

Avondale Drive, Hayes Phase 1A

Noise Assessment in relation to Condition 22 of Decision Notice ref. 76551/APP/2021/4502

Report ref.

AP2047/22288/Rev 1

Issued to

Higgins Partnerships

Prepared by

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Principal Consultant

Version	Authorised by	Remarks	Date
Rev 0	AP	-	20.03.2025
Rev 1	AP	Revised model with no louvre to GF plant room	27.03.2025



SECTION	TITLE	PAGE
1.	INTRODUCTION	1
2.	SITE DESCRIPTION.....	1
3.	PLANNING CONDITION	1
4.	RELEVANT POLICY AND GUIDANCE.....	2
4.1	BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND.....	2
4.2	SUPPLEMENTARY PLANNING DOCUMENT - DEVELOPMENT CONTROL FOR NOISE GENERATING AND NOISE SENSITIVE DEVELOPMENT (JULY 2014)	2
5.	AMBIENT NOISE SURVEY	3
5.1	METHODOLOGY	3
5.2	RESULTS	4
6.	PREDICTION OF NOISE PROPAGATION ACROSS THE SITE	4
7.	ASSESSMENT	6
8.	CONCLUSIONS.....	7

APPENDIX A: Proposed development drawings

APPENDIX B: Mechanical plant layout drawings and plant details

APPENDIX C: Noise monitoring locations and results

APPENDIX D: Noise model results



1. INTRODUCTION

Higgins Partnerships are developing a residential scheme located on land adjacent to Avondale Drive, Hayes. The scheme is to be built out in several phases.

A hybrid planning application has been submitted for the scheme, with full planning permission now granted for Phase 1A, subject to conditions, and outline planning permission granted for Phases 1B and 2 with all matters reserved.

Spectrum has been instructed by Higgins Partnerships to carry out a noise assessment in line with the requirements set out in the noise related conditions.

The assessment detailed within this report focusses on Phase 1A and relates to Condition 22 (environmental plant noise). However, the assessment also considers the presence of the other proposed phases within the noise model.

2. SITE DESCRIPTION

The proposed development site is located on land to the north of Avondale Drive, Hayes and is bounded to the east by Avondale Drive with the A312 beyond. To the north is open space with residential uses beyond. To the south are further residential uses. To the west is Minet School.

The development site is currently occupied by existing residential uses, which are to be demolished and replaced with new residential apartments. Phase 1A of the development is under construction.

Phase 1A is to comprise 30 apartments over five storeys within a single block and is at the western end of the site, furthest from the A312. Phase 1B is to comprise 143 units across four blocks ranging from six to ten storeys and is at the eastern end of the site closest to the A312. Phase 2 is to comprise 137 units across three blocks ranging from six to eight storeys and is located between Phases 1A and 1B.

Drawings of the proposed development are presented in Appendix A. Plant layout drawings and equipment details are presented in Appendix B.

3. PLANNING CONDITION

Condition 22 states:

'Each phase of the development shall not be occupied until full and final details are provided to, and approved by, the Local Planning Authority for each relevant development phase of any building services plant that would result in sound emitted externally, together with details of any required noise control to safeguard the amenity of the occupants of both the scheme and the neighbouring dwellings. The plant shall be selected and installed so as to minimise sound externally to a practicable minimum, and, where required (due to risk of noise impact), the plant and background sound levels should be determined and assessed in accordance with the Council's Noise SPD (2006) and the current version of BS 4142.'



'REASON

To safeguard the amenity of the occupants of the development in accordance with Policy EM8 of the Hillingdon Local Plan: Part One - Strategic Policies (November 2012) in accordance with Policy DMHB 11 of the Hillingdon Local Plan: Part 2 (2020) and Policy D14 of the London Plan (2021).'

4. RELEVANT POLICY AND GUIDANCE

4.1 BS 4142:2014+A1:2019 METHODS FOR RATING AND ASSESSING INDUSTRIAL AND COMMERCIAL SOUND

The principle of BS 4142¹ is to determine an initial estimate of impact of industrial/commercial sound on nearby residents by comparing the Rating Level (sound level from the industrial/commercial source, with a correction applied for any acoustic features that characterise the sound) with the Background Sound Level (L_{A90} as measured in absence of the industrial/commercial source).

Generally, the greater the difference by which the Rating Level exceeds the Background Sound Level, the greater the magnitude of impact. BS 4142 states that *'a difference of around +10 dB or more is likely to be an indication of a significant adverse impact [...]. A difference of around +5 dB is likely to be an indication of an adverse impact [...]. Where the rating level does not exceed the background sound level, this is an indication of the specific sound source having a low impact.'*

However, BS 4142 also advises that *'when making assessments and arriving at decisions [...] it is essential to place the sound in context'* so in each case, the context in which the sound is placed must be considered and the initial estimate of impact should be modified accordingly. For example it advises *'Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.'* It also indicates that impacts estimated during *'the middle of the night can be distinctly different (and potentially of lesser importance) compared to the start or end of the night-time period for sleep purposes.'*

4.2 SUPPLEMENTARY PLANNING DOCUMENT - DEVELOPMENT CONTROL FOR NOISE GENERATING AND NOISE SENSITIVE DEVELOPMENT (JULY 2014)

The Council's Noise SPD (2006) referred to by the condition has been superseded by a subsequent SPD titled Development Control for Noise Generating and Noise Sensitive Development published in July 2014 by the London Boroughs of Hillingdon, Hounslow, and Richmond upon Thames.

The SPD does not provide guidance on noise from mechanical plant related to residential use. However, guidance is provided on acceptability criteria relating to noise from industrial and commercial sound based on the methodology set out in BS 4142. Although this Standard does not specifically include residential mechanical plant within its scope, it is the Standard typically used to assess the impact of such plant on residential receptors.

The SPD advises that a Rating Level that is at least 5dB below the Background Sound Level will normally be acceptable. A Rating Level that is no more than 5dB above the Background Sound Level will be

¹ BS 4142:2014 Methods for rating and assessing industrial and commercial sound



acceptably only if there are overriding economic or social reasons for development to proceed. A Rating Level that is more than 5dB above the Background Sound Level will normally be unacceptable.

