitably qualified acoustician… is appointed to define a bespoke set of performance requirements for all function areas in the building using the three acoustic principles defined in criterion 1, setting out the performance requirements for each and the testing regime required.*

The three principles in criterion 1 relate to: a) sound insulation; b) indoor ambient noise levels; and c) reverberation times.

- Indoor ambient noise levels (from BS 8233: 2014 and BB93 Acoustic Design of Schools)
- Sound insulation (for acoustically sensitive rooms) as required by BS 8233: 2014
- Reverberation Time in rooms or areas used for speech or performance (from BB93)

Bespoke requirements have been set for these quantities as marked up on the Employer's Requirement drawings. The marked up drawings in Appendix B show performance requirements to allow three BREEAM credits to be achieved for Block B, for the community hall and for the non-residential parts of Block D. A discussion on proposed methods of meeting the selected standards follows in the sections below. Additional requirements have been proposed for rooms not covered by the BREEAM credit in accordance with good general acoustic design principles, but they are not part of the BREEAM requirements, however they still form part of the ERs. At this stage, not all of the room uses are fully defined. Instead many rooms are labelled as general activity rooms. These are not considered to be teaching rooms. It may be necessary to revisit the acoustic design requirements if there are specific room uses identified.

Pol -05

Pol 05 allows a single credit to be awarded in relation to external noise levels where a noise limit based on the existing noise levels is met. The criterion limits external noise to +5dB above the background noise during the daytime and +3dB during the night. Note that planning condition 26 limits noise to 10dB below the background noise so Pol 05 should be achieved by default as the planning conditions are more onerous. Mechanical services noise control is discussed in Section 6.1.

3.2 Indoor Ambient Noise Levels

The BREEAM 2014 requirement for internal noise levels in "Other Building Types" is for all rooms to meet the targets in BS 8233: 2014 except for education or learning spaces where BB93 applies. The following noise limits shown in Table 3 below are derived from Table 6 of BS 8233: 2014 and from Table 1 of BB93 (2015). Professional judgement has been used to impose an appropriate limit where there is a divergence between the two standards.

Table 3 – Block B Internal Employer's Requirement Noise Limits

Room	Mech Vent?	ER Noise Limit dB L_{Aeq}	Source / Comments
Community Hall	Yes	35 dB(A)	BB93 for a multi-purpose hall
Café	No	45 dB(A)	BB93 (Dining Room). BS 8233: 2014 has 50 - 55 dB L_{Aeq} for a "Cafeteria"
Office	Grd Fl Only	40 dB(A)	BS 8233: 2014 (35-40 dB L_{Aeq} for executive office)
Kitchen / Servery	Yes	50 dB(A)	BS 8233: 2014 / BB93
Toilets	Yes	50 dB(A)	BB93 (BS 8233 does not give a target)
Ground Floor Meeting Rooms	Yes	40 dB(A)	BS 8233: 2014 (35-45 dB L_{Aeq} for Staff/meeting room)
Circulation / Corridor	No	45 dB(A)	BS 8233: 2014 (range 45 – 55dB given)
Activity Room	No	40 – 45 dB(A)	BS 8233 2014 has 35 – 45dB for a training room. The BB93 target for a gym / activity studio is 40 dB L_{Aeq} depending on function. In this case a limit of 40 – 45 dB(A) is set depending on the possible use. See marked up drawings.
1st Floor Kitchen & Kiln Room (Activity Rooms)	Yes	45 dB(A)	BS 8233 2014 Training Room
Open Plan "Classroom"	No	40 dB(A)	BB93 limit for open plan resource area
Counselling (1:1)	No	40 dB(A)	BB93 target. BS 8233: 2014 has a range is 30-35 dB L_{Aeq}.
Recording Studio	Yes	30 dB(A)	BB93

Note that rooms classified as "activity rooms" are not being interpreted as teaching, performance or learning spaces. As such there is no requirement set in respect of BB93 and instead a requirement in between 40 and 45 dB L_{Aeq} noise target is shown. If they are to be used for teaching, then they would be classified as a classroom or other teaching space for BB93 / BREEAM with a 35 to 40 dB L_{Aeq} noise target and have associated reverberation time limits. The current design assumes they are not teaching rooms.

However, for the naturally ventilated rooms, the target is largely academic since the internal noise level will be determined by the external noise transmitted through the windows. From the noise survey, external noise levels were typically 53 dB L_{Aeq} during the day and 45 dB L_{Aeq} during the evening. BB93 assumes an outside to inside level difference of 16 dB for single-sided ventilation. Therefore internal noise levels should be in the range of 37 to 29 dB L_{Aeq} and therefore compliant with the criteria above for naturally ventilated spaces. The contractor is not required to meet a particular noise limit for external noise immissions in naturally ventilated rooms. The noise limits apply to mechanically serviced rooms.

The open plan area on the 2nd floor of Block B is to be regarded as a learning resource area rather than an open plan teaching area, as otherwise BB93 criteria for the speech transmission index (STI) would apply.

Rain Noise

BREEAM also requires control of rain noise in teaching and learning spaces and again stipulates targets from BB93. Block B as a concrete roof and that is considered sufficient to adequately control rain noise. The hall has a lightweight roof but this incorporates mineral fibre insulation and an additional plywood layer to enhance the sound insulation. Double glazed skylights are included which will also reduce rain noise.

3.3 Sound Insulation between Spaces

To achieve BREEAM credits for sound insulation, sound insulation criteria have been specified for "acoustically sensitive rooms" and other spaces. Criteria for acoustically sensitive rooms have been derived from the sound insulation matrix given in Table 3 (Section 7.5) of BS 8233: 2014 and relate to protecting privacy of the "acoustically sensitive" room. Additional and alternative criteria have been derived where appropriate.

The insitu sound insulation targets are marked up on the drawings with red boxes and arrows indicating the direction applicable (from source room to a receiving room). Sometimes the sound insulation required can differ according to the direction of sound transmission (ie depending on which room is the source and receiving room). It is an Employer's Requirement to achieve these targets.

3.4 Partition Types

Also shown on the drawings is the calculated laboratory sound insulation requirement for the partition with a light blue box (and no arrows). The derived requirement is shown as the laboratory-rated sound insulation, dB R_w. Partition suppliers can provide performance data for their partitions using this index and therefore the R_w ratings can be used to select suitable partitions. The calculation of the R_w ratings has been done in accordance with the equation in the supplementary guidance to BB93[2]. A 5dB tolerance (as recommended) has been allowed for to take into account the difference laboratory and site conditions. The derived partition types range from 45 to 50 dB R_w. Suggested options to achieve this are shown in Table 4.

Table 4 – Partition Types

Acoustic Requirement	Construction	Thickness
45 dB R_w	Two layers of 12.5mm plasterboard both sides of 70mm metal studs (no mineral fibre)	122mm
50 dB R_w	Two layers of 12.5mm plasterboard both sides of 70mm metal studs with 50mm mineral fibre in the cavity	122mm
62 dB R_w	Two layers of 15mm dense plasterboard (eg British Gypsum Soundbloc) on both sides of staggered studs with 25 - 50mm mineral fibre in the cavity	208mm

The partitions must run from slab to slab. They should not be supported on the raised access floor.

A higher performance wall (greater than 50 dB R_w) would also be required based on derived requirements from BS 8233: 2014 between the two 1:1 rooms. However this room is shown to

[2] Acoustics for Schools: a design guide November 2015 published by the Institute of Acoustics and the Association of Noise Consultants

include a door and therefore the performance will be limited by that door. At present, a 35 dB R_w door is shown which is in line with BB93, but the BS 8233: 2014 target of D_w 42 – 47 cannot be achieved with this arrangement.

3.5 Impact Sound Insulation

There are no BREEAM credits available for impact sound insulation. However it will be important to ensure that footsteps and other impact noises are controlled to a reasonable level. Some targets for impact sound are specified in BB93 and these have been adopted for the sensitive rooms and shown on the marked-up drawings. A 300mm concrete slab is provided with a raised access floor system. This will provide reasonable impact sound insulation. The contractor is required to meet these performance requirements.

3.6 Reverberation Control

BREEAM requires reverberation times in teaching and study spaces to meet the criteria based on BB93. However at present the activity rooms in Block B are designated as neither and therefore no requirement is set. Again a requirement would be necessary if the rooms were to be used for teaching or for speech. We would recommend absorption in this rooms. It would be possible for this to be retrofitted by the users according to their needs.

However reverberation control is recommended for the Café area and seating area on the ground floor. A requirement to provide a Class B treatment is set. The same requirement has been applied to the 3rd floor open space.

It is not proposed to meet the BB93 requirement for the sound transmission index (STI) in the 3rd floor open plan classroom. This is acceptable as the area is not considered to be intended for didactic teaching and BREEAM allows bespoke criteria to be set.

3.7 Community Hall

The design of the community hall is discussed below.

Noise Levels

Noise levels in the community hall from the mechanical services shall not exceed 35 dB L_{Aeq}. This is an Employer's Requirement and is required for BREEAM following BB93 for a room used for speech and performances.

Reverberation Times

The hall is considered as a space for performance (and sometimes) speech and therefore to obtain BREEAM credits a BB93 requirement for a multipurpose hall is set at the upper range: 1.2 seconds unoccupied. (Note that if the hall were solely considered as a sports hall a less onerous reverberation time of 1.5 seconds would apply, but the current requirement is T_{mf} 1.2 sec). To achieve the requirements acoustic absorption is required on the ceiling and walls.

The roof construction will comprise a profiled metal deck, specifically currently proposed is RoofDek D137 by Tata Steel. It is recommended that a perforated RoofDek liner is provided with mineral fibre inserts in the troughs so that the roof is absorptive. However, that would not provide sufficient absorption and it is a requirement to provide some absorption to walls too.

An area of timber slats backed with absorptive material could be provided on the high level walls to provide useful absorption along with moderate absorption provided by the perforated

rood deck. An area of 90m^2 of 30mm x 15.2mm timber slats on 50mm dense mineral wool is suggested as likely to be acceptable.

Internal Sound Insulation

The hall features a curtain to divide the space. This will not provide any acoustic separation and there is therefore no requirement in this regard.

Entrance doors to the hall shall be specified at 35 dB R_w. The rating must be achieved in the double leaf configuration and therefore it is likely that a rebated meeting stile will be required. Note that 35 dB R_w is not sufficient to control noise from the gym if the gym has amplified music even at moderate levels. Therefore some management of the spaces will be required to ensure there is no disturbance.

Building Envelope Sound Insulation

Noise from community hall is covered by planning condition no. 25 which requires amplified music and voices to not cause to increase the existing ambient levels by more than 5 dB. The planning condition is provided in Appendix A. The noise survey is reported separately. Based on an external noise level of 33 dB L_{Aeq} measured in the garden of 24 to 32 Winscombe Street this imposes a limit of 37 dB L_{Aeq} for music noise in the evening. Condition 8 limits use of the hall to: 10pm Monday to Friday; 9pm on a Sunday; and, 11.30pm on Friday and Saturday nights.

The Main Hall activities will include sports activities and potentially some third party lettings which could include some music use such as aerobics (although not parties, weddings, DJs, live bands etc). This main hall music use is the most significant music source and calculations have been made on the basis of aerobics classes with amplified music, up to around 83 dB(A) depending on bass level. It is recommended that the main hall be fitted with a noise limiter to control music noise levels. For best results an in-house sound system could be installed with its own dedicated compression / limiter.

The main hall is being mechanically ventilated to avoid ventilation openings but the lightweight roof and skylights will be a weakness. It is recommended to use mineral fibre in the roof construction and a layer of 19mm plywood added to increase the performance; the roof build up is required to achieve 45 dB R_w. The roof lights should be specified at 44 dB R_w eg Pilkingtons 10mm / 16mm argon 8.8 Optiphon – this should provide a performance commensurate with the hall roof such that the roof lights will not be a weak link.

There is a large area of glazing to the west side of the hall. To protect the existing future residents in Block A1 and A2, this should be specified at 41 dB R_w overall and an R_{125Hz} value of 25 dB (this is the sound reduction at a frequency of 125 Hz). This is to ensure a good reduction to bass frequencies. Pilkington's Optiphon 6/16/8.8 should achieve this.

3.8 Testing Regime

To achieve the BREEAM acoustic credits, acoustic testing is required. The contractor is required to carry out acoustic testing and a requirement for testing will be written into the contractor's scope. The test procedure should follow the Association of Noise Consultants Good Practice Guide for Acoustic Testing of Schools and the test organisation will need to carry appropriate accreditation for BREEAM testing.

3.9 Block B Specific Comments

Ground Floor

There are no teaching spaces on the ground floor. However there are three meeting / activity rooms which would be regarded as acoustically sensitive rooms and thus reasonable sound insulation is specified between the rooms. These will be mechanically ventilated with a noise limit of 40 dB(A). Acoustic doors achieving 30 dB R_w are provided to ensure privacy.

In addition, absorption is required in the café seating area to control the build-up of noise. This is an ER requirement even though it is not a BREEAM requirement. The requirement is for free hanging baffles to meeting sound absorption class B in terms of the effective absorption rated on a per square meter basis.

First Floor

There are link doors between the activity room (kitchen) and the adjacent room which is also labelled as a activity room. This will reduce the sound insulation achievable between the rooms. BB93 permits a 35 dB R_w door in a 45 dB R_w wall and that approach is proposed here.

Second Floor

Again there are doors between the two activity rooms labelled also as art and pottery and also between the artist in residence room and the adjacent activity room. In both cases the sound insulation between the two rooms is limited but the same BB93 solution is proposed (a 35 dB R_w door in a 45 dB R_w wall).

Third Floor

The recording studio is shown adjacent to the "open plan" classroom and a 1:1 room. The recording studio should ideally have a lobbied door because of limitations of the sound insulation achievable with single doors and because most of the remaining 3rd floor area is open plan and could be noisy. Ideally there should be a control room in addition to the studio; this could form the lobby access to the studio.

A R_w 62dB wall requirement is required between the studio and the 1:1 room. This could be a staggered stud wall which is 208mm thick; however a better twin framed deeper wall would be recommended (say 300mm) to improve overall and low frequency performance.

The recording studio will need acoustic absorption treatment to achieve the 0.5 second reverberation time. This is required to be provided on the ceiling and on the all walls to include the zone between 600mm and 2000mm above floor level". Tufsound perforated metal panels from H&H Acoustic Technologies are an example of a finish which might be suitable for the walls. This room will also have mechanical ventilation. A noise limit of 30 dB L_{Aeq} is specified in accordance with BB93. The specified fan coil unit may exceed this limit with noise levels up to 40 dB(A) depending on the setting. Therefore any recordings would need to be made with the unit switched off. Note that the noise limit applies to all sources transmitted via any mechanism. The plant above the recording studio must have adequate vibration isolation to control structureborne noise.

