

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

18487-R06-A

15 February 2022

Globe & Simpson, St Johns

Commissioning test report and BREEAM assessments

London, Manchester, Edinburgh, Birmingham, Belfast, Leeds

Sandy Brown Ltd

Registered in England & Wales

No. 13227735

post@sandybrown.com

www.sandybrown.com

Registered Office: 55 Charterhouse Street, London EC1M 6HA

SANDY BROWN

Consultants in Acoustics, Noise & Vibration

Version	Date	Comments	Author	Reviewer
A	15 Feb 22		Daniel Shaw	James Atha

Disclaimer

This report has been prepared for the sole benefit and use of our client based on their instructions and requirements. Sandy Brown Ltd extends no liability in respect of the information contained in the report to any third party.

Summary

Sandy Brown has been appointed to carry out acoustic commissioning testing at Globe & Simpson, St Johns, Manchester.

This report provides a summary of the acoustic commissioning test results. This development is targeting the following credits:

- BREEAM 2018 New Construction – Offices Pol 05
- BREEAM 2018 New Construction – Offices Hea 05
- BREEAM 2018 New Construction – Retail Hea 05.

Indoor ambient noise level measurements have been performed. All indoor ambient noise level measurements obtained were within or below the BREEAM Hea 05 criteria for Offices and retail. The relevant BREEAM Hea 05 credits should be awarded.

Temporary dampers were installed as part of the base-build room side ductwork in order to provide back pressure to the AHUs and allow them to be commissioned. The dampers resulted in high noise levels due to regenerated noise, however they are to be removed as part of the Cat-A fit-out works. For the internal ambient noise levels, the AHUs were operating at nominal fan speed.

The indoor ambient noise level measurements obtained exceeded the speculative office NR38 design criteria in all spaces. The base-build plant items were specified to not exceed NR33 in order to allow for noise contributions from the terminal plant equipment provided as part of the Cat-A fit-out (such as FCUs). It is understood that the systems have been designed and installed to achieve these criteria once the temporary dampers have been removed as part of the fit-out but this should be confirmed by the MEP subcontractor, Briggs and Forrester.

External plant noise measurements and a subsequent assessment have been undertaken. The BREEAM 2018 Pol 05 credit requires noise egress from external plant to be at least 5 dB lower than the background noise throughout the day and night as measured at the facade of the nearest noise sensitive receptors.

The level of plant noise egress is predicted to be L_{Aeq} 44 dB at the nearest noise sensitive receptor. This complies with the daytime (07:00-23:00) BREEAM Pol 05 criteria. The plant items will not operate during the night-time (23:00-07:00) and so the BREEAM Pol 05 night-time criteria will also be achieved. As such, the relevant BREEAM Pol 05 credit should be awarded.

The predicted level of plant noise egress, based on the measurements, also complies with the plant noise egress limits set in line with the Manchester City Council criteria.

Contents

1 Introduction 5

2 BREEAM 2018 criteria 5

3 Method..... 5

4 Plant noise egress assessment..... 6

5 Internal noise levels 11

Appendix A 13

 Indoor ambient noise level measurement location mark-ups..... 13

Appendix B 22

 Test equipment information 22

Appendix C 24

 Suitably Qualified Acoustician..... 24

1 Introduction

Sandy Brown has been appointed to carry out acoustic commissioning testing at Globe & Simpson, St Johns, Manchester.

This report details the test methodology, a comparison against the specified design requirements and also the following BREEAM credit criteria:

- BREEAM 2018 New Construction – Offices Pol 05
- BREEAM 2018 New Construction – Offices Hea 05

Appendix A presents the indoor ambient noise level measurement location mark-ups.

Appendix B presents the test equipment information.

Appendix C presents a statement regarding the Suitably Qualified Acoustician requirements.

2 BREEAM 2018 criteria

The following sections set out the criteria for the relevant BREEAM credit being targeted.

The office and retail spaces are being constructed to shell and core only.

2.1 BREEAM 2018 New Construction – Offices Hea 05

The development is targeting 'excellent' under BREEAM 2018 New Construction – Offices at shell & core.

The following acoustic credit is available which relates to internal noise levels within offices:

Hea 05 Acoustic Performance – For shell & core buildings, the Hea 05 credit can be awarded if indoor ambient noise levels meet with the criteria set by BS8233.

2.2 BREEAM 2018 New Construction – Offices Pol 05

The development is targeting 'excellent' under BREEAM 2018 New Construction – Offices at Shell & Core.

The following credit is available which relates to plant noise egress:

Pol 05 Reduction of noise pollution - The plant noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5 dB lower than the background noise throughout the day and night.

3 Method

The following section provides the methods used to undertake the commissioning testing and BREEAM noise measurements.

Plant noise measurements and internal ambient noise level measurements were undertaken by Daniel Shaw on 10 February 2022.

3.1 Internal noise level measurements

Internal ambient noise level measurements were carried out at the locations indicated in Appendix A.

The measurements were carried out at different locations in the speculative office and retail unit spaces with the sound level meter mounted on a tripod approximately 1.2 m from the floor. Each measurement was made over a 5 minute period.

As this is a shell and core only development, there are no requirements to test rooms intended for speech with regards to reverberation times or sound insulation.

Temporary dampers were installed as part of the base-build room side ductwork in order to provide back pressure to the AHUs and allow them to be commissioned. The dampers resulted in high noise levels due to regenerated noise, however they are to be removed as part of the Cat-A fit-out works.

For all measurements, the AHUs were operating at nominal fan speed, which is likely to be higher than typical for a Cat A fit-out.

3.2 Equipment

The rooftop plant noise measurements and indoor ambient noise level measurements were made using a BK 2250 sound level meter.

The sound level meter and microphone were calibrated at the beginning and end of measurements. No significant calibration deviation occurred. The calibration information for the equipment used during the measurements is provided in Appendix B.

4 Plant noise egress assessment

4.1 Pol 05 assessment criteria

Taking into account the BREEAM 2018 Pol 05 criteria as per Section 2.2, the corresponding proposed limits are provided in Table 1.