5. AMBIENT NOISE SURVEY

5.1 METHODOLOGY

Unattended ambient noise measurements were carried out during a site survey between Monday 31 October and Friday 4 November 2022.

Noise loggers were installed at four locations as indicated on the Noise Monitoring Location (NML) plan in Appendix B. The NMLs are summarised as follows:

NML 1: Roof of Glenister House (2.5m above roof level)

NML 2: Rear of Fitzgerald House (2.5m above ground)

NML 3: Edge of roof of carpark between Glenister and Fitzgerald House overlooking Avondale Drive (4m above ground)

NML 4: East façade of Wellings House at first floor level (4m above ground)

Noise measurement parameters consisted of equivalent continuous (L_{Aeq}) noise levels and maximum (L_{Amax}) noise levels as well as statistical noise levels (termed L_n , where n is the percentage of time the level is exceeded during the measurement period). Both overall and 1/1 octave band measurements were stored for later analysis.

The following equipment was used:

NML 1

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3024396
- Bruel & Kjaer Type 4189 Microphone s/n 3147701
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 3021281

NML 2

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3024398
- Bruel & Kjaer Type 4189 Microphone s/n 3147720
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 3021283

NML 3

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3024525
- Bruel & Kjaer Type 4189 Microphone s/n 3147699
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 3021285

NML 4

- Bruel & Kjaer Type 2250 Sound Level Meter s/n 3027942
- Bruel & Kjaer Type 4189 Microphone s/n 3196081
- Bruel & Kjaer Type 4231 Acoustic Calibrator s/n 2229957

Before and after the survey, the sound level meter was field-calibrated in accordance with the manufacturer's guidelines, and no significant drift was observed. The meter, microphone and field calibrator are laboratory calibrated biennially in accordance with UKAS procedures or to traceable National Standards.

Weather was monitored remotely based on information available online of weather stations around Heathrow Airport. During the survey there were periods of elevated wind and rain. These periods were therefore excluded from the dataset before further analysis was undertaken to determine the representative daytime and night time noise environment affecting the site.

5.2 RESULTS

Noise levels affecting the site are dominated by road traffic movements on the A312 and Avondale Drive during both the day and night time periods.

The results of the ambient noise measurements are presented in Appendix C. The results have been processed to determine the typical background sound levels at the site. The resulting background sound levels are summarised in Table 3.

Noise Measurement Location (NML)	Background sound level L_{A90} (dB)	
	Day	Night
NML 1: Roof of Glenister House	58	54
NML 2: Rear of Fitzgerald House	46	46
NML 3: Carpark overlooking Avondale Drive	51	48
NML 4: East façade of Wellings House	59	54

Table 3: Summary of results of ambient noise survey results

The summarised background sound levels have been determined by taking the lowest of the mean, mode and median $L_{A90,5min}$ values for each of the relevant periods. The analysis of nighttime background sound levels focuses on the early nighttime period between 23:00 and 01:00 when residents would be going to sleep.

6. PREDICTION OF NOISE PROPAGATION ACROSS THE SITE

The particular prediction model that has been used for this analysis is DGMR's iNoise software. This acoustic model implements the procedures set out in ISO 9613-2:1996 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation to determine noise levels", and is Quality Assured to all parts of ISO 17534:2015 "Acoustics – Software for the calculation of sound outdoors". The Predictor model takes account of the following features in its calculation procedure:

- Source sound power level (for point, line and area sources)
- Reflection from nearby structures and source directivity
- Distance from noise source (geometric spreading)
- Atmospheric absorption
- Acoustic screening of intervening structures and topography



- Ground absorption
- Ground effects (which includes the height of ground relative to the noise source)

Detailed noise calculations are then computed of the contribution of each individual noise source to combined noise levels at the receptor location.

The equipment list and sound power levels are summarised in Table 4.

Item	Make / model / comment	L_{WA} (dB)	Octave band sound power level, L_w (dB)							
			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz
P/RF/01 (circulation pump)	Grundfos MAGNA 3 D 32-60 F	50	38	39	41	48	45	44	38	34
P/RF/02 (circulation pump)	Grundfos Alpha 1 25-40 N	50	38	39	41	48	45	44	38	34
CAT5/00/01 (Cat 5 Booster Set)	KGN Pillinger BTC/EV-1-8/1PH1HME08/PW225	63	51	52	54	61	58	57	51	47
BS/00/01 (cold water booster set)	KGN Pillinger AV-1-24HP/3PVX1006 KGN	81	69	70	72	79	76	75	69	65
ASHP/RF/01	Vaillant Arotherm Plus 12kW VWL 125/6	60	59	62	61	58	54	49	43	37
ASHP/RF/02	Vaillant Arotherm Plus 12kW VWL 125/6	60	59	62	61	58	54	49	43	37
ASHP/RF/03	Vaillant Arotherm Plus 12kW VWL 125/6	60	59	62	61	58	54	49	43	37
WSHP/RF/01	Kensa Evo 17kW K170-S1H	56	55	58	57	54	50	45	39	33
EF/00/01 exhaust (in duct)	Nuaire DE4-ES	63	78	78	59	52	48	48	42	44
EF/00/01 casing	Nuaire DE4-ES	39	54	52	42	35	26	22	17	16
Substation	Estimate based on 1000kVA unit from other similar site.	56	58	64	57	53	50	46	41	39

Table 4: Equipment list sound power levels

The equipment list sound power data has been taken from manufacturer data provided by the Mechanical Designer/Contractor. Noise data has generally been supplied in broadband dB(A) terms. The octave band sound power levels have therefore been estimated based on similar equipment for which data is available. The extract fan (EF/00/01) octave band data however has been supplied by the manufacturer. Noise data for the substation has not been made available. Accordingly, the sound power level of the substation has been estimated based on typical data from other similar installations.