Much of the remaining 3rd floor area is open plan. A ceiling treatment meeting sound absorption class B is required for this area. This is an Employer's Requirement. Acoustic rafts or baffles could again be used.

4 Block C

Block C is a converted residential block. Marked up drawings for Block C are shown in Appendix B. These show the separating wall (Requirement E1) and the locations where requirement E2 applies for internal partitions.

The onsite requirement for the separating walls is 43 dB $D_{nT,w}+C_{tr}$ in Approved Document E. It is not possible to use Robust Details to avoid pre-completion testing. However the example construction can be built in the knowledge that the tests are likely to be satisfactory (subject to detailing and workmanship).

The walls in the converted houses can probably most easily be constructed using timber studwork. Robust detail E-WT-1 or E-WT-2 would be suitable. It is important that the partitions are fixed to the brickwork external walls. Any thermal linings to the external wall must be broken by the party wall.

Requirement E2 will apply to some internal partitions as shown on the marked up drawings and also to the internal house floor. This must achieve a design requirement of 40 dB R_w.

Requirement E3 does not apply to Block C as there are two houses being built without common parts.

5 Block D

Block D is largely residential. Therefore the standard Building Regulations requirements E1, E2 and E3 will apply for the residential interfaces. The party wall in this case is a blockwork construction similar to Robust Detail E-WM-17. A concrete party floor is provided similar to Robust Detail E-FC-16 is provided. Note that an acoustic resilient layer For the partitions, similar construction to those proposed for Block A can be used.

5.1 Residential / Commercial Sound Insulation

However the ground floor features a gym which is linked to the main hall with double doors and there is an apartment directly above. The planning condition with the +10dB uplift applies to the sound insulation of this floor. Specifically, the contractor is required to provide sound insulation of $D_{nT,w}+C_{tr}$ 55 dB between the ground floor and the residential element above. This is a very high performance requirement.

Therefore, it is recommended that a suspended plasterboard ceiling is installed in the gym to control music noise audible in the flat above. This should comprise two layers of 12.5mm plasterboard suspended at least 200mm below the slab on ceiling grid supported using resilient hangers (eg Pliteq, CDM-UK or Total Vibration Solutions etc) with 100mm of mineral fibre provided to the cavity. The mechanical services for the gym should be suspended below the sound insulation ceiling. The sound insulation ceiling must not be perforated although it will be acceptable for supports for the mechanical services to pass through it provided that they are sealed with mastic. An accessible secondary ceiling may then be required for the mechanical services unless these are to be exposed.

Note however that the 1st floor living room of one of the flats shares a separating wall with the main wall. It is understood that two separate walls will be built so that the hall wall and the residential wall are two separate structures. Again a requirement of 55 dB $D_{nT,w}+C_{tr}$ applies as an Employer's Requirement.

5.2 Requirement E3

The 1st, 2nd and 3rd floor flats are accessed directly from the stairs. Therefore requirement E3 will apply to the stair core. The most practical solution will be that advised in section 7.11 of Approved Document E:

"For stairwells or a stair enclosure, calculate the combined area of the stair treads, the upper surface of the intermediate landings, the upper surface of the landings (excluding ground floor) and the ceiling area on the top floor. Either cover at least an area equal to this calculated area with a Class D absorber, or cover an area equal to at least 50% of this calculated area with a Class C absorber or better. The absorptive material should be equally distributed between all floor levels. It will normally be convenient to cover the underside of the intermediate landings, the underside of the other landings, and the ceiling area on the top floor. "

A perforated plasterboard absorber achieving Class C is often a practical solution in respect. Many types of perforate plasterboard do not achieve this but if the undersides of the stair treads are treated then a Class D absorber is also a suitable possibility. Note that some quite plush carpets with an open cell foam underlay can also just achieve Class D (this would not be achieved by standard contract carpets).

6 Compliance with Planning Conditions

Other planning requirements relating to noise include the following:

6.1 Mechanical Services Noise Control

Planning condition 26 requires plant noise levels to be 10dB below the background noise levels at sensitive receptors (eg residences).

Based on the noise survey, the plant limits at the nearest housing can be determined. Table 5 below shows the limits at the nearby housing; these would apply at 1m outside the windows of noise sensitive rooms. Note these limits will also apply at the new residential accommodation provided as part of this development

Table 5 – Proposed Plant Noise Limits

Period	Average Background Noise L_{A90}, dB	Noise Limit dB(A)
Day 07:00 to 19:00	37	27
Evening 19:00 to 23:00	32	22
Night-time 23:00 to 07:00	30	20

The proposed noise limits are very low and will provide a good standard of amenity. In addition complying with these limits will also enable a BREEAM credit to be achieved under Pol05 which concerns plant noise emissions.

For these limits to apply, the plant must not exhibit tonal or impulsive characteristics; according to the Camden guidance, tonal or impulsive plant would have noise limits a further 5 dB below these (ie 15dBA below background level). However, controlling evening and night noise levels to 22/20 dB respectively would render the level so low in absolute terms that further reductions would not be merited for general building plant. The substation will incorporate a transformer

which will be a source of tonal noise. A level of 32 dB L_{A90} was measured in Bertram Street and therefore in accordance with the planning condition, a limit of 17 dB (A) will apply to the substation. UK Power Networks have provided a calculation which indicates this limit can be achieved.

Planning Condition 22 requires details of the noise attenuation measures to be shown on plans submitted to the local authority. This will include details of the noise barrier around the hall AHU and gym condenser which are located on the bicycle store roof on Block D. This barrier is required to reduce noise to residential locations. The screen would need to be approximately 200mm higher than the AHU. This should comprise a solid panel construction with a minimum surface mass of 15 kg/m^2. The panels should have an absorbent lining to the side facing the AHU. Typically this would be 50mm mineral fibre faced with perforated metal with a 25% open area.

Noise barriers will also be required for the air source heat pump on the roof of Block B. The same requirements apply. All other plant must be selected with appropriate attenuators to achieve the noise limits.

6.2 Music / Activity Noise

Noise from the hall has been discussed above.

In general most of the other activity of within Block B is expected to be relatively quiet and will be similar to existing activities that currently take place. However, there are some areas where higher music-type noise levels will occur at times. These are the main hall, the gym and the recording studio.

The recording studio is a small enclosed space with mechanical ventilation provided with no openings in the facade and no windows. Part of the principle of the design for this space is to provide good sound insulation to control noise from other parts of the centre being heard inside the studio. This will therefore also provide good sound insulation against music noise breakout, and noise emissions can therefore be contained.

Similarly, the gym will be mechanically ventilated and is located away from existing residents. This space could therefore be used for moderate levels of amplified music. Amplified music however would not be permitted in activity rooms which are ventilated with openable windows.

7 Summary

This report describes the acoustic Employer's Requirements relating to the proposed HNCC scheme. The design requirements are determined by the Building Regulations, by planning conditions, by BREEAM and other design guidance. Marked up drawings in a series of Appendices show the acoustic requirements. The proposed forms of construction to meet the acoustic ERs are also discussed.

No. 8 Community Facilities – Hours of Use

The community facilities in Buildings B and D and the community hall shall only be used between 8.30am – 10pm Monday to Thursday, 8.30am – 11.30pm Friday to Saturday and 9.30am – 9pm on Sundays.

Reason: To ensure that the amenity of occupiers of residential properties in the area is not adversely affected by noise and disturbance in accordance with the requirements of policy A1 of the Camden Local Plan.

No. 22 Soundproofing

Prior to the occupation of the residential units, all fixed M&E and associated acoustic isolation, sound attenuation and anti-vibration measures are to be shown on plans approved in writing by the Local Planning Authority. All such measures shall thereafter be retained and maintained in accordance with the manufacturers' recommendations.

Reason: To prevent the transmission of noise and vibration throughout application buildings and or into any neighbouring premises, to safeguard amenities in accordance with the requirements of policies A1 and A4 of the London Borough of Camden Local Plan 2017

No. 23 Residential / Commercial Soundproofing

Prior to commencement of above ground works, details shall be submitted to and approved in writing by the Council, of the sound insulation of floors/ceilings/walls separating commercial parts of the building from residential premises. The airborne sound insulation performance shall achieve as a minimum 10 dB increase in the minimum requirements of Approved Document E of the Building Regulations 2010. A test shall be carried out prior to the discharge of this condition to show the standard of sound insulation required shall be met and the results submitted to the Council for approval.

Reason: To ensure that occupiers of residential premises do not suffer a loss of amenity by reason of noise nuisance from neighbouring commercial premises in accordance with Camden Local Plan policy A1

No. 24 Residential / Commercial Soundproofing

All residential premises shall be designed in accordance with BS 8233:2014 to attain the following internal noise levels:

Activity	Location	07.00 to 23.00	23.00 to 07.00
Resting	Living room	35 dB LAeq	None
Dining	Dining room/area	40 dB LAeq	None
Sleeping (daytime resting)	Bedroom	35 dB LAeq	30 dB LAeq

Before commencement of the use hereby permitted details shall be provided to discharge this condition to show the standard of sound insulation in habitable rooms facing the community centre shall be met and the results submitted to the Local Planning Authority for approval.

Reason: To ensure that the occupiers and users of the proposed residential component do not suffer a loss of amenity by reason of excess noise from environmental sources in accordance with the requirements of policies A1 and A4 of the London Borough of Camden Local Plan 2017

No. 25 Amplified music/voices

Neither music nor amplified loud voices emitted from the non-residential parts of the built development shall result in more than a 5dB increase from existing ambient noise levels to nearby residential properties.

Reason: To ensure that the amenity of occupiers of the development site/surrounding premises is not adversely affected by noise in accordance with policy A1.

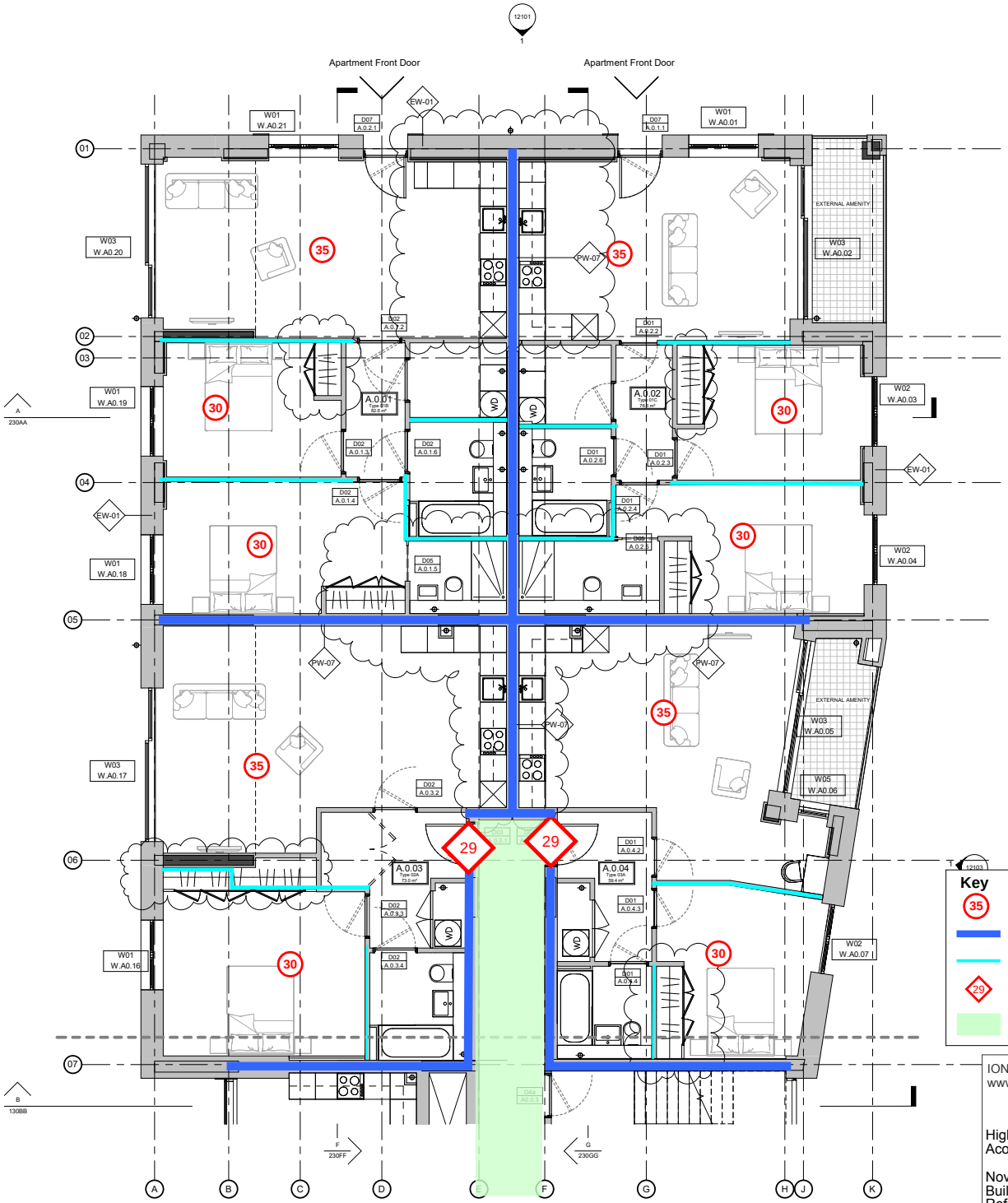
No. 26 Plant and Equipment

Before the use commences, the total noise from fixed plant associated with the application site, when at a point 1m external to sensitive facades shall be at least 10 dB(A) less than the existing background measurement (L_{A90}), expressed in dB(A), when all plant/equipment (or any part of it) is in operation unless the plant/equipment hereby permitted will have a noise that is distinguishable, discrete continuous note (whine, hiss, screech, hum) and/or if there are distinct impulses(bangs, clicks, clatters, thumps), then the noise levels from the plant/equipment at any sensitive façade shall be at least 15 dB(A) below background noise level.

Reason: To safeguard the amenities of the [adjoining] premises [and the area generally] in accordance with the requirements of policies A1 and A4 of the London Borough of Camden Local Plan 2017.

Appendix B – Marked Up Drawings with Acoustic Requirements

Note the marked up drawings are based on the PQQ Drawings from November 2019 to show the acoustic intent. The architect's drawings take precedence for construction.



Key

- 35 — Noise Limit dB L_{Aeq} for MVHR system
- Separating Wall Requirement E1 Applies
- Partition Requirement E2 Applies
- 29 — Door Sound Insulation (dB Rw)
- Class C Absorption Required for Ceiling (Requirement E3)

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Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

November 2019
Building A1 Ground Floor
Ref: A973

General Notes:

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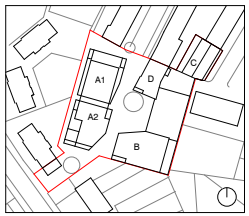
- This drawing is to be read in conjunction with all other relevant drawings and specifications by the architect, structural engineer and services engineer.