Table 1 Pol 05 plant noise limits

Time of day	Maximum sound pressure level at 1 m from noise sensitive premises, L_{Aeq} (dB)
Daytime (07:00 – 23:00)	46
Night-time (23:00 – 07:00)	38

4.2 External noise criteria for Manchester City Council

Planning condition 17 imposed by Manchester City Council states the following:

‘Externally mounted ancillary plant, equipment and servicing shall be selected and / or acoustically treated in accordance with a scheme as relevant to each phase and designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location.

The scheme shall be submitted to and approved in writing by the City Council as local planning authority prior to occupation of each phase in order to secure a reduction in the level of noise emanating from the site’

Based on this condition, the corresponding proposed limits are provided in Table 2.

Table 2 MCC plant noise limits

Time of day	Maximum sound pressure level at 1 m from noise sensitive premises, L_{Aeq} (dB)
Daytime (07:00 – 23:00)	46
Night-time (23:00 – 07:00)	38

4.3 Attention catching features

If the proposed plant noise contains attention catching features (such as tonal elements, whines, whistles, bangs etc), the plant should be designed to achieve a limit below those set out above, based on the type and impact of the features.

If appropriate, a subjective assessment of the plant features can be adopted. Where the plant noise contains tonal elements, the following corrections can be made depending on how perceptible the tone is at the noise receptor:

- 0 dB where the tone is not perceptible
- 2 dB where the tone is just perceptible
- 4 dB where the tone is clearly perceptible
- 6 dB where the tone is highly perceptible.

Where the plant noise is impulsive, the following corrections can be made depending on how perceptible the impulsivity is at the noise receptor:

- 0 dB where the impulse is not perceptible
- 3 dB where the impulse is just perceptible
- 6 dB where the impulse is clearly perceptible
- 9 dB where the impulse is highly perceptible.

For noise, which is equally both impulsive and tonal, then both features can be taken into account by linearly summing the corrections for both characteristics.

If the plant has other distinctive characteristics, such as intermittency, then a 3 dB correction can be made.

If a subjective assessment is not appropriate, then an objective assessment can be made. A noise source is deemed to be tonal if the time averaged sound pressure level in a one-third octave band exceeds the level in adjacent one-third octave bands by the level differences given below:

- 15 dB in the low frequency one-third octave bands (25 Hz to 125 Hz)
- 8 dB in the mid frequency one-third octave bands (160 Hz to 400 Hz)
- 5 dB in the high frequency one-third octave bands (500 Hz to 10000 Hz).

If an objective assessment identifies the plant noise to be tonal then a 6 dB correction must be made.

4.4 Plant layouts

The rooftop plant item locations are set out below:

- 2 x tenant chillers (highlighted in blue within Figure 1)
- AHU-1 (highlighted in red within Figure 1)
- AHU-2 (highlighted in red within Figure 1)
- Packaged plant area (highlighted in green within Figure 1)
- Emergency generator (highlighted in orange within Figure 1)
- Toilet extract fan (highlighted in purple within Figure 1)

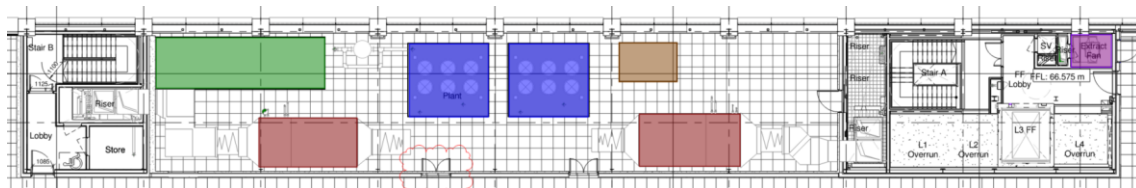


Figure 1 Rooftop plant layout

4.4.1 Chiller noise data

The chillers achieve a sound power level of L_{wA} 75 dB with an acoustic shroud proposed. However, these are considered as tenant items given that they provide cooling to the Cat A FCUs.

4.5 Attenuation and mitigation measures

In-line attenuators are included to the AHUs and toilet extract fan. Acoustic attenuation packages are applied to the chillers and generator.

4.6 Screening

A screen is provided along the bottom edge of the plant deck. This screen is solid and equal to the height of the lift overrun. A louvre forms the upper edge of the plant area.

4.6.1 Operational hours

The plant will be in operation during the daytime (07:00-23:00) and will be switched off during the night-time (23:00-07:00).

4.7 Plant noise measurements

The results of the plant noise measurements undertaken are provided in Table 3. These measurements were taken at a 1 m distance from the sources.

It should be noted that during the testing, the chillers were not operating due to a lack of cooling load within the building, which will be added during the fit-out. In these instances, the acoustic data provided has been used to supplement the noise egress assessment.

Table 3 Plant noise measurement results

Measurement ref.	Plant item / source	Measured noise level, L_{Aeq} 30 seconds (dB)
1	Basement shower pumps	68
2	Basement smoke extract ^[1]	80
3	Basement smoke extract ^[1]	83
4	External smoke extract ^[1]	76
5	Generator long edge ^[1]	79
6	Generator short edge ^[1]	77
7	Generator flue/exhaust ^[1]	84
8	AHU casing	66
9	Right AHU	69

Measurement ref.	Plant item / source	Measured noise level, L_{Aeq} 30 seconds (dB)
10	Left AHU	65
11	Packaged plant large louvre	69
12	Packaged plant small louvre	64
13	Toilet extract fan	66
14	Terrace	57
15	Terrace	57

[1] Emergency life safety plant only

4.8 Plant noise egress levels and assessment

The 3D plant noise egress model of the site has been updated based on the plant noise measurements undertaken and plant data provided.

The nearest and worst effected noise sensitive premise is considered to be the overlooking commercial tower. The resulting levels of normally operating plant noise egress are calculated to be in the region of L_{Aeq} 44 dB at the nearest overlooking tower. No attention catching features or characteristics were observed during the testing, and so no corrections are applicable.

4.8.1 Comparison to BREEAM

The predicted plant noise egress levels comply with the daytime (07:00-23:00) BREEAM Pol 05 plant noise egress criteria as detailed in Table 1.