External plant has been modelled as point sources in the noise model. The modelled sound power level of the extract fan exhaust includes the attenuation that would be provided by the duct bend and the end reflection loss at the ducted façade termination. This reduces the sound power level of the exhaust from L_{WA} 63dB (in-duct) at the fan unit outlet to L_{WA} 55dB (open outlet) at the façade termination.

Noise breakout through the roof level plantroom louvred door and ground floor plant room steel door has been modelled as vertical areas sources. The sound power levels of the louvre and door have been calculated taking account of the total sound power level of plant inside the plant rooms, the reverberation time within the plant rooms, the sound reduction index of the louvre/door, and the area of the louvre/door. As the ground floor plant room is ventilated mechanically, there will be no passive ventilation openings in the façade or door.

The nearest noise sensitive receptors to the proposed plant are the residential windows associated with the Phase 1A development.

A 3D view of the noise model is shown in Figure 1. Sources are shown in red. Receivers are shown in blue.

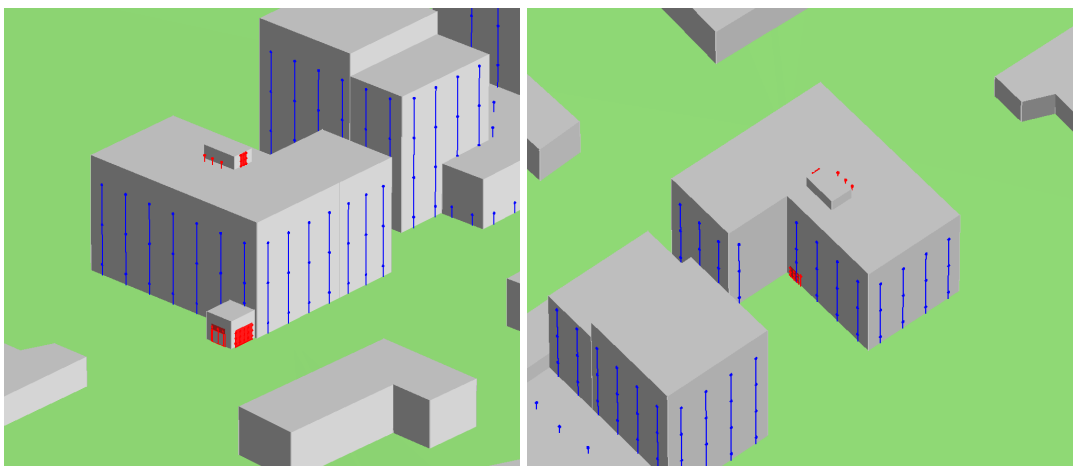


Figure 1: 3D view of noise model

The results of the model are presented in Appendix D.

7. ASSESSMENT

As the plant will operate on a 24-hour basis, the nighttime period will be critical to the assessment as background sound levels will be lower at night than they are during the day. The siting and orientation of the plant relative to the nearest receptor locations mean that the background sound levels measured at NML 2 are the most appropriate for this assessment. Accordingly, the nighttime background sound level to be used in the assessment is L_{A90} 46dB.

As detailed in Section 4.2, the Council's SPD advises that a '*Rating Level that is at least 5dB below the Background Sound Level will normally be acceptable*'. Therefore, the design target for plant noise is to achieve a rating level not exceeding $L_{A,T,r}$ 41dB at the most noise exposed receptor.



The noise from plant at nearby receptor locations will be broadband and continuous, without impulsive or tonal characteristics. Furthermore, with a design target that is 5dB below the background sound level, it is unlikely there would be any other characteristics that would readily stand out against the residual acoustic environment. Accordingly, no character correction is applied to the specific sound level in determination of the rating level. Therefore, the rating level is equal to the specific sound level.

The results of the mitigated noise model indicate that plant noise levels will be up to $L_{A,r,Tr}$ 40dB at the most noise exposed receptor location. This is 6dB below the background sound level and should therefore be acceptable.

8. CONCLUSIONS

Higgins Partnerships are planning a residential development at Avondale Drive, Hayes for which full planning permission has been granted for Phase 1A, subject to conditions, with outline permission granted for the rest of the site with all matters reserved.

The assessment for Phase 1A set out within this report relates to Condition 22, which requires external noise from mechanical plant to be reduced to acceptable levels at nearby receptors.

The assessment is based on information provided by the Mechanical Designer/Contractor. The assessment indicates that the current design will achieve the plant noise limits set out in this report, as determined in accordance with the condition, and therefore demonstrates that acceptable noise levels will be achieved.

A P P E N D I X A

Proposed development drawings

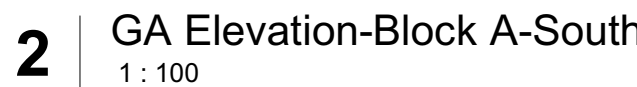
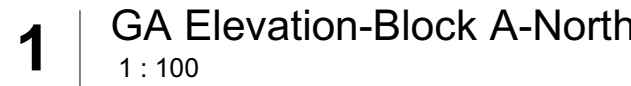
Current Proposal

Storey Heights



The Proposed Masterplan





The contractor is responsible for checking dimensions, tolerances and references. Any discrepancy to be verified with the Architect before proceeding with the works. Where an item is covered by drawings to different scales the larger scale drawing is to be worked to.