0 0.5m 1m 2m 3m 5m

Drawing Notes:

Revision	Date	Description
P4	25.10.2019	Stage 3 Design Freeze
P3	21.03.2019	Stage 3 Issue
P2	03.12.2018	For co-ordination
P1	23.11.2018	Initial Issue



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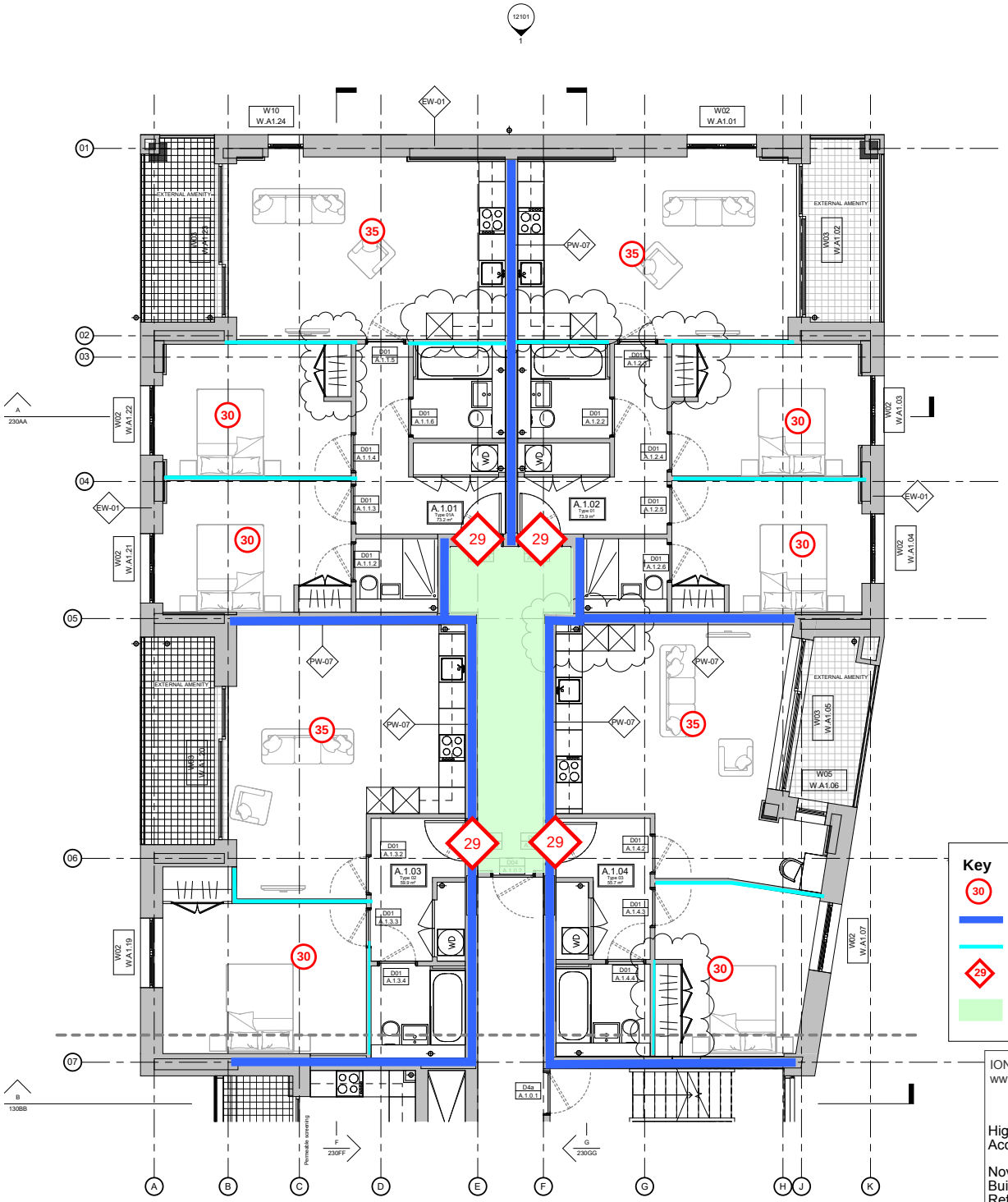
job title: HIGHGATE NEWTOWN COMMUNITY CENTRE
drawing title/location: BLOCK A1 - GROUND FLOOR PLAN - AS PROPOSED
scale: 1 : 50 @ A1 | 1:100 @ A3
suitability: status description — S4 – For Approval
job no originator zone level type role dwg no: HNCC - RCK - 02 - GF - DR - A - 21000
revision: P4



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November 2019
Building A1 First Floor
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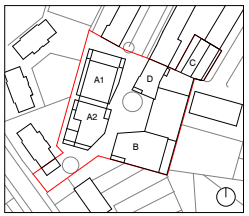

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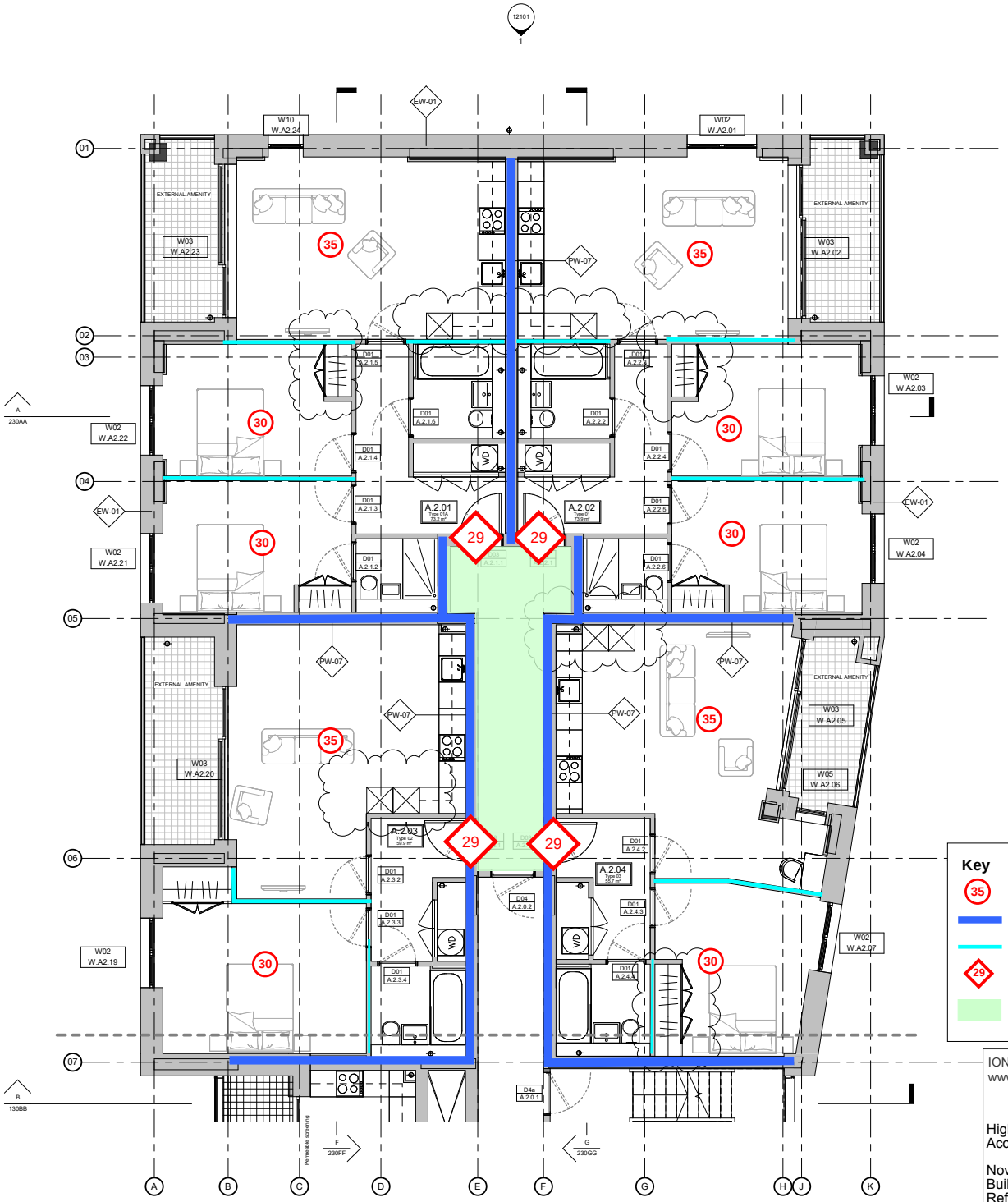
job title	HIGHGATE NEWTOWN COMMUNITY CENTRE
drawing title/location	BLOCK A1 - FIRST FLOOR PLAN - AS PROPOSED
scale	1 : 50 @ A1 / 1:100 @ A3
suitability	status description: S4 – For Approval
job no originator zone level type role dwg no	HNCC - RCK - 02 - 01 - DR - A - 21001
revision	P4



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Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

November 2019
Building A1 Second Floor
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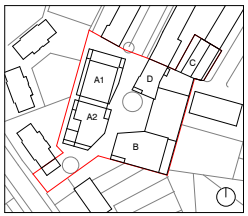

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drawing title/location
BLOCK A1 - SECOND FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability	status	description
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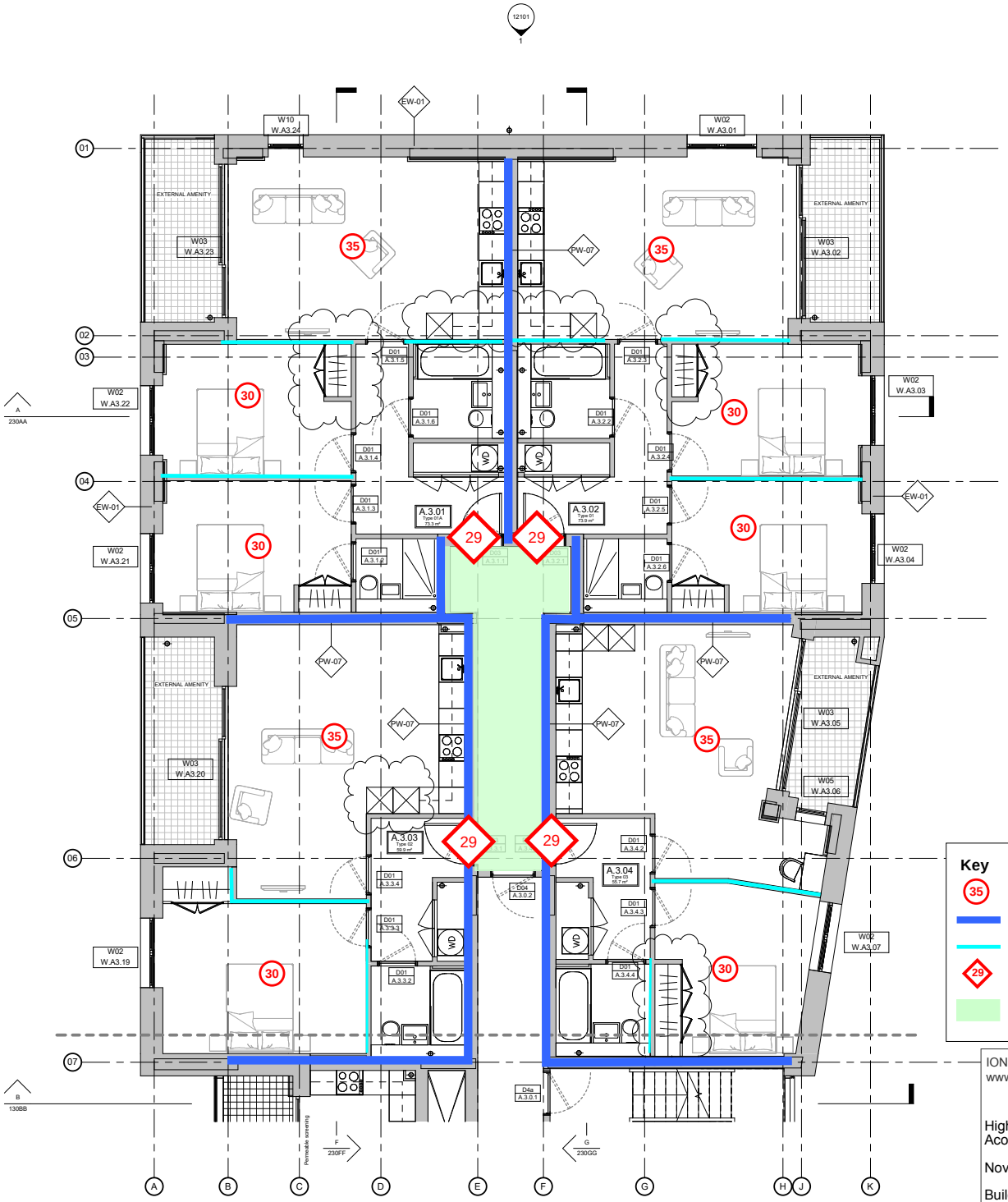
job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	02	02	DR	A	21002	P4



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- Class C Absorption Required for Ceiling (Requirement E3)

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Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

November 2019

Building A1 Third Floor
Ref: A973

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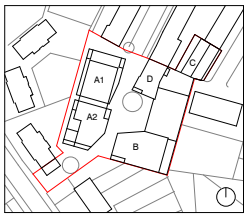