As the plant items will not operate during the night-time (23:00-07:00), the BREEAM Pol 05 criteria as detailed in Table 1 will also be achieved. Hence, the relevant BREEAM 2018 New Construction – Offices Pol 05 credit should be awarded.

4.8.2 Comparison to Manchester City Council criteria

The predicted noise egress levels based on the measurement also meet with the relevant daytime (07:00-23:00) Manchester City Council criteria as per Table 2. As the plant will not operate during the night-time, (23:00-07:00) the night-time plant noise egress criteria will also be achieved.

4.8.3 Chillers

The model has also been run with the chillers operating, based on the noise data provided and the resulting noise egress levels meet with the relevant noise criteria.

4.8.4 Emergency plant

Emergency plant noise egress has been calculated to achieve L_{Aeq} 55 dB outside the nearest noise sensitive receptors, based on the noise measurements. This meets with the specified criteria, which were set to be in line with the Manchester City Council requirements.

5 Internal noise levels

5.1 Assessment criteria – BREEAM 2018

The spaces in which internal ambient noise level measurements were undertaken were reception offices or speculative office spaces as well as retail units.

As per the criteria provided in Section 2, BS:8233:2014 states that internal ambient noise levels should be in the region of:

- L_{Aeq} 45-50 dB for open plan offices
- L_{Aeq} 50-55 dB for retail units.

5.2 Assessment criteria – Design specification

Building services noise should not exceed NR38 within speculative offices and NR40 within retail units following the Cat-A fit-outs as per the specified design building services noise criteria.

For base-build plant items, building services noise should not exceed NR33 within speculative offices and NR35 within retail units.

5.3 Measurement results

The indoor ambient noise level measurement results are summarised in Table 4. The internal noise levels were noted to be driven by building services noise.

Mark-ups are provided in Appendix A indicating locations where measurements were carried out.

Table 4 Indoor ambient noise level measurement results

Ref	Sound pressure levels measured, $L_{Aeq,5min}$ (dB)	Noise rating NR
<i>Level 8</i>		
1.1	48	46
1.2	50	46
1.3	49	44

Ref	Sound pressure levels measured, $L_{Aeq,5min}$ (dB)	Noise rating NR
<i>Average</i>	<i>49</i>	<i>45</i>
<i>Level 2</i>		
2.1	47	43
2.2	46	43
2.3	43	38
<i>Average</i>	<i>46</i>	<i>41</i>
<i>Level 1</i>		
3.1	49	45
3.2	47	43
3.3	46	41
<i>Average</i>	<i>47</i>	<i>43</i>
<i>Ground</i>		
4.1	48	44
4.2	49	45
4.3	46	42
<i>Average</i>	<i>48</i>	<i>44</i>

5.4 Comparison to specified design criteria

Building services noise from the base-build plant items within speculative offices and retail units should not exceed NR33 and NR35 respectively as per the specified design building services noise criteria as set out in Section 5.2.

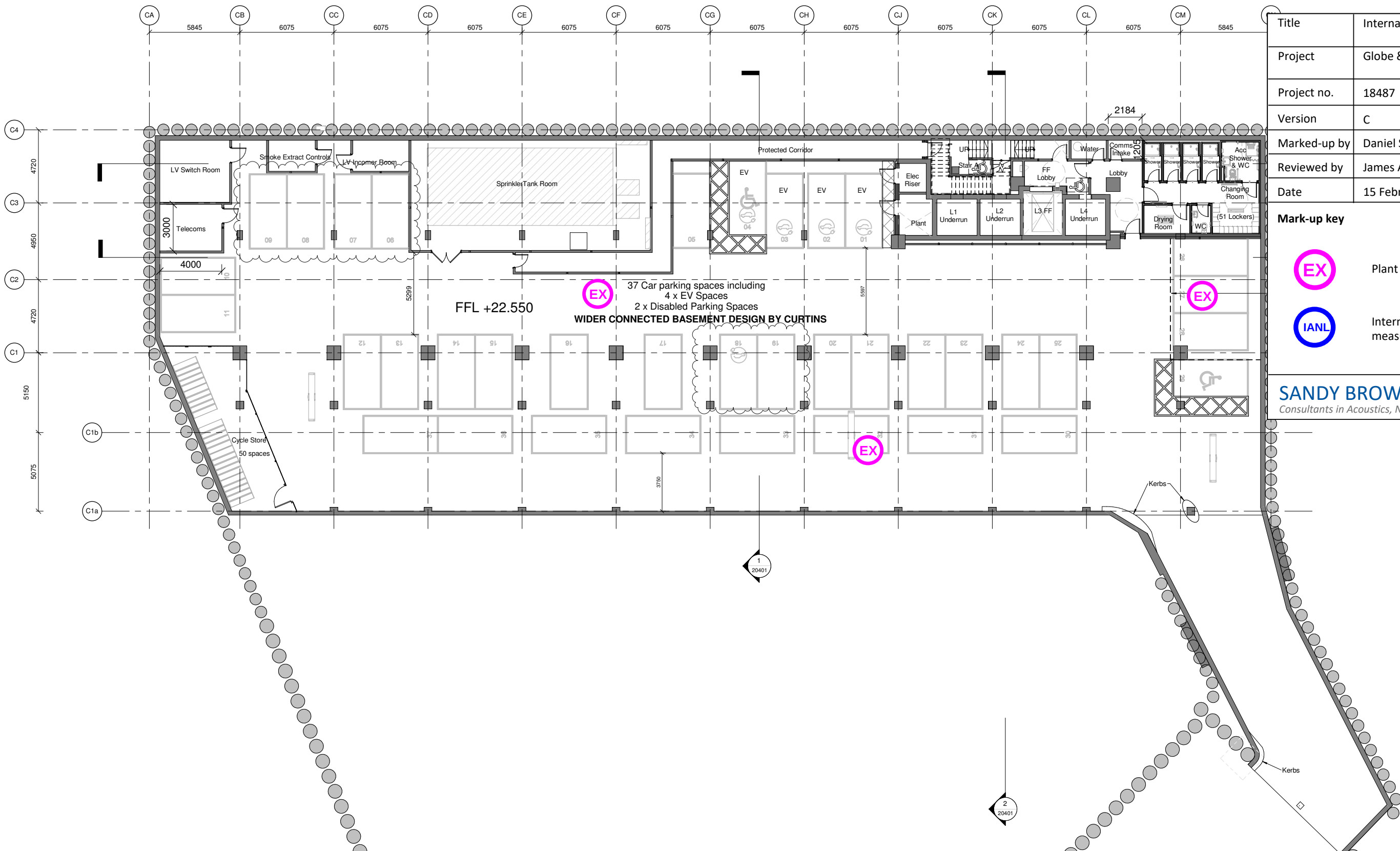
For the internal ambient noise levels, the AHUs were operating at nominal fan speed, which is unlikely to be representative of conditions following a Cat-A fit-out, once temporary dampers have been removed. It is understood that the systems have been designed and installed to achieve these criteria once the temporary dampers have been removed as part of the fit-out, but this should be confirmed by the MEP subcontractor, Briggs and Forrester.