MATERIAL REFERENCES

C5	04/11/24	Bee, Birds and Bat boxes added	JC	SG
C4	11/03/24	All Windows revised to open outwards as per Client's instruction	JC	RB
C3	14/12/23	Revision to Movement Joints in Balcony areas	JC	SG
C2	28/11/23	Balcony revised - BS22 added.	RB	SG
Rev	Date	Description	Drawn/Checked	

Project - Originator - Zone - Level - Doc - Discipline - Number
AVD-PRP-P1AA-ZZ-ELV-A-41000
S4 - FOR CONSTRUCTION Revision:C5
 Drawn GB Checked SG Date Sep 2022 Scale @ A1 1:100

1 GA Elevation-Block A-East

1 : 100



2 GA Elevation-Block A-West

1 : 100



GRID REFERENCE: A8, 8888, 8888, 8888

SECTION REFERENCE: 1, 1, 1, 1

ELEVATION REFERENCE: 1, 1, 1, 1

PLAN CALLOUT / DETAIL REFERENCE: 00, 8888

DIMENSIONS: 1430.3', 1430.3'

SPOT LEVELS: 48100 T.O. Double Solder Course, 47735 U.S. Solder Course, 45775 T.O. Solder Course, 45560 U.S. Brick, 43300 T.O. Brick, 42700 T.O. Solder Course, 42485 U.S. Brick, 40225 T.O. Brick, 39625 T.O. Solder Course, 39410 U.S. Brick, 37150 T.O. Brick, 36550 T.O. Solder Course, 36335 U.S. Brick, 34075 T.O. Brick, 33475 T.O. Solder Course, 33260 U.S. Brick, 31600 T.O. Brick

ADJACENT DRAWING REF: XXXXX

KEY TO DOOR & WINDOW REFERENCES:

TAGS: SYMBOLS & ABBREVIATIONS:

LEGEND:

BRICK DATUM:

GENERAL NOTES:

The contractor is responsible for checking dimensions, tolerances and references. Any discrepancy to be verified with the Architect before proceeding with the works. Where an item is covered by drawings to different scales the larger scale drawing is to be worked to.

Do not scale drawing. Figured dimensions to be worked to in all cases.

Where products have been specified, PRP have reviewed applicable products available in the UK at the time of writing the specification. For the avoidance of doubt, product manufacturers and suppliers must confirm that each product is fit for its intended use and provide such evidence as may reasonably be requested to confirm performance, including, but not limited to, product test classification and interfaces with adjacent products.

Where the contractor wishes to propose alternative products, representative samples and a full technical appraisal should be submitted by the contractor to the employer demonstrating that their proposed alternative has equal or better performance.

CDM REGULATIONS 2015. All current drawings and specifications for the project must be read in conjunction with the Designer's Hazard and Environment Assessment Record

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KEY DRAWING REFERENCES

Title of Drawing Series	Drawing Series No's
Site Plan	30000
Building Co-Ordinates	31000
GA Plans	40000
Structural Layout	40500
GA Elevations & Sections	41000
GA Height Rods	42000
GA Cores	43000
Dwelling Plans	44000
Bay Studies	47000
Materials Palettes	48000
Refuse Strategy	50000
Postal Strategy	51000
Fire Strategy	52000
Cycle Strategy	53010
Security Strategy	53020
Rainwater Disposal Strategy	53050
Cleaning and Maintenance	53060
Principal Construction	60000
Lead Details	61000
Sub-structure Details	62000
Fenestration Details	63000
Envelope Details	64000
Roof Details	65000
Internal Wall Details	66000
Balconies	67000
Metalswork	68000
Window & Door Schedule	70000
Internal Doors Schedule	71000
Bathroom Types Schedule	72000
Kitchen Schedule	73000

MATERIAL REFERENCES

Brickwork - Supplier TBC

Brick Type 'a' Red multi-stock with light coloured mortar.

Brick Type 'b' Dark red multi-stock with light coloured mortar.

Brick Type 'c' Light brick with light coloured mortar.

Brick Type 'd' Warm grey multi-stock with light coloured mortar.

Brick Type 'e' Glazed green brick with dark mortar.

FABRIC EFFICIENCY U-VALUES (Baseline Values)

Ground / Exposed Upper Floor: 0.11 W/m²K

External Walls: 0.15 W/m²K

Party Walls: 0.00 W/m²K (all exposed edges sealed and cavity fully filled to prevent heat loss through cavity)

Dwelling / Com Wall: 0.15 W/m²K (U-Value of walls next to unheated areas)

Roof: 0.11 W/m²K

Solid Door: 1.2 W/m²K

Window: 1.2 W/m²K (G-Value - 0.40 S&W / 0.55 N&E)

Air Permeability: 3.0 m³/h.m² at 50 Pa

C5	04/11/24	Bee, Birds and Bat boxes added	JC	SG
C4	11/03/24	All Windows revised to open outwards as per Client's instruction	JC	RB
C3	14/12/23	Revision to Movement Joints in Balcony areas	JC	SG
C2	28/11/23	Balcony revised - BS22 added.	RB	SG
Rev	Date	Description	Drawn/Checked	

Avondale Drive Phase 1A

PRP project No.AVD

GA Elevation-Block A-East & West

Project - Originator - Zone - Level - Doc - Discipline - Number

AVD-PRP-P1AA-ZZ-ELV-A-41001

S4 - FOR CONSTRUCTION Revision:C5

Drawn GB Checked SG Date Sep 2022 Scale @ A1 1 : 100

LEGEND:

HL

LOW LEVEL

F/A

FROM ABOVE

F/B

TO BELOW

T/B

TO ABOVE

T/A

TO ABOVE

F&R

FLOW & RETURN

BCWS

CAT 5

DH

DHWSF

DHWSR

LTHW F&R

MCWS

SK

BOOSTED COLD WATER SERVICE

CAT 5 BOOSTED COLD WATER SERVICE

DISTRICT HEATING

DOMESTIC HOT WATER SERVICE FLOW

DOMESTIC HOT WATER SERVICE RETURN

LOW TEMPERATURE HOT WATER PIPEWORK FLOW

LOW TEMPERATURE HOT WATER PIPEWORK RETURN

DRY RISER PIPEWORK

SPRINKLER PIPEWORK

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SUPPLY DUCT

RETURN DUCT

EXTRACT DUCT

FRESH AIR DUCT

EXHAUST DUCT

ISOLATION VALVE

THERMAL BALANCING VALVE

CIRCULAR EXTRACT GRILLE

CIRCULAR SUPPLY GRILLE

FIRE DAMPER

NOTES:

- SPRINKLER LAYOUT INDICATIVE ONLY. SPRINKLER DESIGN IS TO BE COMPLETED BY SPECIALIST INCLUDING PIPE SIZING

T03	Tender - Client Comment Update	NO	13.06.24
T02	Tender	NO	09.02.24
T01	Tender	NO	09.10.23
P01	Preliminary	NO	16.08.23
Rev.	Amendment	Initial	Date

Synergy

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Client

Higgins Partnerships

Project

Avondale Drive Estate

Drawing Title

Ground Floor Mechanical Landlord Services Layout

Scale(s)	1 : 50 @ A0				
Drawn Date	07/31/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

Dwg.	AVD-SYN-P1AA-00-DR-M-1000	Rev.	T03
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TENDER

HL	HIGH LEVEL
LL	LOW LEVEL
F/A	FROM ABOVE
F/B	FROM BELOW
T/B	TO BELOW
T/A	TO ABOVE
F&R	FLOW & RETURN
BOWS	BOOSTED COLD WATER SERVICE
CAT 5	CAT 5 BOOSTED COLD WATER SERVICE
DH	DISTRICT HEATING
DHWS*	DOMESTIC HOT WATER SERVICE FLOW
DHWSR	DOMESTIC HOT WATER SERVICE RETURN
LTHW F&R	LOW TEMPERATURE HOT WATER FLOW & RETURN
MCWS	MAINS COLD WATER SERVICE
S/K	SINK

	HIGH LEVEL PIPEWORK
	LOW LEVEL PIPEWORK
	BOOSTED COLD WATER SERVICE PIPEWORK
	DOMESTIC HOT WATER SERVICE PIPEWORK FLOW
	DOMESTIC HOT WATER SERVICE PIPEWORK RETURN
	LOW TEMPERATURE HOT WATER PIPEWORK FLOW
	LOW TEMPERATURE HOT WATER PIPEWORK RETURN
	DRY RISER PIPEWORK
	SPRINKLER PIPEWORK
	SUPPLY DUCT
	RETURN DUCT
	EXTRACT DUCT
	FRESH AIR DUCT
	EXHAUST DUCT

	ISOLATION VALVE
	THERMAL BALANCING VALVE
	CIRCULAR EXTRACT GRILLE
	CIRCULAR SUPPLY GRILLE
	FIRE DAMPER

NOTES:

• SPRINKLER LAYOUT INDICATIVE ONLY. SPRINKLER DESIGN IS TO BE COMPLETED BY SPECIALIST INCLUDING PIPE SIZING

T02	Tender	NO	09.02.24
T01	Tender	NO	09.10.23
P01	Preliminary	NO	16.08.23
Rev.	Amendment	Initial	Date

Synergy
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Tel: 020 7529 8950 Fax: 020 7388 9312 Email: mail@synergysuit.co.uk Web: www.synergysuit.co.uk

Client Higgins Partnerships

Project **Avondale Drive Estate**

Drawing Title

First Floor Mechanical Landlord
Services Layout

Scale(s)	1: 50 @ A0				
Drawn Date	07/31/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

Dwg.	AVD-SYN-P1AA-01-DR-M-1001	Rev.	T02
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Notes
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TENDER

LEGEND:

- | | |
|----------|--|
| HL | HIGH LEVEL |
| LL | LOW LEVEL |
| FA | FROM ABOVE |
| FB | FROM BELOW |
| TB | TO BELOW |
| TA | TO ABOVE |
| F&R | FLOW & RETURN |
| BCWS | BOOSTED COLD WATER SERVICE |
| CAT 5 | CAT 5 BOOSTED COLD WATER SERVICE |
| DH | DISTRICT HEATING |
| DHWSF | DOMESTIC HOT WATER SERVICE FLOW |
| DHWSR | DOMESTIC HOT WATER SERVICE RETURN |
| LTHW F&R | LOW TEMPERATURE HOT WATER FLOW & RETURN |
| MCWS | MAINS COLD WATER SERVICE |
| SK | SINK |
| --- | HIGH LEVEL PIPEWORK |
| --- | LOW LEVEL PIPEWORK |
| --- | BOOSTED COLD WATER SERVICE PIPEWORK |
| --- | DOMESTIC HOT WATER SERVICE PIPEWORK FLOW |
| --- | DOMESTIC HOT WATER SERVICE PIPEWORK RETURN |
| --- | LOW TEMPERATURE HOT WATER PIPEWORK FLOW |
| --- | LOW TEMPERATURE HOT WATER PIPEWORK RETURN |
| --- | DRY RISER PIPEWORK |
| --- | SPRINKLER PIPEWORK |
| --- | SUPPLY DUCT |
| --- | RETURN DUCT |
| --- | EXTRACT DUCT |
| --- | FRESH AIR DUCT |
| --- | EXHAUST DUCT |

- | |
|-------------------------|
| ISOLATION VALVE |
| THERMAL BOUNCING VALVE |
| CIRCULAR EXTRACT GRILLE |
| CIRCULAR SUPPLY GRILLE |
| FD |
| FIRE DAMPER |

NOTES:

- SPRINKLER LAYOUT INDICATIVE ONLY. SPRINKLER DESIGN IS TO BE COMPLETED BY SPECIALIST INCLUDING PIPE SIZING

T02	Tender	NO	09.02.24
T01	Tender	NO	09.10.23
P01	Preliminary	NO	16.08.23
Rev.	Amendment	Initial	Date

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Client
Higgins Partnerships

Project
Avondale Drive Estate

Drawing Title
Second Floor Mechanical Landlord Services Layout

Scale(s)	1 : 50 @ A0				
Drawn Date	07/31/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

Dwg. AVD-SYN-P1AA-02-DR-M-1002 Rev. T02



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TENDER

LEGEND:

HL	HIGH LEVEL
LL	LOW LEVEL
F/A	FROM ABOVE
F/B	FROM BELOW
T/B	TO BELOW
T/A	TO ABOVE
F&R	FLOW & RETURN
BCWS	BOOSTED COLD WATER SERVICE
CAT 5	CAT 5 BOOSTED COLD WATER SERVICE
DH	DISTRICT HEATING
DHWSF	DOMESTIC HOT WATER SERVICE FLOW
DHWSR	DOMESTIC HOT WATER SERVICE RETURN
LTHW F&R	LOW TEMPERATURE HOT WATER FLOW & RETURN
MCWS	MAINS COLD WATER SERVICE
SK	SINK