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job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK A1 - THIRD FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability — status description: S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
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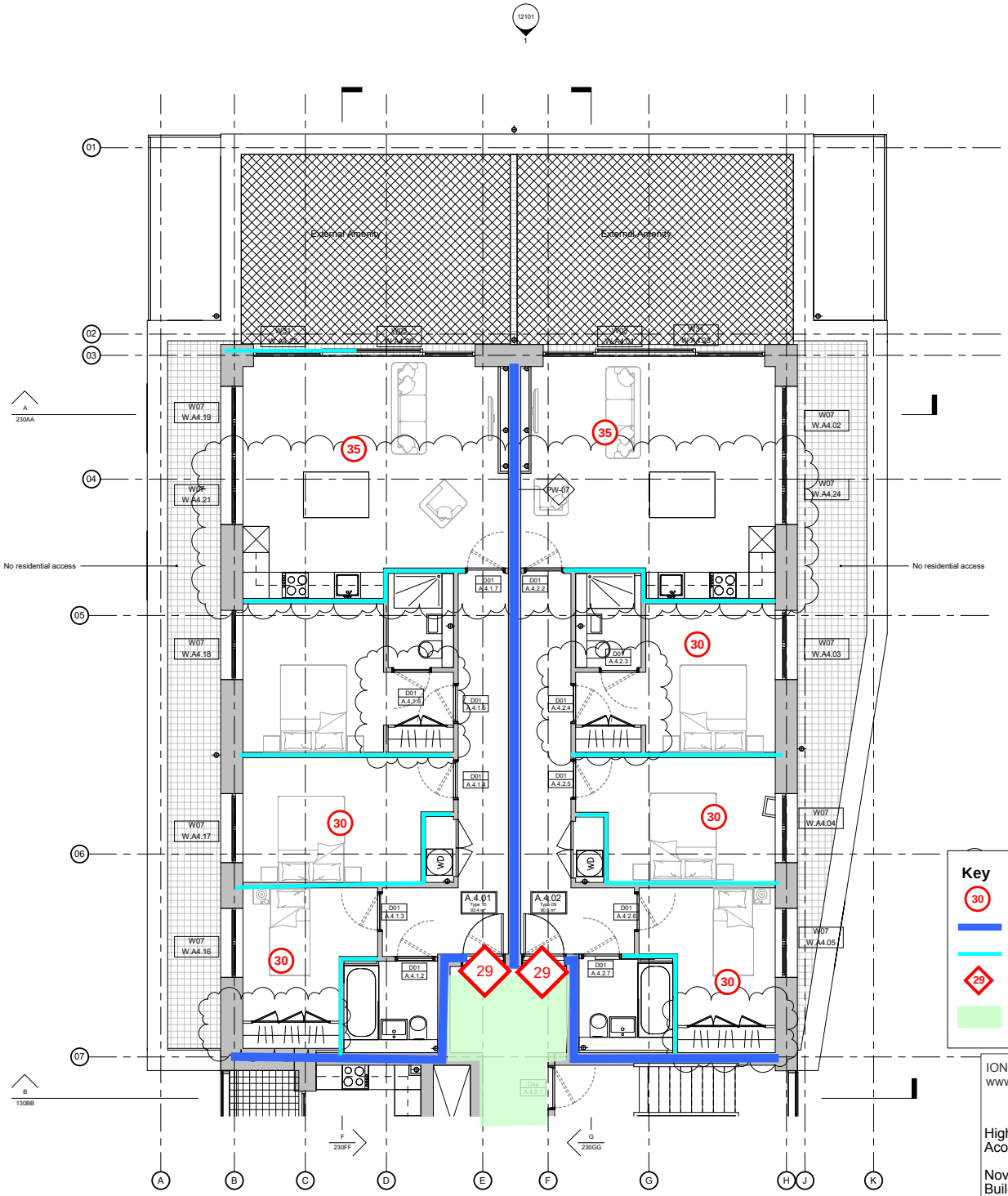

Key

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Highgate Newtown Community Centre (HNCC)
Acoustics Employer's Requirement Drawings

November 2019
Building A1 Fourth Floor
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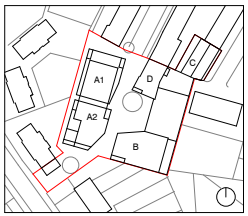

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job title: HIGHGATE NEWTOWN COMMUNITY CENTRE

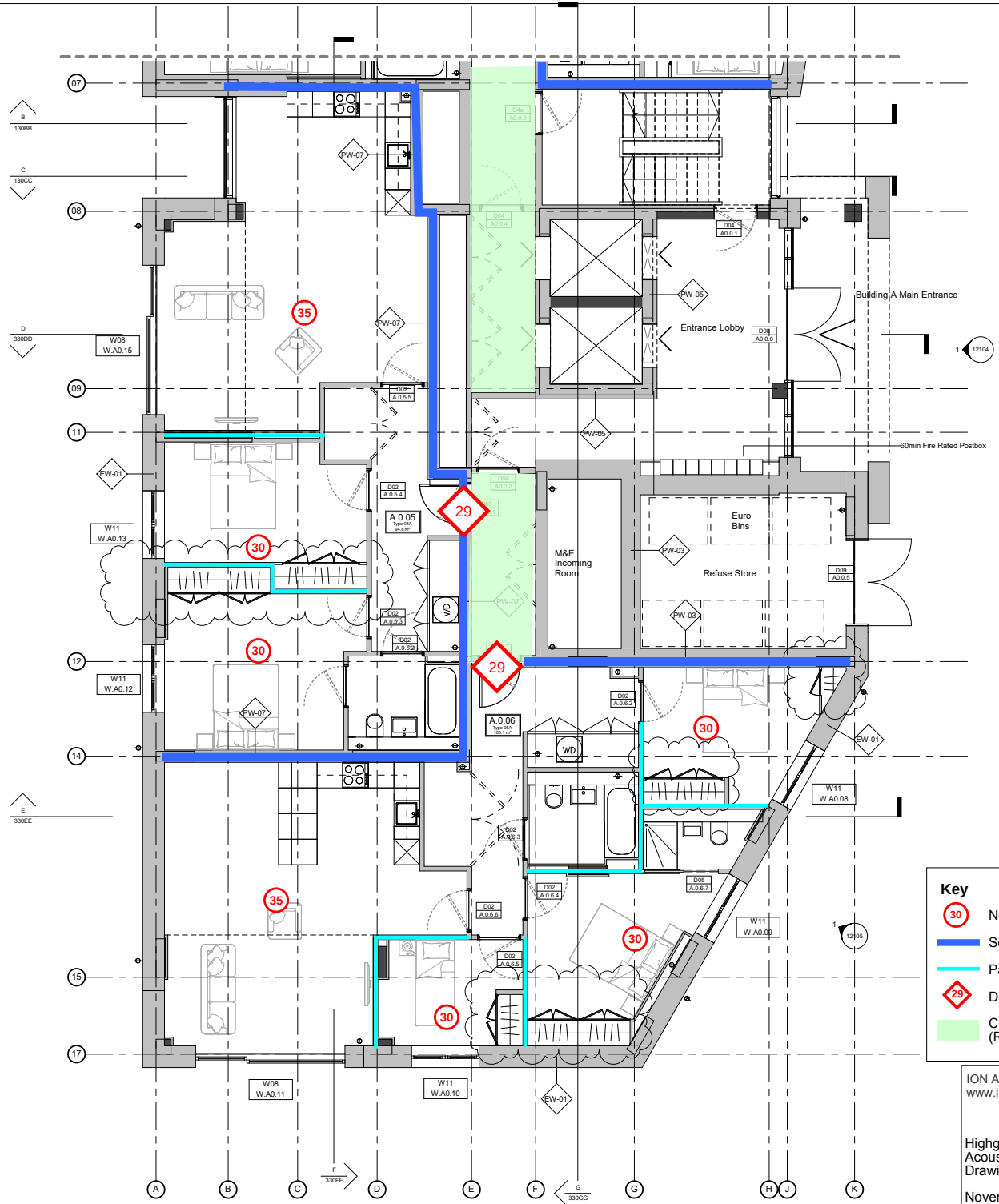
drawing title/location: BLOCK A1 - FOURTH FLOOR PLAN - AS PROPOSED

scale: 1 : 50 @ A1 | 1:100 @ A3

suitability: status description — S4 – For Approval

job no originator zone level type role dwg no: HNCC - RCK - 02 - 04 - DR - A - 21004

revision: P4



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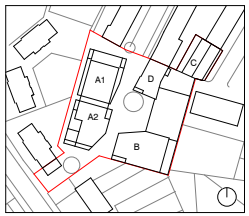

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Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings
Drawings

November 2019
Building A2 Ground Floor
Ref: A973

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drawing title/location	BLOCK A2 - GROUND FLOOR PLAN - AS PROPOSED
scale	1 : 50 @ A1 / 1:100 @ A3
suitability	status description: S4 – For Approval
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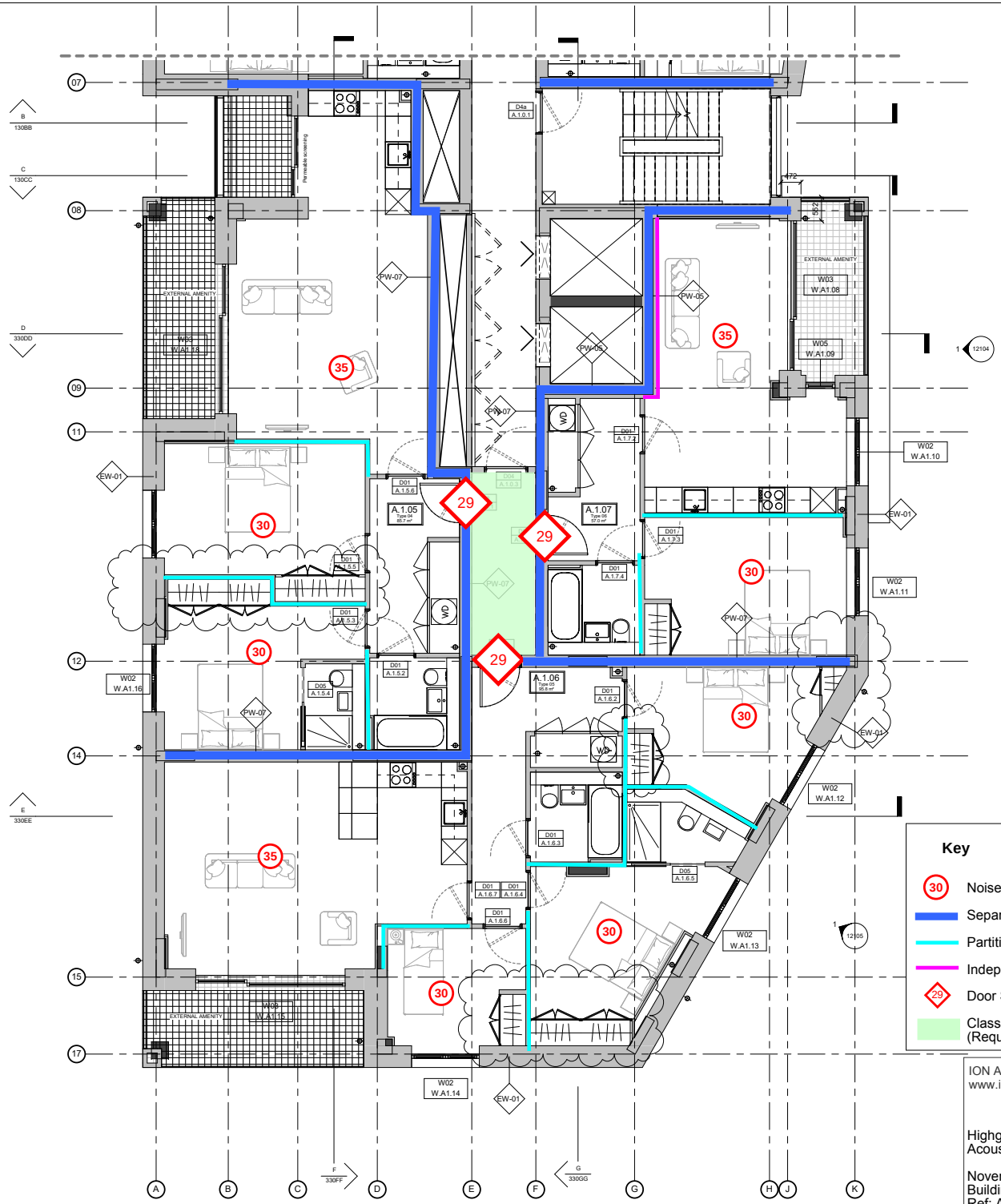
revision	P4



Key

- 30 — Noise Limit (dB L_{Aeq}) for MHVR System
- Separating Wall Requirement E1 Applies
- Partition Requirement E2 Applies
- Independent lining required to reduce lift noise
- 29 — Door Sound Insulation (dB R_w)
- Class C Absorption Required for Ceiling (Requirement E3 Applies)

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Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

November 2019
Building A2 First Floor
Ref: A973

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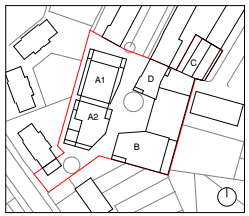

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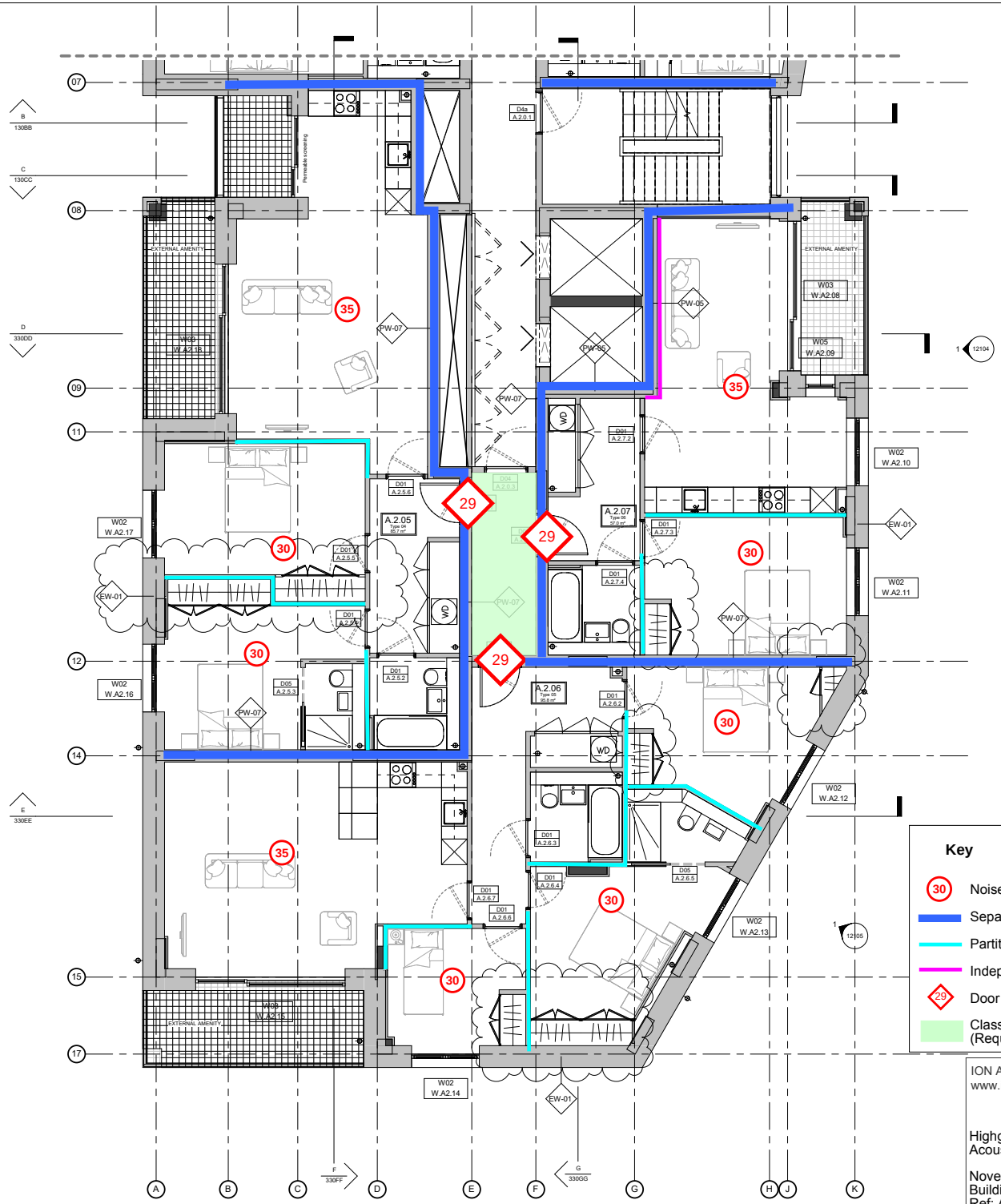
job title	HIGHGATE NEWTOWN COMMUNITY CENTRE
drawing title/location	BLOCK A2 - FIRST FLOOR PLAN - AS PROPOSED
scale	1 : 50 @ A1 / 1:100 @ A3
suitability	status description: S4 – For Approval
job no originator zone level type role dwg no	HNCC - RCK - 03 - 01 - DR - A - 31001
revision	P4