5.5 Comparison to BREEAM requirements

All of the measured noise levels within the speculative offices and retail units as per Table 4 are all within or below the respective criteria. Hence, these spaces meet with the BREEAM 2018 New Construction – Offices Hea 05 and BREEAM 2018 New Construction – Retail Hea 05 credits. These credits should therefore be awarded.

Appendix A

Indoor ambient noise level measurement location mark-ups



Basement General Arrangement

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
Mark-up key	
	Plant noise measurement
	Internal ambient noise level measurement location
SANDY BROWN Consultants in Acoustics, Noise & Vibration	

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT	KEYPLAN
C01	30/03/20	Corridor around sprinkler tank room added, car parking spaces updated to suit - issued for construction	
C02	31/03/20	LV Incomer Room enlarged	
C03	Date 274	EV charging points omitted (EAI 027)	

CLIENT

ALLIED LONDON

AXIS ARCHITECTS

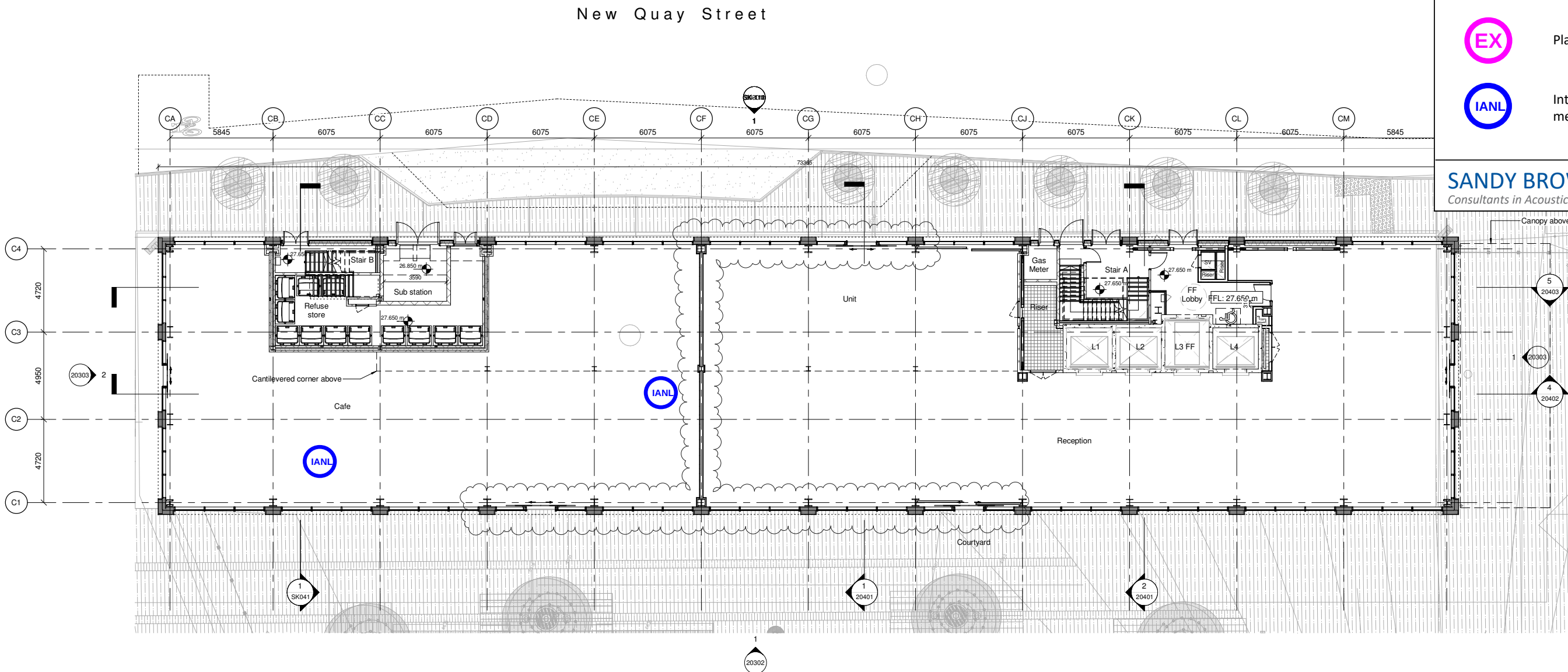
27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk
SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1:125 12/11/2018 GM MA NAB

PROJECT
Globe & Simpson, St John's - Building 102

TITLE
General Arrangement Plan -
Level B1 Basement

STATUS PURPOSE FOR ISSUE STAGE AXIS No.
A5 For Construction Stage 5 9169
DRAWING NO. REV.
SJQ-102-AXS-XX-B01-DR-A-20199 C03

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
Mark-up key	
	Plant noise measurement
	Internal ambient noise level measurement location
SANDY BROWN Consultants in Acoustics, Noise & Vibration	



Ground Floor General Arrangement

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS 3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT	KEYPLAN
C01	03/07/20	Issued for Construction	
C02	12/01/21	Entrance doors relocated / added, wall added to split tenancies as EAIs 019 and 021	

CLIENT



AXIS ARCHITECTS

27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk

SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1: 125 12/11/2018 GM MA NAB