— — — HIGH LEVEL PIPEWORK
— — — LOW LEVEL PIPEWORK
— — — BOOSTED COLD WATER SERVICE PIPEWORK
— — — DOMESTIC HOT WATER SERVICE PIPEWORK FLOW
— — — DOMESTIC HOT WATER SERVICE PIPEWORK RETURN
— — — LOW TEMPERATURE HOT WATER PIPEWORK FLOW
— — — LOW TEMPERATURE HOT WATER PIPEWORK RETURN
— — — DRY RISER PIPEWORK
— — — SPRINKLER PIPEWORK

— — — SUPPLY DUCT
— — — RETURN DUCT
— — — EXTRACT DUCT
— — — FRESH AIR DUCT
— — — EXHAUST DUCT

ISOLATION VALVE
THERMAL BALANCING VALVE
CIRCULAR EXTRACT GRILLE
CIRCULAR SUPPLY GRILLE
FD
FIRE DAMPER

NOTES:
- SPRINKLER LAYOUT INDICATIVE ONLY. SPRINKLER DESIGN IS TO BE COMPLETED BY SPECIALIST INCLUDING PIPE SIZING

T02	Tender	NO	09.02.24
T01	Tender	NO	09.10.23
P01	Preliminary	NO	16.08.23
Rev.	Amendment	Initial	Date

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Client
Higgins Partnerships

Project
Avondale Drive Estate

Drawing Title
Third Floor Mechanical Landlord Services Layout

Scale(s)	1 : 50 @ A0				
Drawn Date	07/31/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

Dwg. AVD-SYN-P1AA-03-DR-M-1003 **Rev.** T02



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TENDER

LEGEND:

HL	HIGH LEVEL
LL	LOW LEVEL
F/A	FROM ABOVE
F/B	FROM BELOW
T/B	TO BELOW
T/A	TO ABOVE
F&R	FLOW & RETURN

BCWS	BOOSTED COLD WATER SERVICE
CAT S	CAT 5 BOOSTED COLD WATER SERVICE
DH	DISTRICT HEATING
DHWSF	DOMESTIC HOT WATER SERVICE FLOW
DHWSR	DOMESTIC HOT WATER SERVICE RETURN
LTHW F&R	LOW TEMPERATURE HOT WATER FLOW & RETURN
MCWS	MAINS COLD WATER SERVICE
SK	SINK

---	HIGH LEVEL PIPEWORK
---	LOW LEVEL PIPEWORK
---	BOOSTED COLD WATER SERVICE PIPEWORK
---	DOMESTIC HOT WATER SERVICE PIPEWORK FLOW
---	DOMESTIC HOT WATER SERVICE PIPEWORK RETURN
---	LOW TEMPERATURE HOT WATER PIPEWORK FLOW
---	LOW TEMPERATURE HOT WATER PIPEWORK RETURN
---	DRY RISER PIPEWORK
---	SPRINKLER PIPEWORK

---	SUPPLY DUCT
---	RETURN DUCT
---	EXTRACT DUCT
---	FRESH AIR DUCT
---	EXHAUST DUCT

ISOLATION VALVE
THERMAL BALANCING VALVE

CIRCULAR EXTRACT GRILLE
CIRCULAR SUPPLY GRILLE

FD	FIRE DAMPER
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NOTES

- SPRINKLER LAYOUT INDICATIVE ONLY. SPRINKLER DESIGN IS TO BE COMPLETED BY SPECIALIST INCLUDING PIPE SIZING

T02	Tender	NO	09.02.24
T01	Tender	NO	09.10.23
P01	Preliminary	NO	16.08.23
Rev.	Amendment	Initial	Date

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Client
Higgins Partnerships

Project
Avondale Drive Estate

Drawing Title
Fourth Floor Mechanical Landlord Services Layout

Scale(s)	1 : 50 @ A0				
Drawn Date	07/31/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

Dwg.	AVD-SYN-P1AA-04-DR-M-1004	Rev.	T02
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TENDER

LEGEND:

H/L	HIGH LEVEL
LL	LOW LEVEL
F/A	FROM ABOVE
F/B	FROM BELOW
T/B	TO BELOW
T/A	TO ABOVE
F&R	FLOW & RETURN

BCWS	BOOSTED COLD WATER SERVICE
CAT 5	CAT 5 BOOSTED COLD WATER SERVICE
DH	DISTRICT HEATING
DHWS	DOMESTIC HOT WATER SERVICE
LTHW	LOW TEMPERATURE HOT WATER
MOWS	MAINS COLD WATER SERVICE
SK	SINK

— —	HIGH LEVEL PIPEWORK
— —	LOW LEVEL PIPEWORK
— —	BOOSTED COLD WATER SERVICE PIPEWORK
— —	DOMESTIC HOT WATER SERVICE PIPEWORK
— —	DISTRICT HEATING PIPEWORK
— —	DRY RISER PIPEWORK
— —	SPRINKLER PIPEWORK

— —	SUPPLY DUCT
— —	RETURN DUCT
— —	EXTRACT DUCT
— —	FRESH AIR DUCT
— —	EXHAUST DUCT

— —	ISOLATION VALVE
— —	CIRCULAR EXTRACT GRILLE
— —	CIRCULAR SUPPLY GRILLE

NOTES:

- SPRINKLER LAYOUT INDICATIVE ONLY. SPRINKLER DESIGN IS TO BE COMPLETED BY SPECIALIST INCLUDING PIPE SIZING
- DISTRICT HEATING PIPEWORK TO FLATS TO BE CAPPED FOR FUTURE CONNECTION