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Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

November 2019
Building A2 Second Floor
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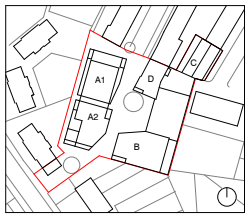
P1	23.11.2018	Initial Issue



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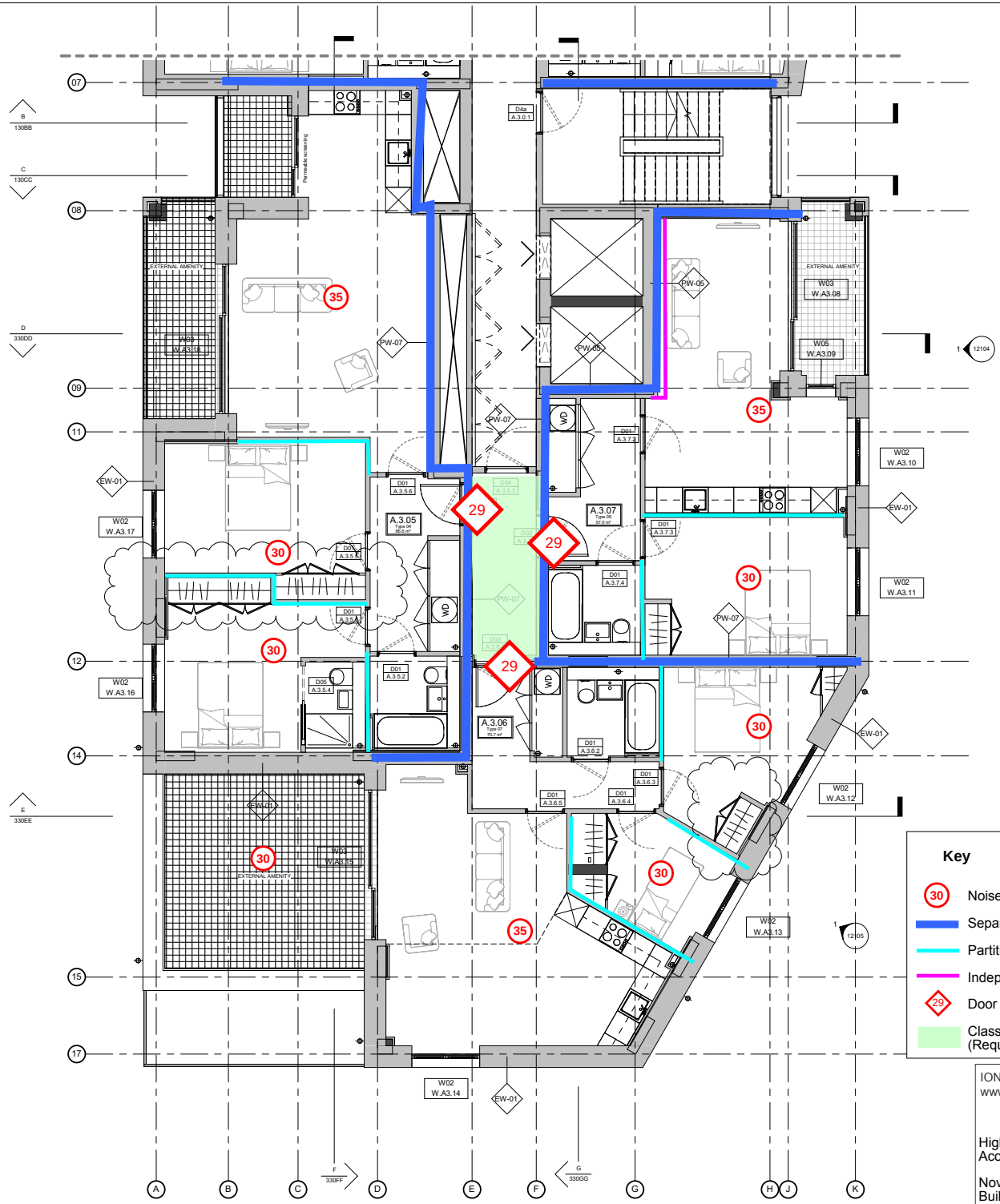
job title: HIGHGATE NEWTOWN COMMUNITY CENTRE
drawing title/location: BLOCK A2 - SECOND FLOOR PLAN - AS PROPOSED
scale: 1 : 50 @ A1 | 1:100 @ A3
suitability: status description — S4 – For Approval
job no originator zone level type role dwg no: HNCC - RCK - 03 - 02 - DR - A - 31002
revision: P4



Key

- 30 — Noise Limit (dB L_{Aeq}) for MHVR System
- Separating Wall Requirement E1 Applies
- Partition Requirement E2 Applies
- Independent lining required to reduce lift noise
- 29 — Door Sound Insulation (dB R_w)
- Class C Absorption Required for Ceiling (Requirement E3 Applies)

General Notes:

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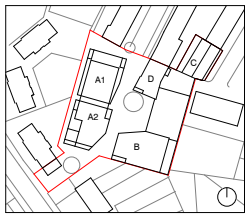
- This drawing is to be read in conjunction with all other relevant drawings and specifications by the architect, structural engineer and services engineer.

0 0.5m 1m 2m 3m 5m

Drawing Notes:

Revision	Date	Description
P4	25.10.2019	Stage 3 Design Freeze
P3	21.03.2019	Stage 3 Issue
P2	03.12.2018	For co-ordination
P1	23.11.2018	Initial Issue



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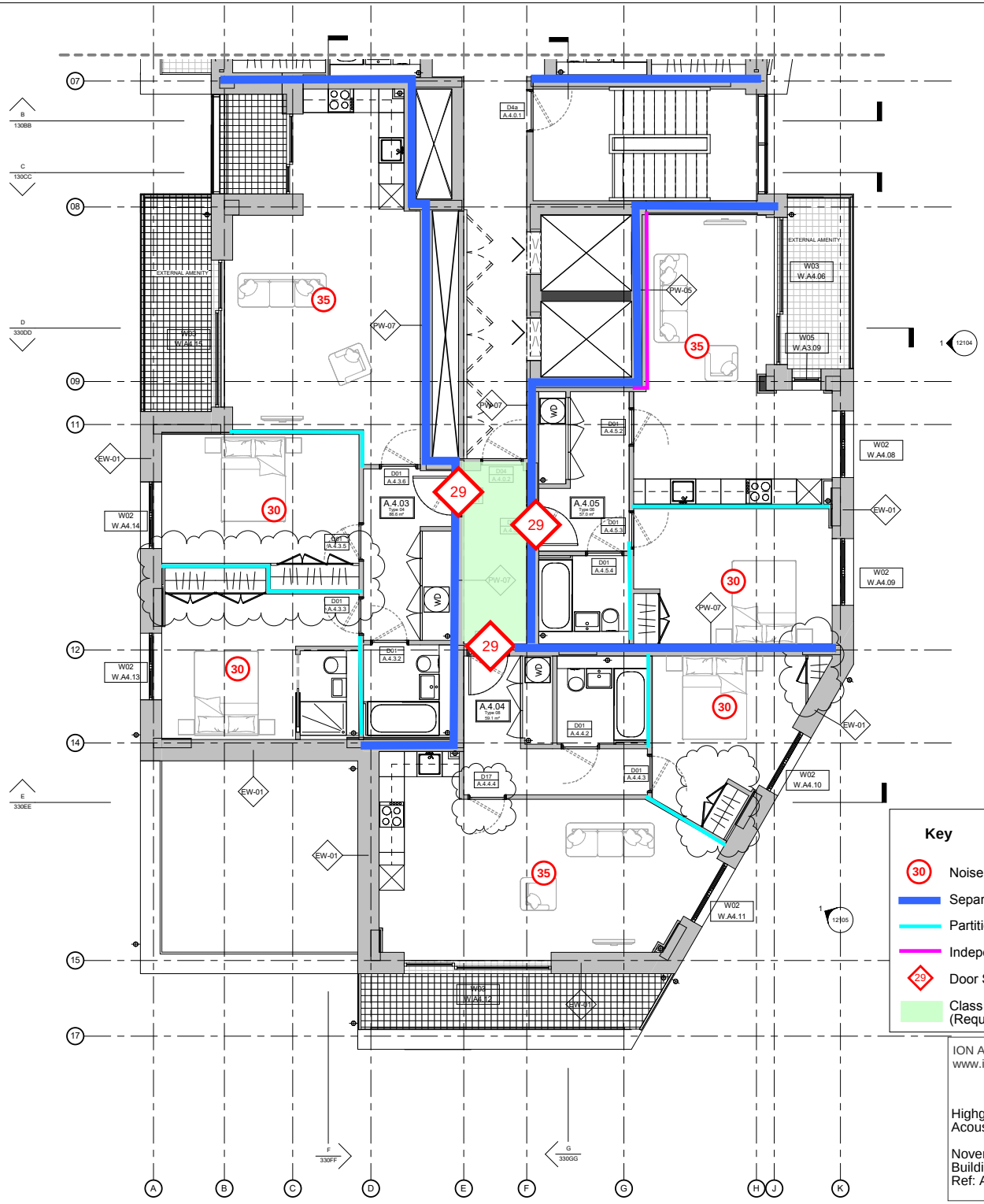
Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

Novermber 2019
Building A2 Third Floor
Ref: A973

job title	HIGHGATE NEWTOWN COMMUNITY CENTRE
drawing title/location	BLOCK A2 - THIRD FLOOR PLAN - AS PROPOSED
scale	1 : 50 @ A1 / 1:100 @ A3
suitability	S4 – For Approval
job no originator zone level type role dwg no	HNCC - RCK - 03 - 03 - DR - A - 31003
revision	P4



Key

- 30 — Noise Limit (dB L_{Aeq}) for MHVR System
- Separating Wall Requirement E1 Applies
- Partition Requirement E2 Applies
- Independent lining required to reduce lift noise
- 29 — Door Sound Insulation (dB R_w)
- Class C Absorption Required for Ceiling (Requirement E3 Applies)

General Notes:

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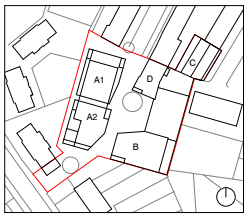
0 0.5m 1m 2m 3m 5m

Drawing Notes:

Revision	Date	Description
P4	25.10.2019	Stage 3 Design Freeze
P3	21.03.2019	Stage 3 Issue
P2	03.12.2018	For co-ordination
P1	23.11.2018	Initial Issue



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job title: HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location: BLOCK A2 - FOURTH FLOOR PLAN - AS PROPOSED

Highgate Newtown Community Centre (HNCC)
Acoustic Employer's Requirement Drawings

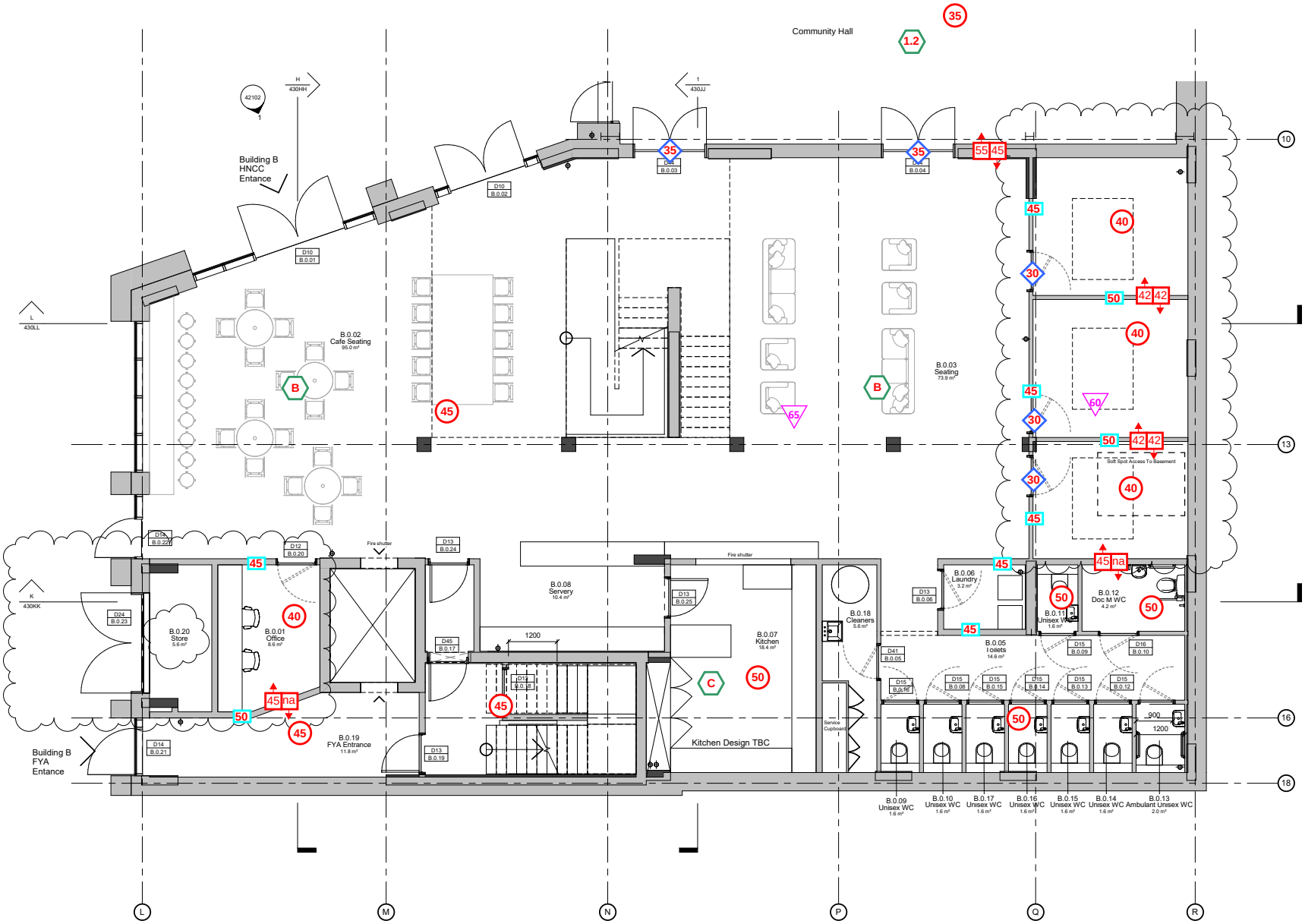
November 2019
Building A2 Fourth Floor
Ref: A973

scale: 1 : 50 @ A1 | 1:100 @ A3

suitability: status description — S4 – For Approval

job no originator zone level type role dwg no: HNCC - RCK - 03 - 04 - DR - A - 31004

revision: P4



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0 5m
0.5m 1m 2m 3m

Drawing Notes:

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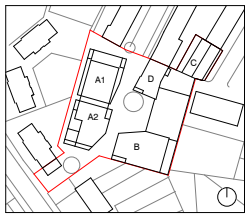
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block B Ground Floor

- 50 Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 Reverberation Time T_{mf} (sec)
- B Absorption Class Requirement
- 45 45 Insitu Wall sound insulation $D_{nT,w}$ (dB)
- 40 Design sound insulation for wall R_w (dB)
- 30 Doorset sound insulation R_w (dB)
- 65 Max Impact Sound Level dB $L'_{nT,w}$ (from floor above)

Revision	Date	Description
P4	25.10.2019	Stage 3 Design Freeze
P3	21.03.2019	Stage 3 Issue
P2	19.12.2018	Building B GF Layout
P1	14.12.2018	Block B / D issue



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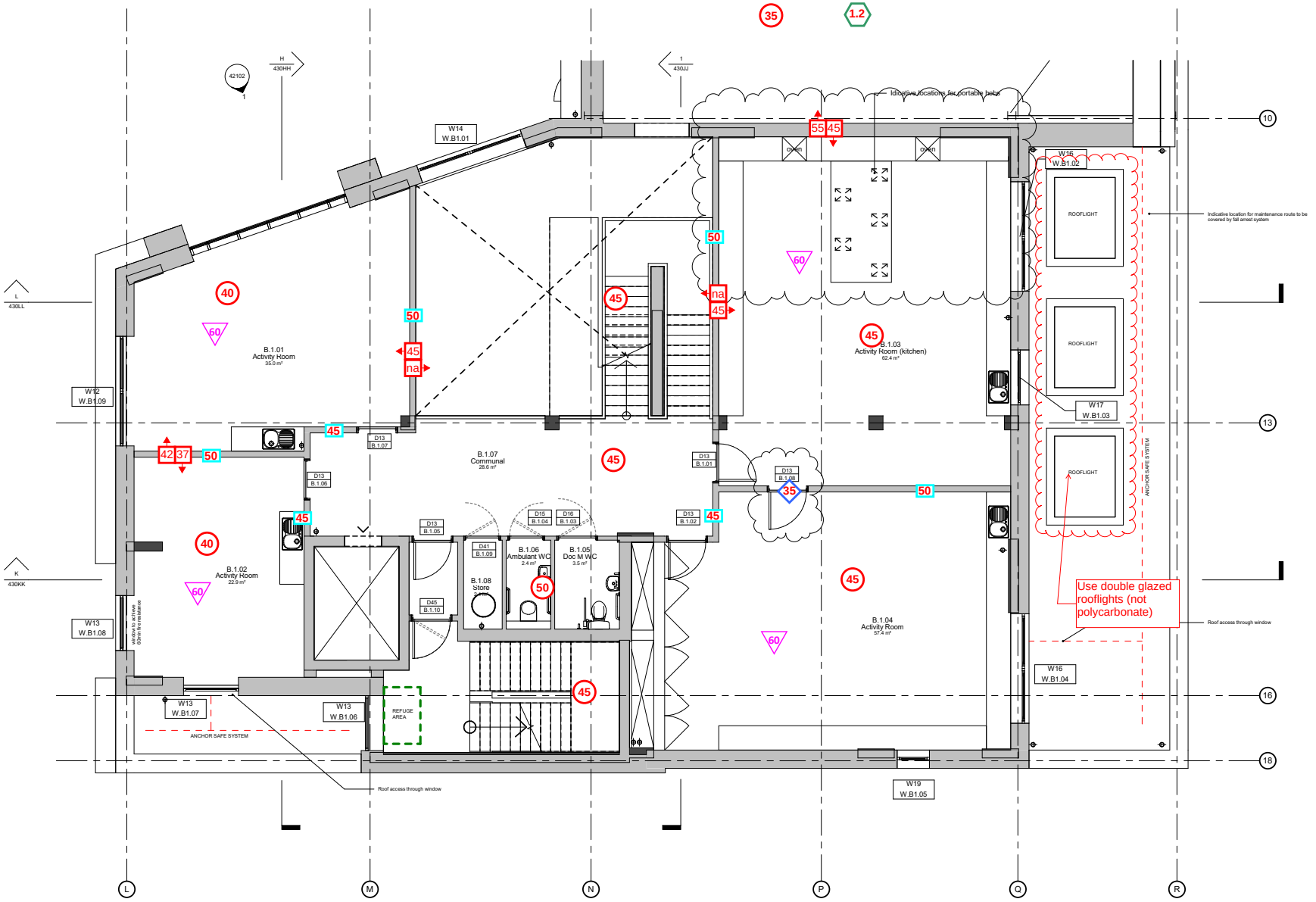
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK B - GROUND FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability
status description
S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	04	GF	DR	A	4100	P4



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0 0.5m 1m 2m 3m 5m

Drawing Notes:

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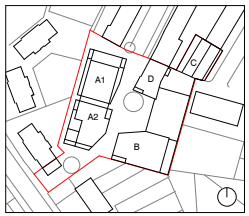
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block B First Floor

Key

- 50 Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 Reverberation Time T_{mf} (sec)
- B Absorption Class Requirement
- 45 45 Onsite wall sound insulation $D_{nT,w}$ (dB)
- 40 Design sound insulation for wall R_w (dB)
- 30 Doorset sound insulation R_w (dB)
- 60 Max Impact Sound Level dB $L'_{nT,w}$

Revision	Date	Description
P3	25.10.2019	Stage 3 Design Freeze
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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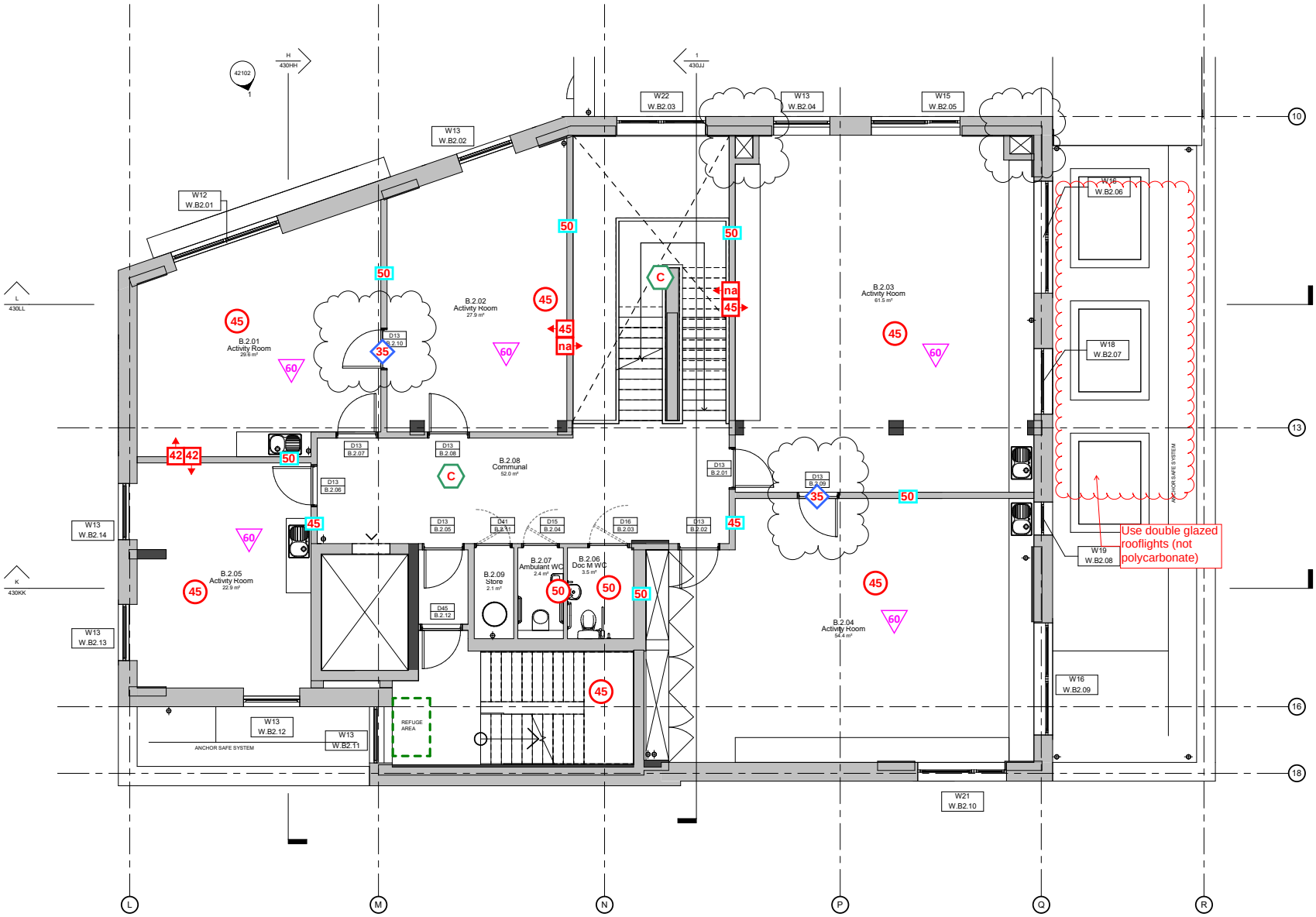
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK B - FIRST FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability | status description: S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	04	01	DR	A	4100[illegible]	P3



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0 0.5m 1m 2m 3m 5m

Drawing Notes:

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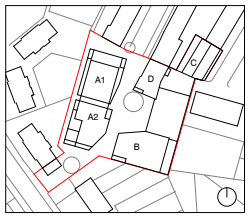
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block B Second Floor

Key

- 45 — Internal Ambient Noise Limit L_{Aeq} dB)
- 1.0 — Reverberation Time T_{mf} (sec)
- B — Absorption Class Requirement
- 45 45 — Onsite Wall sound insulation $D_{nT,w}$ (dB)
- 40 — Design sound insulation for wall R_w (dB)
- 30 — Doorset sound insulation R_w (dB)
- 60 — Max Impact Sound Level dB $L'_{nT,w}$ (from floor above)

Revision	Date	Description
P3	25.10.2019	Stage 3 Design Freeze
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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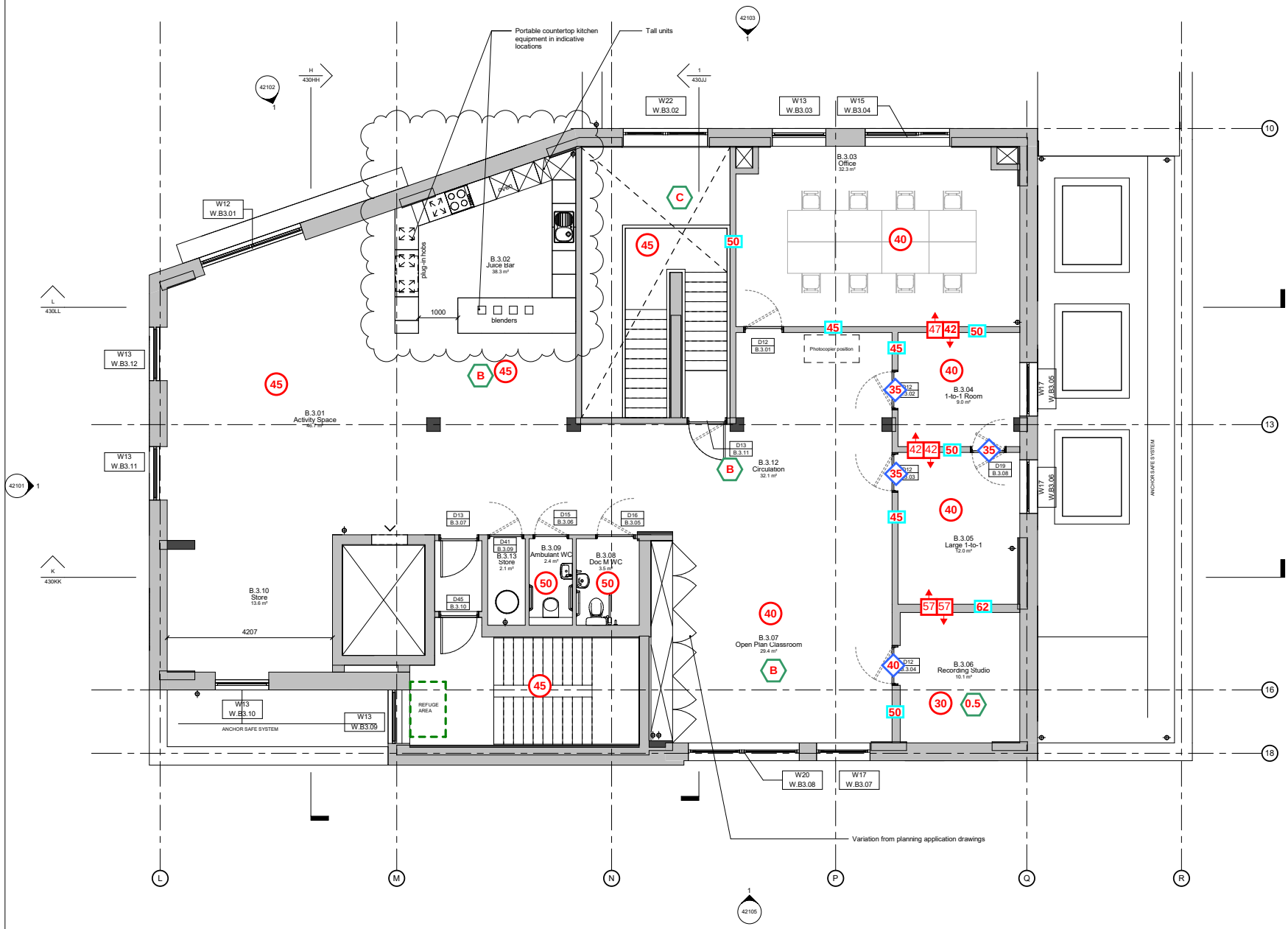
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK B - SECOND FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability
status description
S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	04	02	DR	A	41002	P3