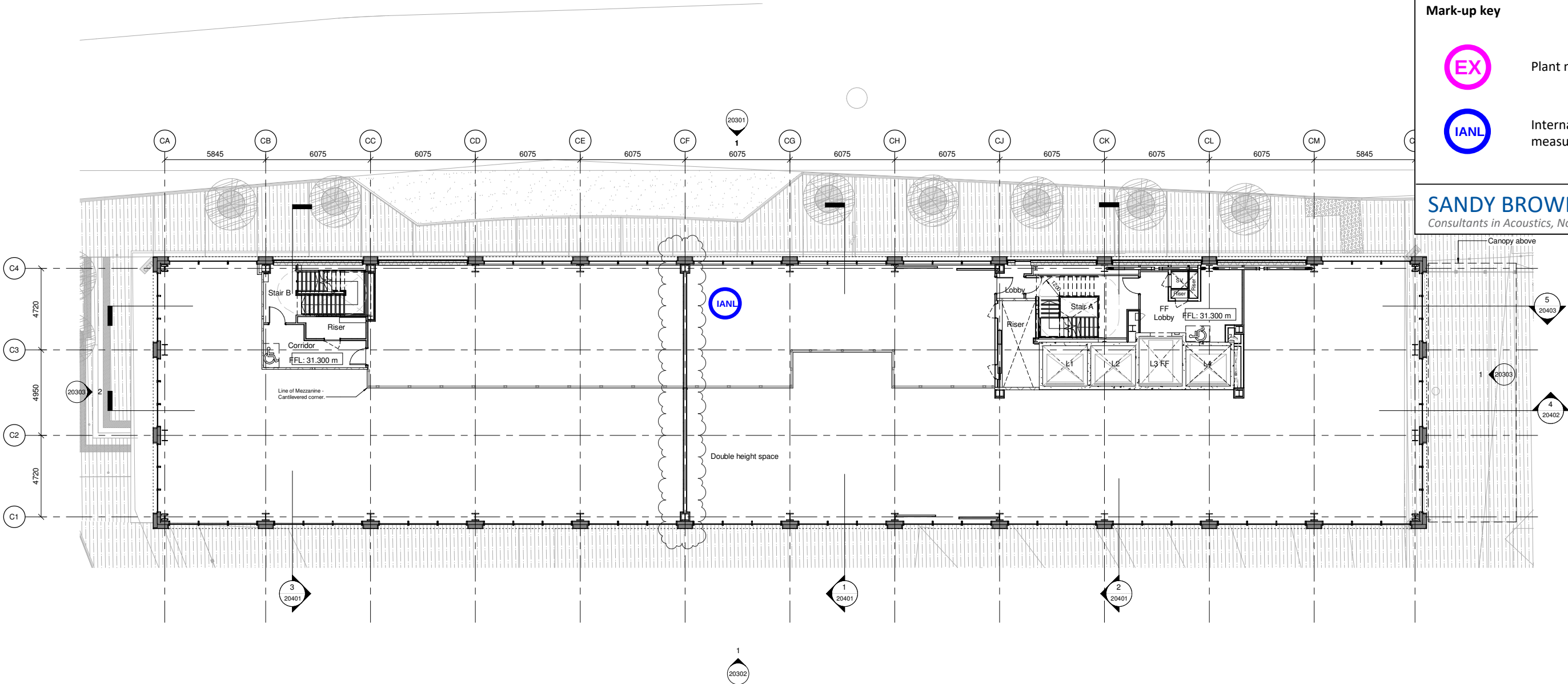
PROJECT
Globe & Simpson, St John's - Building 102

TITLE
General Arrangement Plan -
Level L00 Ground Floor

STATUS PURPOSE FOR ISSUE STAGE AXIS No.
A5 For Construction Stage 5 9169

DRAWING NO. REV.
SJQ-102-AXS-XX- L00 - DR - A - 20200 C02

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
<div>Mark-up key</div> <div><div>EX</div>Plant noise measurement</div> <div><div>IANL</div>Internal ambient noise level measurement location</div>	
<div>SANDY BROWN</div> <div>Consultants in Acoustics, Noise & Vibration</div>	



Mezzanine General Arrangement

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS 3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT	KEYPLAN
C01	03/07/20	Issued for Construction	
C02	09/11/20	Tenant Variation (removal of slab) incorporated	
C03	12/01/21	Entrance doors relocated / added, wall added to split tenancies as EAls 019 and 021	

CLIENT

ALLIED LONDON

AXIS
ARCHITECTS

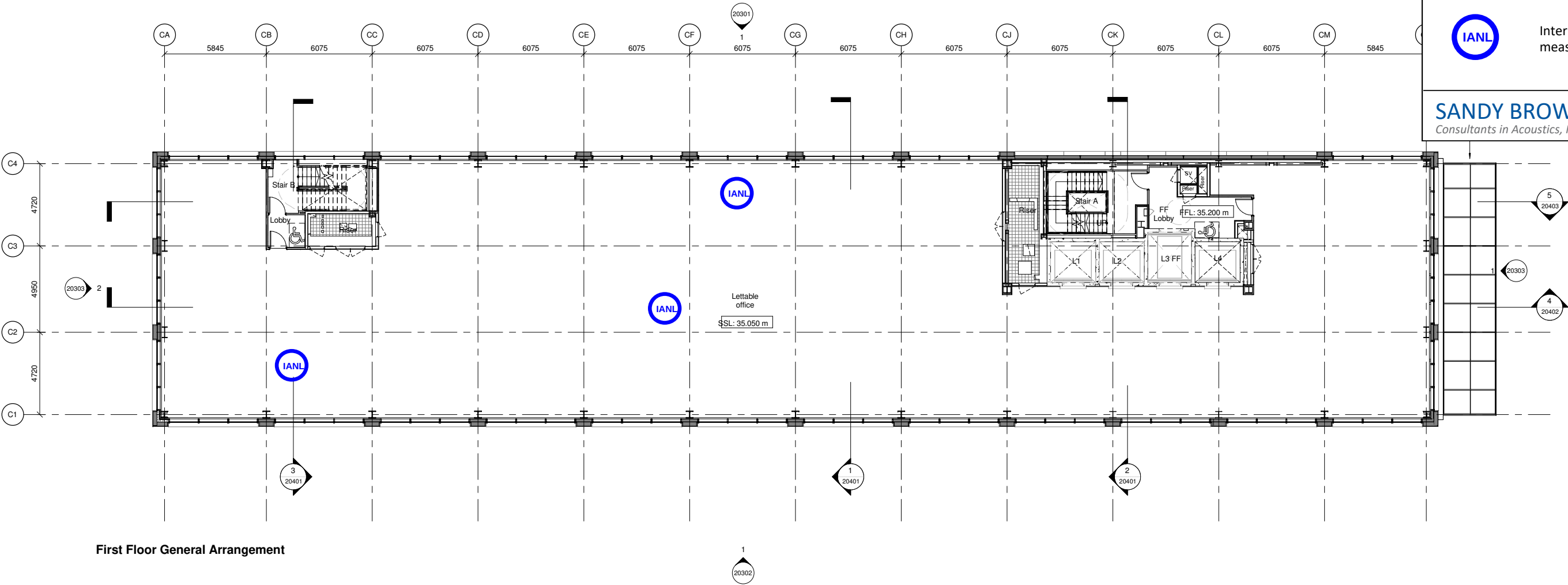
27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk
SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1: 125 12/11/2018 GM MA NAB