T01	Tender	NO	09.10.23
P01	Preliminary	NO	16.08.23
Rev.	Amendment	Initial	Date

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Client
Higgins Partnerships

Project
Avondale Drive Estate

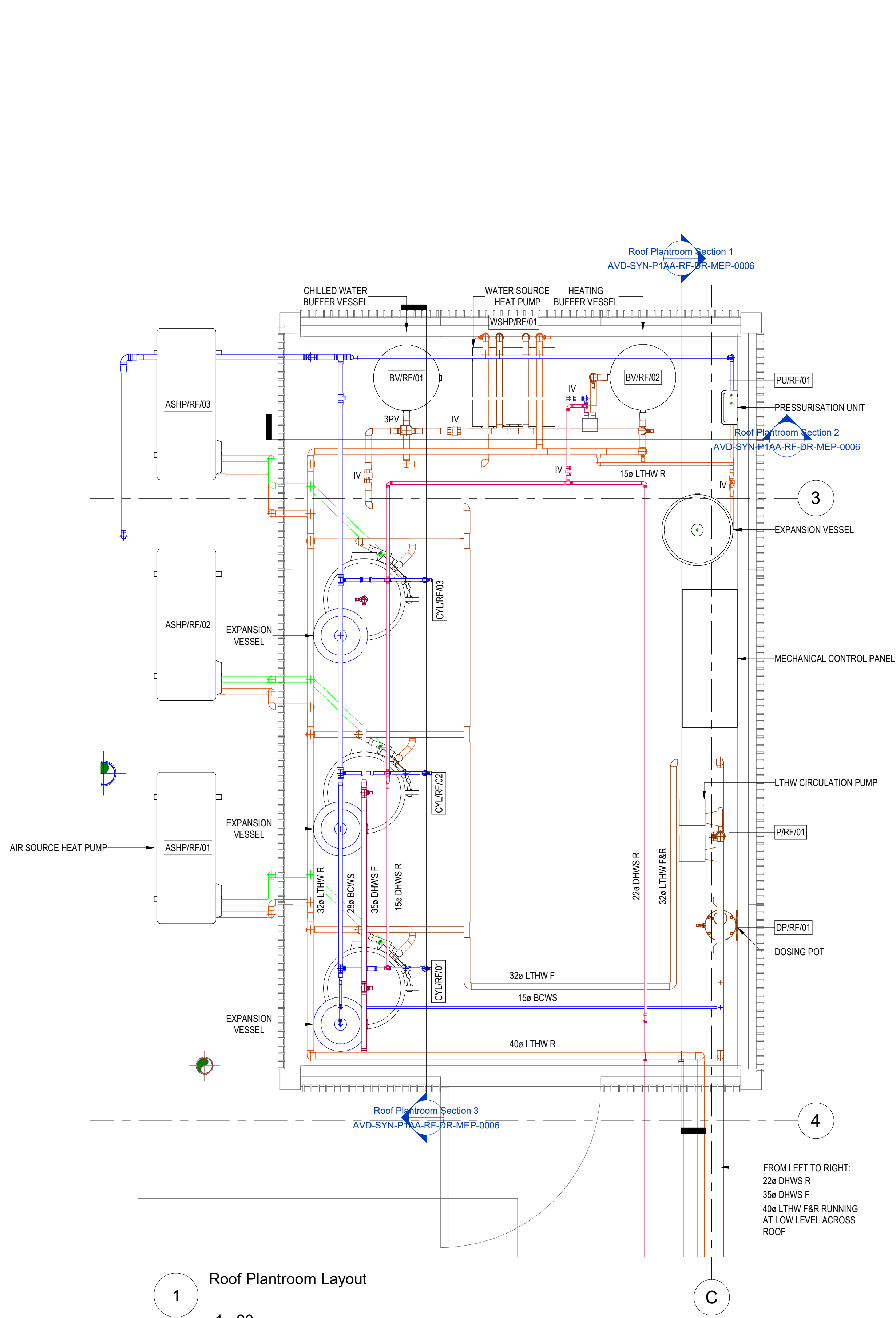
Drawing Title
Roof Mechanical Landlord Services Layout

Scale(s)	1 : 50 @ A0				
Drawn Date	07/31/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