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0 5m
0.5m 1m 2m 3m

Drawing Notes:

ION ACOUSTICS
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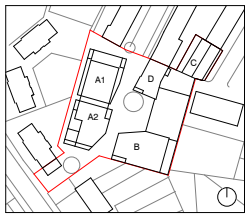
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block B Third Floor

Key

- 50 — Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 — Reverberation Time T_{mf} (sec)
- B — Absorption Class Requirement
- 45 45 — Onsite Wall sound insulation $D_{nT,w}$ (dB)
- 40 — Design sound insulation for wall R_w (dB)
- 30 — Doorset sound insulation R_w (dB)

Revision	Date	Description
P3	25.10.2019	Stage 3 Design Freeze
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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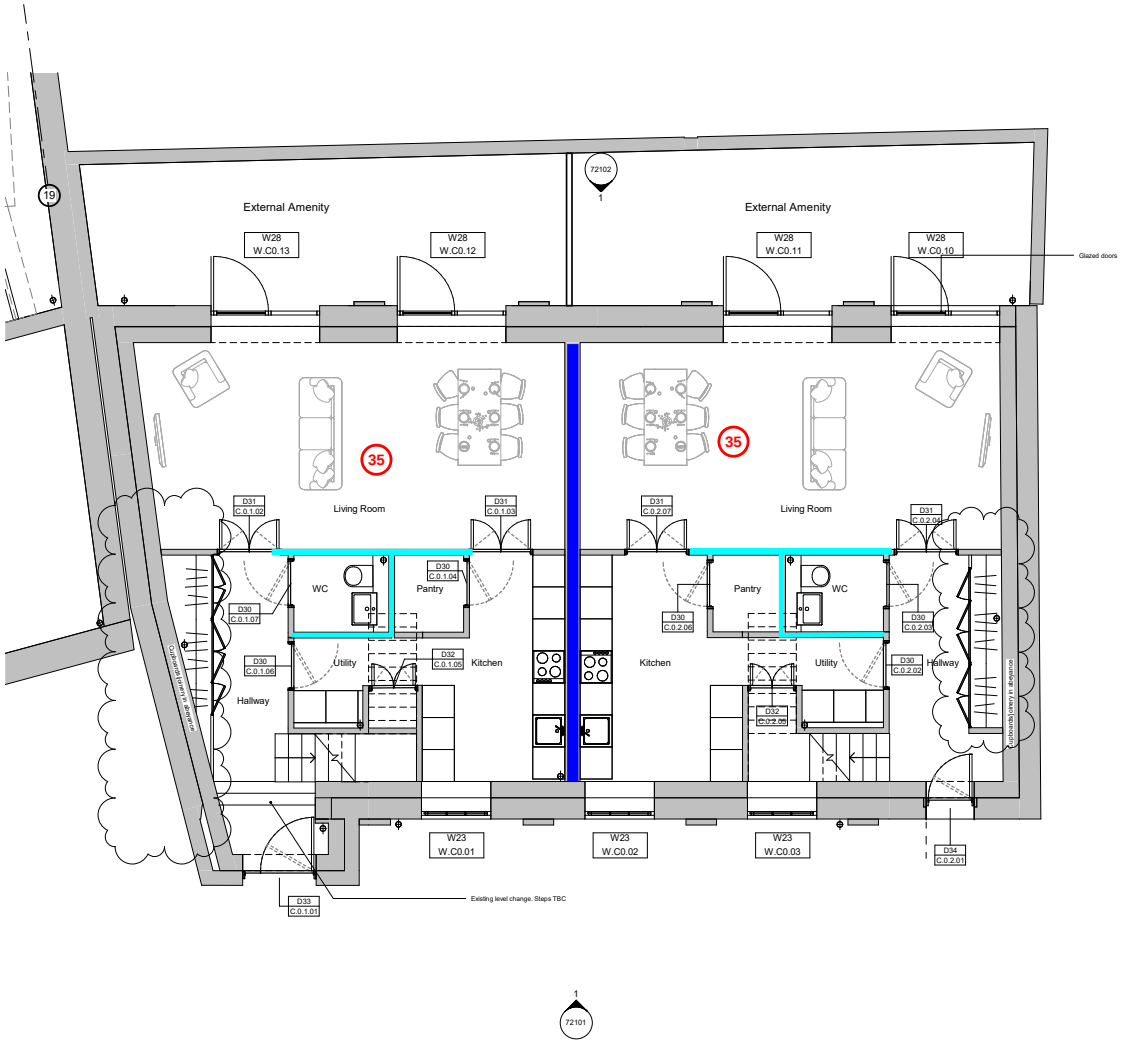
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK B - THIRD FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability — status description: S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	04	03	DR	A	41003	P3



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0 5m
0.5m 1m 2m 3m

Drawing Notes:

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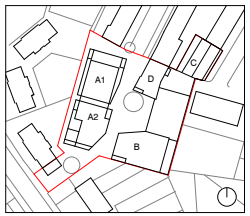
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block C Ground Floor

Key

- Separating Wall (Requirement E1)
- Partition (Requirement E2) Applies
- 35 MVHR Ambient Noise Limit L_{Aeq} dB)

Revision	Date	Description
P4	25.10.2019	Stage 3 Design Freeze
P3	04.07.2019	Apartment layout updates
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block C issue



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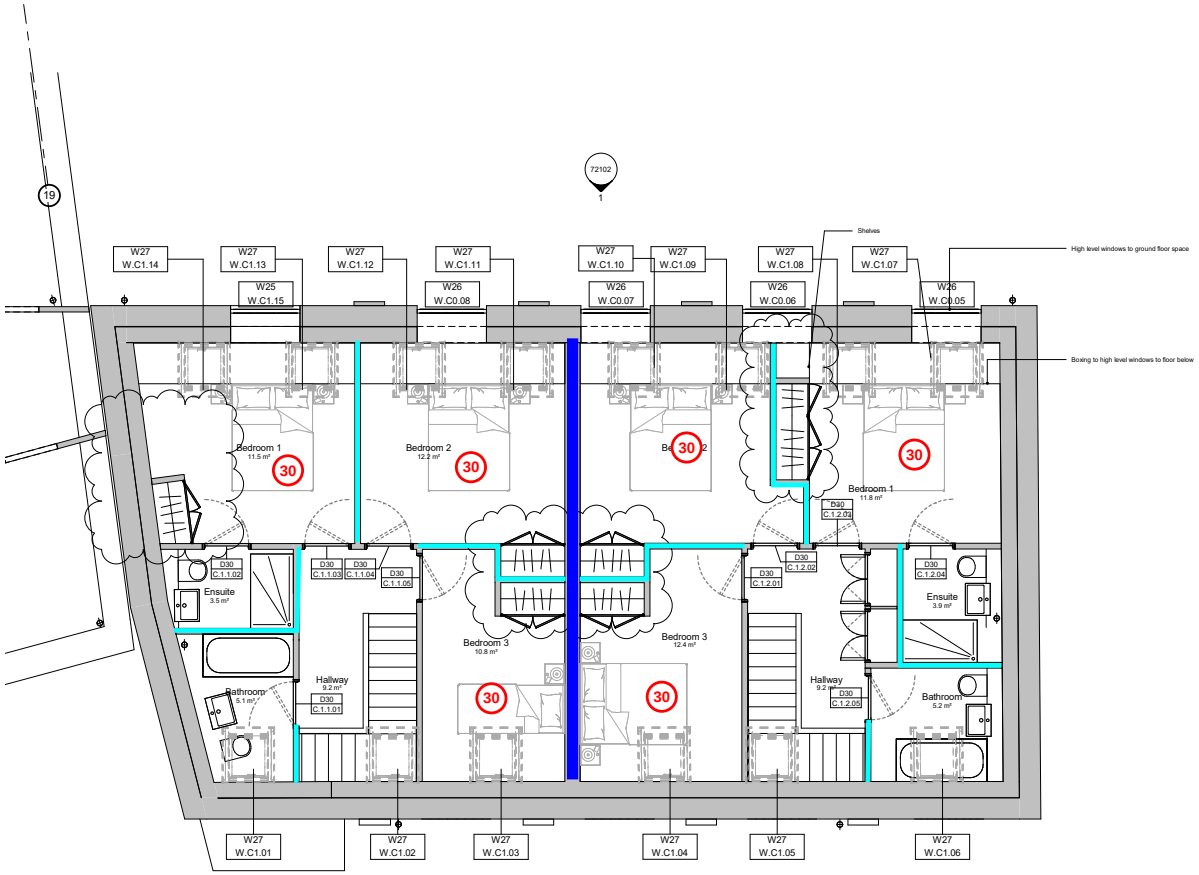
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK C - GROUND FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3
suitability	status description: S3 – For Review/Comment	

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	07	GF	DR	A	7100	P4



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0 5m
0.5m 1m 2m 3m

Drawing Notes:

ION ACOUSTICS
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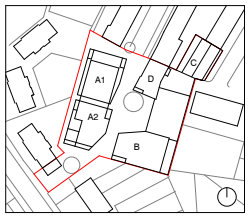
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block C First Floor

Key

- Separating Wall (Requirement E1)
- Partition (Requirement E2) Applies
- 35 Internal Ambient Noise Limit L_{Aeq} dB)

Revision	Date	Description
P4	25.10.2019	Stage 3 Design Freeze
P3	04.07.2019	Apartment layout updates
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block C issue



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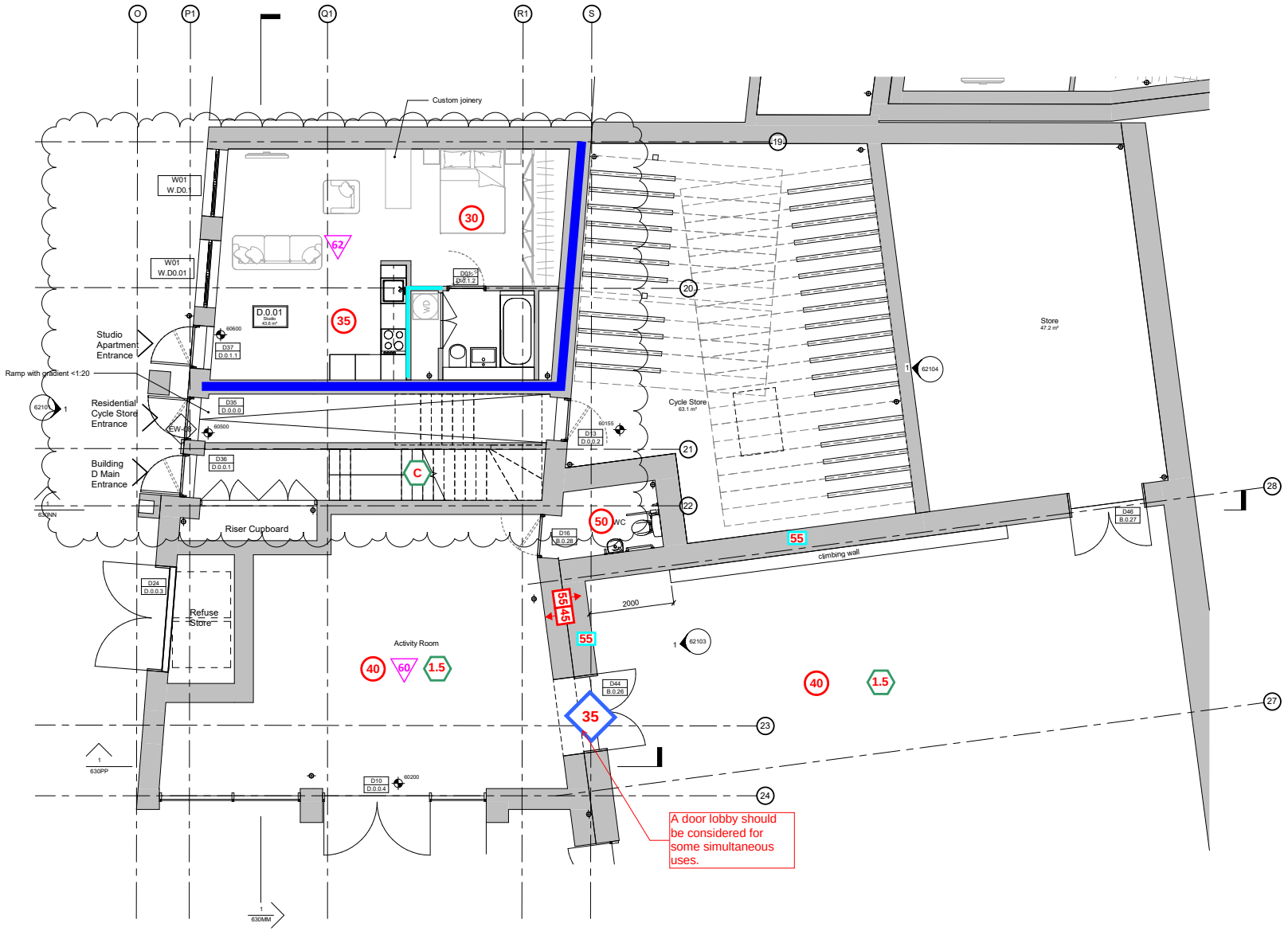
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK C - FIRST FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability | status description: S3 – For Review/Comment

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	07	01	DR	A	7100 1	P4



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0 5m
0.5m 1m 2m 3m

Drawing Notes:

ION ACOUSTICS
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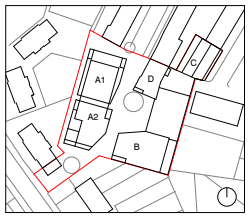
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block D Ground Floor

Key

- Separating Wall (Requirement E1)
- Partition (Requirement E2) Applies
- 50 Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 Reverberation Time T_{mf} (sec)
- C Absorption Class Requirement
- 45 45 Onsite Wall sound insulation $D_{nT,w}$ (dB)
- 40 Design sound insulation for wall R_w (dB)
- 30 Doorset sound insulation R_w (dB)
- 60 Maximum Impact Sound Pressure Level $L'_{nT,w}$ (dB)