PROJECT
Globe & Simpson, St John's - Building 102

TITLE
General Arrangement Plan -
Level L00M Mezzanine

STATUS	PURPOSE FOR ISSUE	STAGE	AXIS No.
A5	For Construction	Stage 5	9169
DRAWING NO.		REV.	
SJQ-102-AXS-XX-L00M-DR-A-20201		C03	

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
<div>Mark-up key</div> <div><div>EX</div>Plant noise measurement</div> <div><div>IANL</div>Internal ambient noise level measurement location</div>	
<div>SANDY BROWN</div> <div>Consultants in Acoustics, Noise & Vibration</div>	



First Floor General Arrangement

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS 3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT	KEYPLAN
C01	03/07/20	Issued for Construction	



AXIS
ARCHITECTS

27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk
SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1: 125 12/11/2018 GM MA NAB

PROJECT
Globe & Simpson, St John's - Building 102

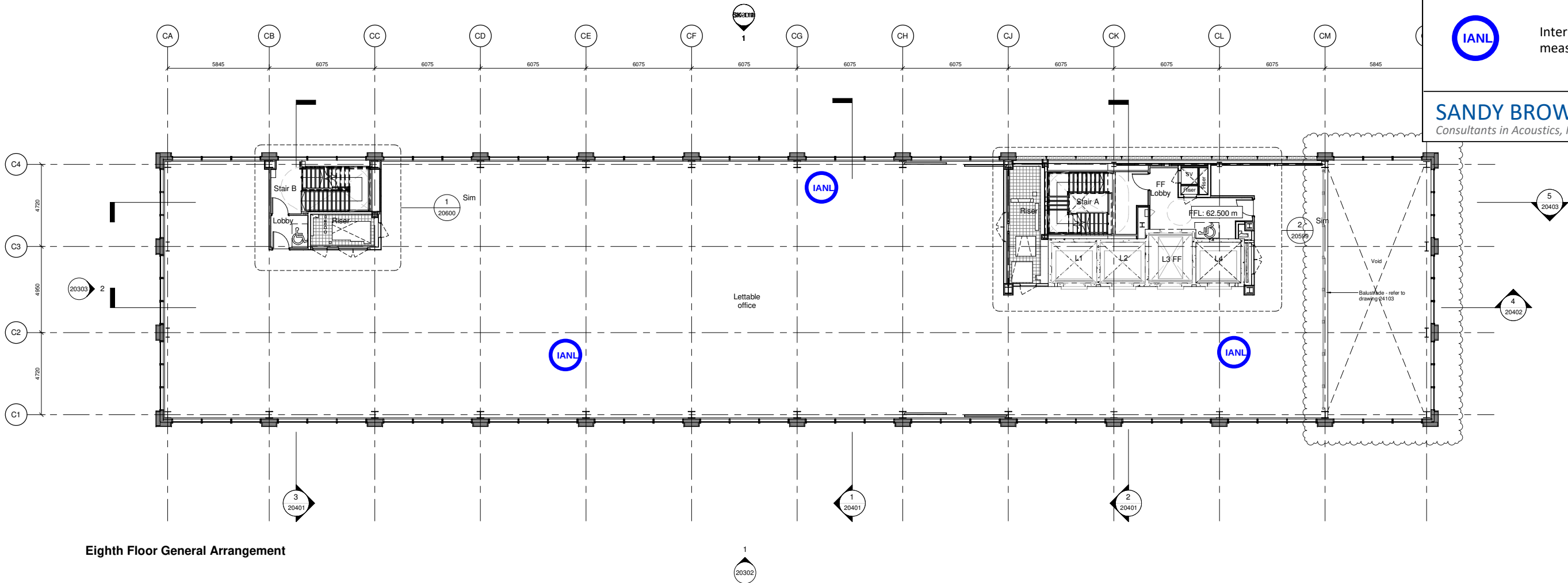
TITLE
General Arrangement Plan -
Level L01

STATUS	PURPOSE FOR ISSUE	STAGE	AXIS No.
A5	For Construction	Stage 5	9169
DRAWING NO.		REV.	
SJQ-102-AXS-XX-L01-DR-A-20202		C01	



DRAWING NO. **SJQ-102-AXS-XX- L02 -DR-A-20203** REV. **C01**

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
Mark-up key	
<div><div>EX</div>Plant noise measurement</div>	
<div><div>IANL</div>Internal ambient noise level measurement location</div>	
SANDY BROWN Consultants in Acoustics, Noise & Vibration	



Eighth Floor General Arrangement

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS 3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT	KEYPLAN
C01	03/07/20	Issued for Construction	
C02	09/11/20	Tenant Variation (removal of slab) incorporated	



AXIS
ARCHITECTS
27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk
SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1: 125 12/11/2018 GM MA NAB

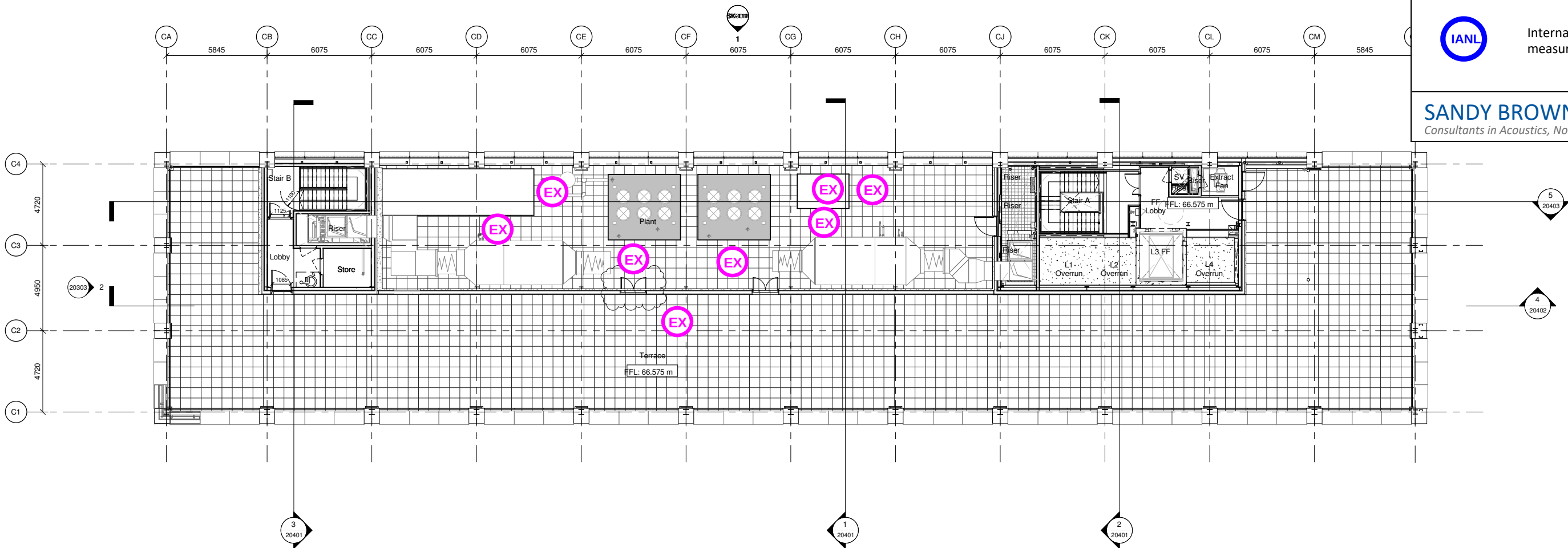
PROJECT
Globe & Simpson, St John's - Building 102

TITLE
General Arrangement Plan - Level L08

STATUS PURPOSE FOR ISSUE STAGE AXIS No.
A5 For Construction Stage 5 9169

DRAWING NO. REV.
SJQ-102-AXS-XX-L08-DR-A-20209 C02

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
Mark-up key	
<div><div>EX</div>Plant noise measurement</div>	
<div><div>IANL</div>Internal ambient noise level measurement location</div>	
SANDY BROWN Consultants in Acoustics, Noise & Vibration	



Roof General Arrangement

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS 3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT
C01	03/07/20	Issued for Construction
C02	22/02/21	Door moved to suit plant layout

KEYPLAN

CLIENT



AXIS ARCHITECTS

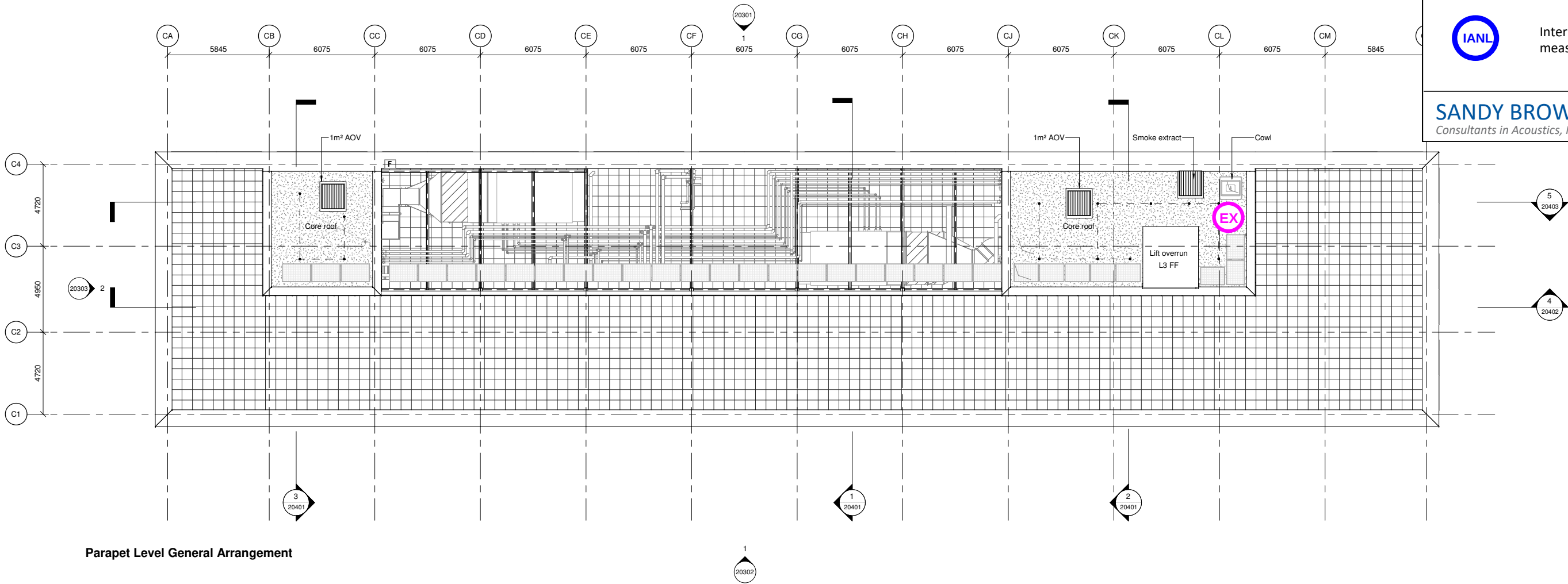
27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk
SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1:125 12/11/2018 GM MA NAB