Revision	Date	Description
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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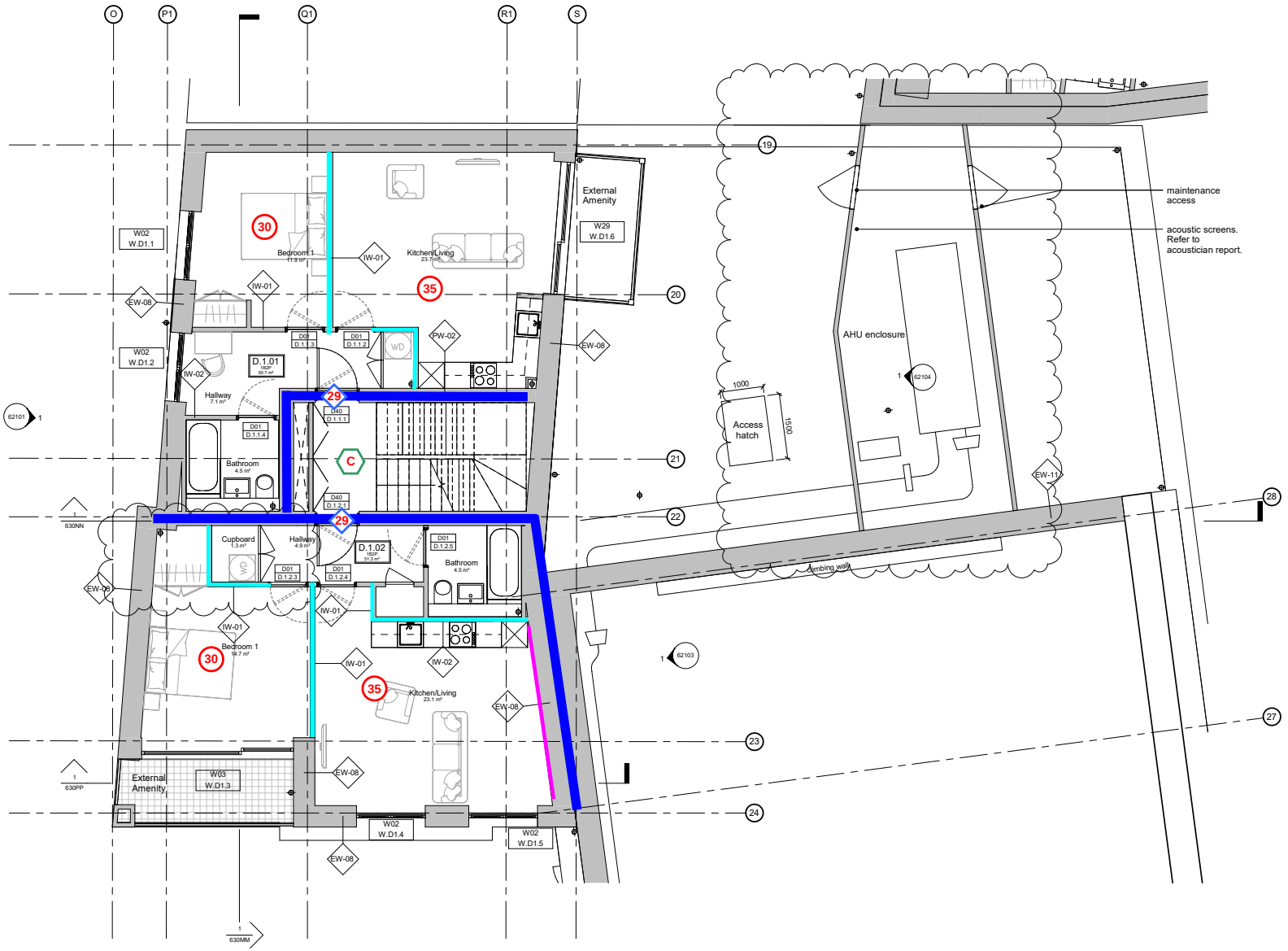
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK D & STORES - GROUND FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3
suitability	status description: S4 – For Approval	

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	06	GF	DR	A	61000	P2



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0 0.5m 1m 2m 3m 5m

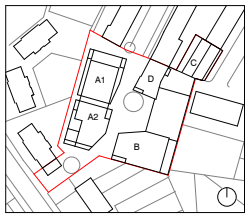
Drawing Notes:

ION ACOUSTICS
www.ionacoustics.co.uk
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block D First Floor

Key

- Separating Wall (Requirement E1)
- Partition (Requirement E2) Applies
- 50 — Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 — Reverberation Time T_{mf} (sec)
- C — Absorption Class Requirement
- 45 45 — Onsite Wall sound insulation $D_{nT,w}$ (dB)
- 40 — Design sound insulation for wall R_w (dB)
- 30 — Doorset sound insulation R_w (dB)
- Planning Condition Sound Insulation Applies + 10dB, ie 55 dB $D_{nT,w}+C_{tr}$

Revision	Date	Description
P3	25.10.2019	Stage 3 Design Freeze
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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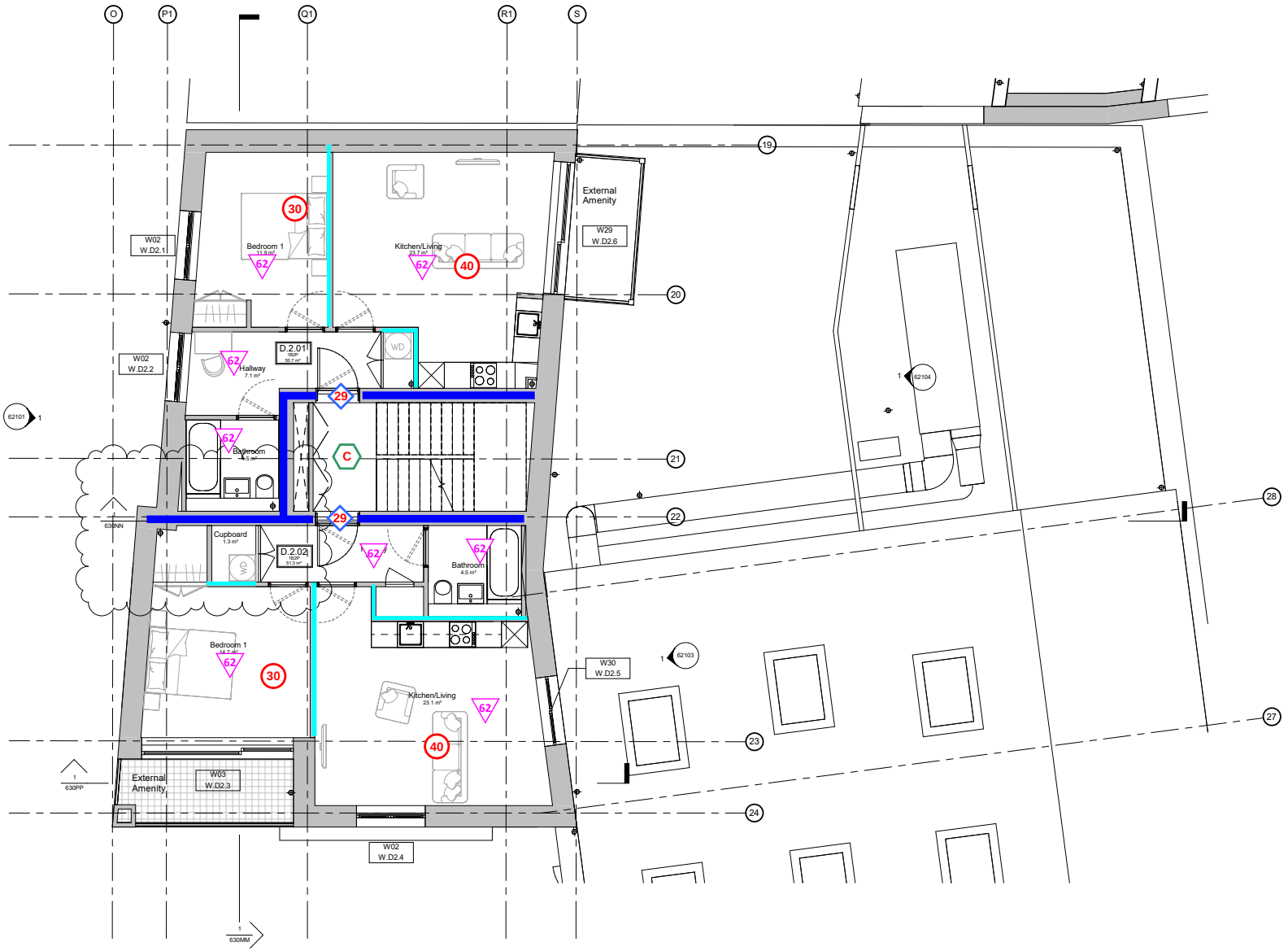
job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK D & STORES - FIRST FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability | status description: S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	06	01	DR	A	61001	P3



General Notes:

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0 5m
0.5m 1m 2m 3m

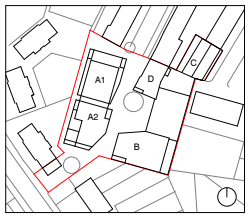
Drawing Notes:

ION ACOUSTICS
www.ionacoustics.co.uk
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block D Second Floor

Key

- Separating Wall (Requirement E1)
- Partition (Requirement E2) Applies
- 50 Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 Reverberation Time T_{mf} (sec)
- C Absorption Class Requirement
- 45/45 Onsite Wall sound insulation $D_{nT,w}$ (dB)
- 40 Design sound insulation for wall R_w (dB)
- 30 Doorset sound insulation R_w (dB)
- 60 Maximum Impact Sound Pressure Level $L'_{nT,w}$ (dB)

Revision	Date	Description
P3	25.10.2019	Stage 3 Design Freeze
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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job title
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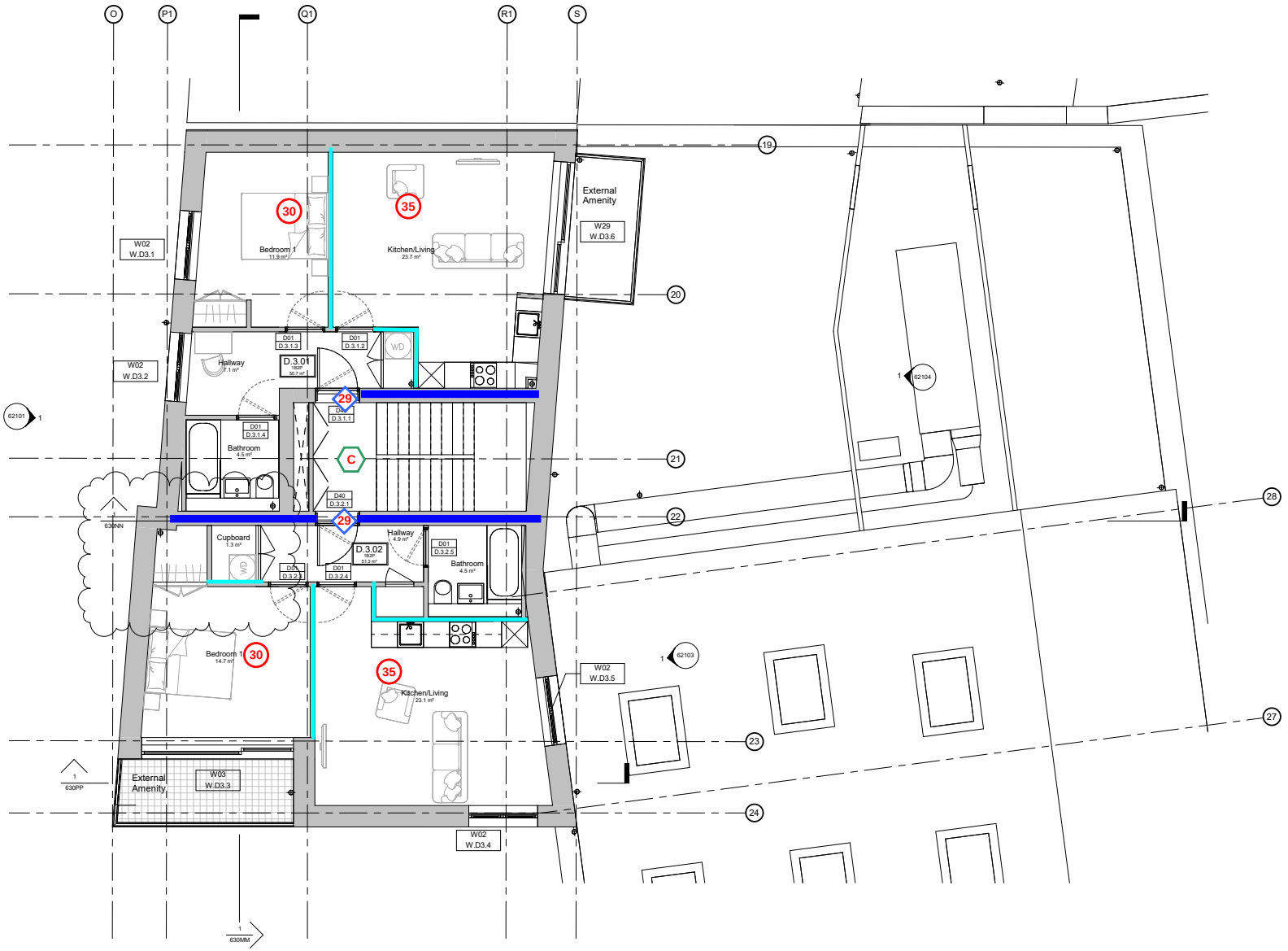
drawing title/location
BLOCK D & STORES - SECOND FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability | status description: S4 – For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	06	02	DR	A	61002	P3



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0 5m
0.5m 1m 2m 3m

Drawing Notes:

ION ACOUSTICS
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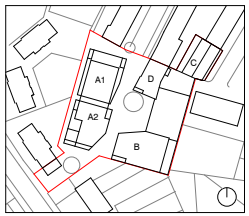
HNCC
Acoustic Employer's Requirements
November 2019
A973 Block D Third Floor

Key

- Separating Wall (Requirement E1)
- Partition (Requirement E2) Applies
- 50 — Internal Ambient Noise Limit L_{Aeq} dB)
- 1.5 — Reverberation Time T_{mf} (sec)
- B — Absorption Class Requirement
- 45 45 — Onsite Wall sound insulation $D_{nT,w}$ (dB)
- 40 — Design sound insulation for wall R_w (dB)
- 30 — Doorset sound insulation R_w (dB)
- 60 — Maximum Impact Sound Pressure Level $L'_{nT,w}$ (dB)

Revision	Date	Description
P3	25.10.2019	Stage 3 Design Freeze
P2	21.03.2019	Stage 3 Issue
P1	14.12.2018	Block B / D issue



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job title
HIGHGATE NEWTOWN COMMUNITY CENTRE

drawing title/location
BLOCK D & STORES - THIRD FLOOR PLAN - AS PROPOSED

scale	1 : 50 @ A1	1:100 @ A3

suitability	status	description
	S4	For Approval

job no	originator	zone	level	type	role	dwg no	revision
HNCC	RCK	06	03	DR	A	61003	P3