PROJECT
Globe & Simpson, St John's - Building 102

TITLE
General Arrangement Plan -
Level LRF Roof

STATUS	PURPOSE FOR ISSUE	STAGE	AXIS No.
A5	For Construction	Stage 5	9169
DRAWING NO.		REV.	
SJQ-102-AXS-XX-LRF-DR-A-20210		C02	

Title	Internal noise measurements
Project	Globe & Simpson, St Johns Place
Project no.	18487
Version	C
Marked-up by	Daniel Shaw
Reviewed by	James Atha
Date	15 February 2022
<div>Mark-up key</div> <div><div>EX</div>Plant noise measurement</div> <div><div>IANL</div>Internal ambient noise level measurement location</div>	
<div>SANDY BROWN</div> <div>Consultants in Acoustics, Noise & Vibration</div>	



Parapet Level General Arrangement

© COPYRIGHT
The copyright in this drawing is vested in AXIS and no licence or assignment of any kind has been, or is, granted to any third party whether by provision of copies or originals of the drawings or otherwise unless otherwise agreed in writing.

DO NOT SCALE FROM THIS DRAWING
The contractor shall check and verify all dimensions on site and report any discrepancies in writing to AXIS before proceeding with work.

FOR ELECTRONIC DATA ISSUE
Electronic data / drawings are issued as "read only" and should not be interrogated for measurement. All dimensions and levels should be read, only from those values stated in text, on the drawing.

AREAS MEASUREMENT
The areas are approximate and can only be verified by a detailed dimensional survey of the completed building. Any decisions to be made on the basis of these predictions, whether as to project viability, pre-letting, lease agreements or otherwise, should include due allowance for the increases and decreases inherent in the design development and building processes. Existing buildings may present anomalies in relation to surveyed/drawn plans that may also effect the stated areas. All areas are subject to Town Planning and Conservation Area Consent and detailed Rights to Light analysis. Figures relate to the Net Internal Area (NIA) of the building at the current stage of the design and are calculated using one of the following (as stated in the accompanying areas schedule) IPMS1, IPMS2, IPMS 3, Gross External Area (GEA), Gross Internal Area (GIA) or Net Internal Area (NIA) methods of measurement from the RICS Property Measurement 1st edition.

REV.	DATE	AMENDMENT	KEYPLAN
C01	03/07/20	Issued for Construction	



AXIS
ARCHITECTS

27th Floor City Tower Piccadilly Plaza Manchester M1 4BT
T: +44 (0)161 233 8900 E: axis@axisarchitects.co.uk
SCALE @ A1 DATE ORIGINATOR CHECKED AUTHORISED
1: 125 12/11/2018 GM MA NAB

PROJECT
Globe & Simpson, St John's - Building 102

TITLE
General Arrangement Plan -
Parapet Level LPL

STATUS	PURPOSE FOR ISSUE	STAGE	AXIS No.
A5	For Construction	Stage 5	9169
DRAWING NO.		REV.	
SJQ-102-AXS-XX-LPL-DR-A-20211		C01	

Appendix B

Test equipment information

Equipment

A BK 2250 sound level meter was used to undertake the the Pol 05 plant measures and the Hea 05 indoor ambient noise level measurements. The calibration details for the sound level meter are provided in Table A1.

Table A1 Equipment calibration data

Equipment description	Type/serial number	Manufacturer	Calibration expiry	Calibration certification number
Sound level meter	2250/3011964	Brüel & Kjær	8 Sep 22	UCRT21/2089
Microphone	4189/3100176	Brüel & Kjær	8 Sep 22	UCRT21/2089
Pre-amp	ZC0032/26376	Brüel & Kjær	8 Sep 22	UCRT21/2089
Calibrator	4231/3019123	Brüel & Kjær	8 Sep 22	UCRT21/2086

Calibration of the sound level meter used for the tests is traceable to national standards. The calibration certificates for the sound level meter used in this survey are available upon request.

The sound level meter and microphone were calibrated at the beginning and end of the measurements using their respective sound level calibrator. No significant deviation in calibration occurred.

Appendix C

Suitably Qualified Acoustician

Acoustics assessments and testing for BREEAM are to be carried out by a 'suitably qualified acoustician' and a 'compliant test body', respectively, as defined in the guidance notes for the BREEAM acoustic credits.

A suitably qualified acoustician is defined as an individual who:

- Holds a degree, PhD or equivalent qualification in acoustics/sound testing
- Has a minimum of three years relevant experience (within the last five years)
- Holds a recognised acoustic qualification and membership of an appropriate professional body. The primary professional body for acoustics in the UK is the Institute of Acoustics.

A compliant test body is defined as:

- Organisations having UKAS accreditation to the appropriate scope, or who are accredited by a member of the International Accreditation Forum to the appropriate scope OR
- Organisations or individuals registered with the Association of Noise Consultants (ANC) Registration Scheme OR
- Organisations that can provide evidence that they follow the relevant principles of ISO/IEC 17024 in relation to BREEAM requirements.

All technical staff at Sandy Brown hold suitable qualifications in acoustics and the relevant level of membership in the Institute of Acoustics.

Sandy Brown is an independent acoustic consultancy that is a member of the Association of Noise Consultants and a sponsor member of the Institute of Acoustics. It is registered under the Association of Noise Consultants scheme for Approved Document E pre-completion testing (company number 141) which qualifies it as a 'compliant test body' for acoustics.

In this instance the assessment has been carried out by Kane Mitchell and reviewed by James Atha.

Daniel Shaw has the following qualifications:

- MEng Acoustical Engineering
- Experience in the last 5 years: 3 years
- AMIOA

James Atha has the following qualifications:

- BSc (Hons) Audio Technology
- Experience in the last 5 years: 5 years
- MIOA