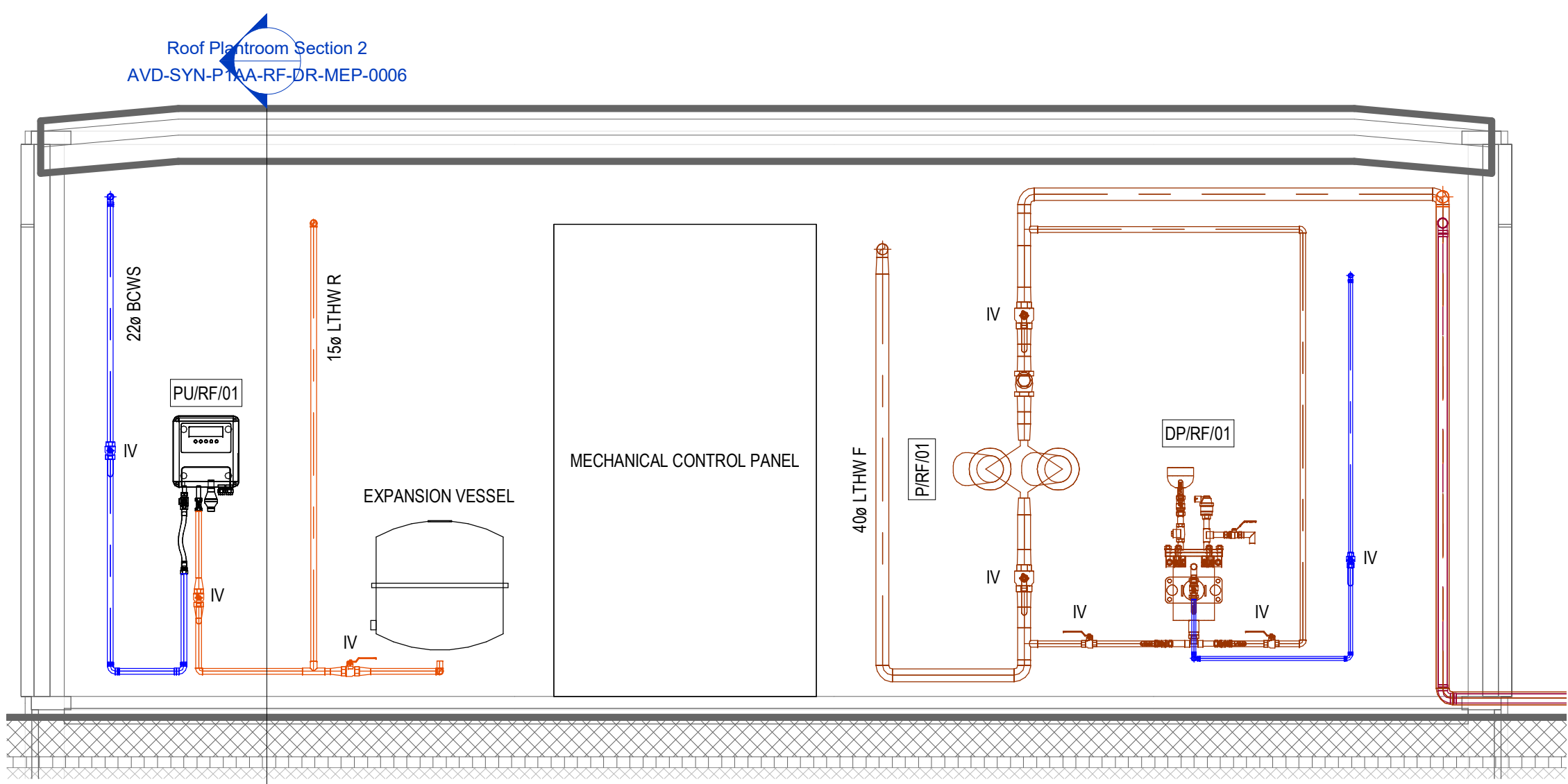
Dwg.	AVD-SYN-P1AA-RF-DR-M-1005	Rev.	T01
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A P P E N D I X B

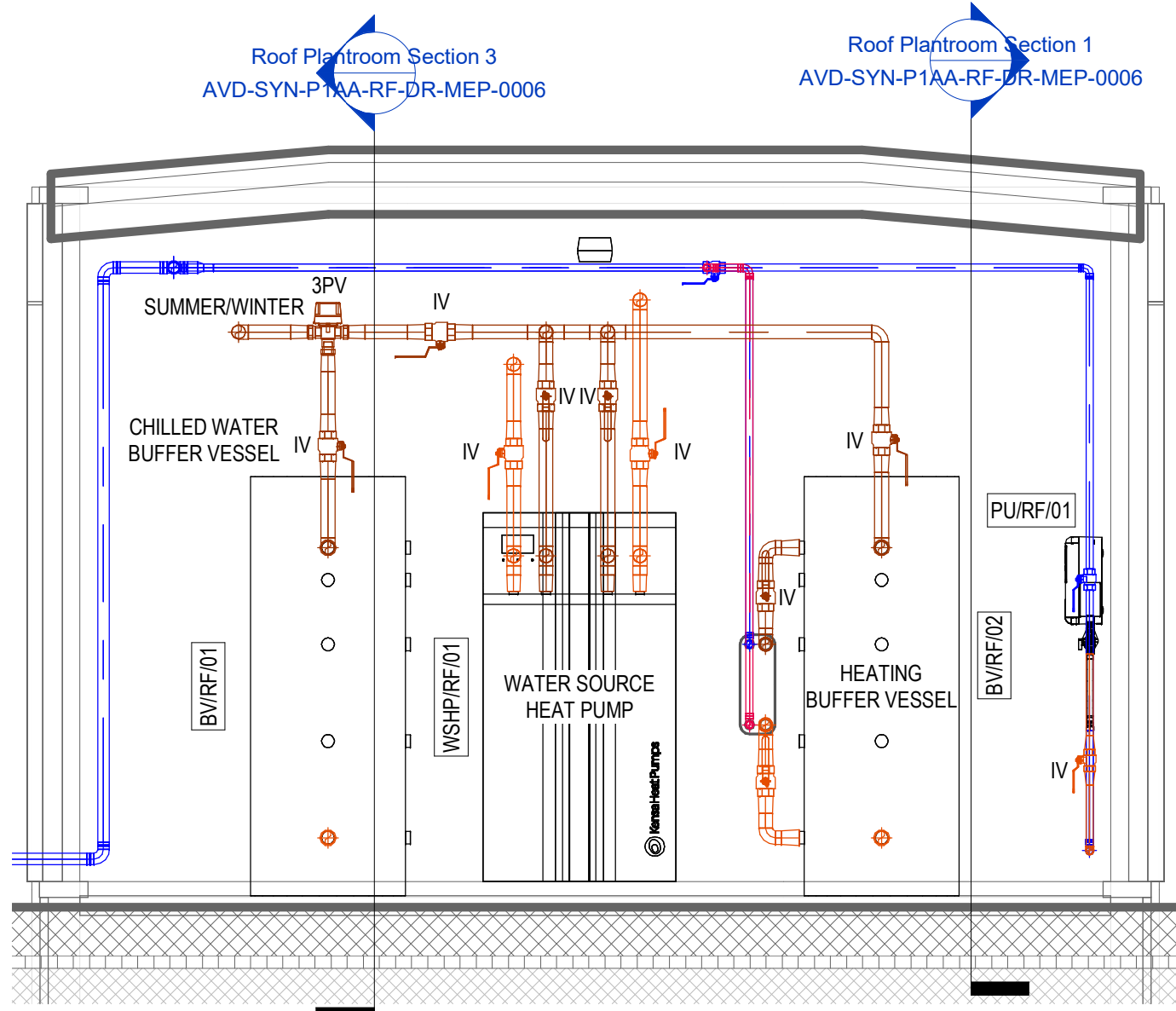
Mechanical plant layout drawings and plant details



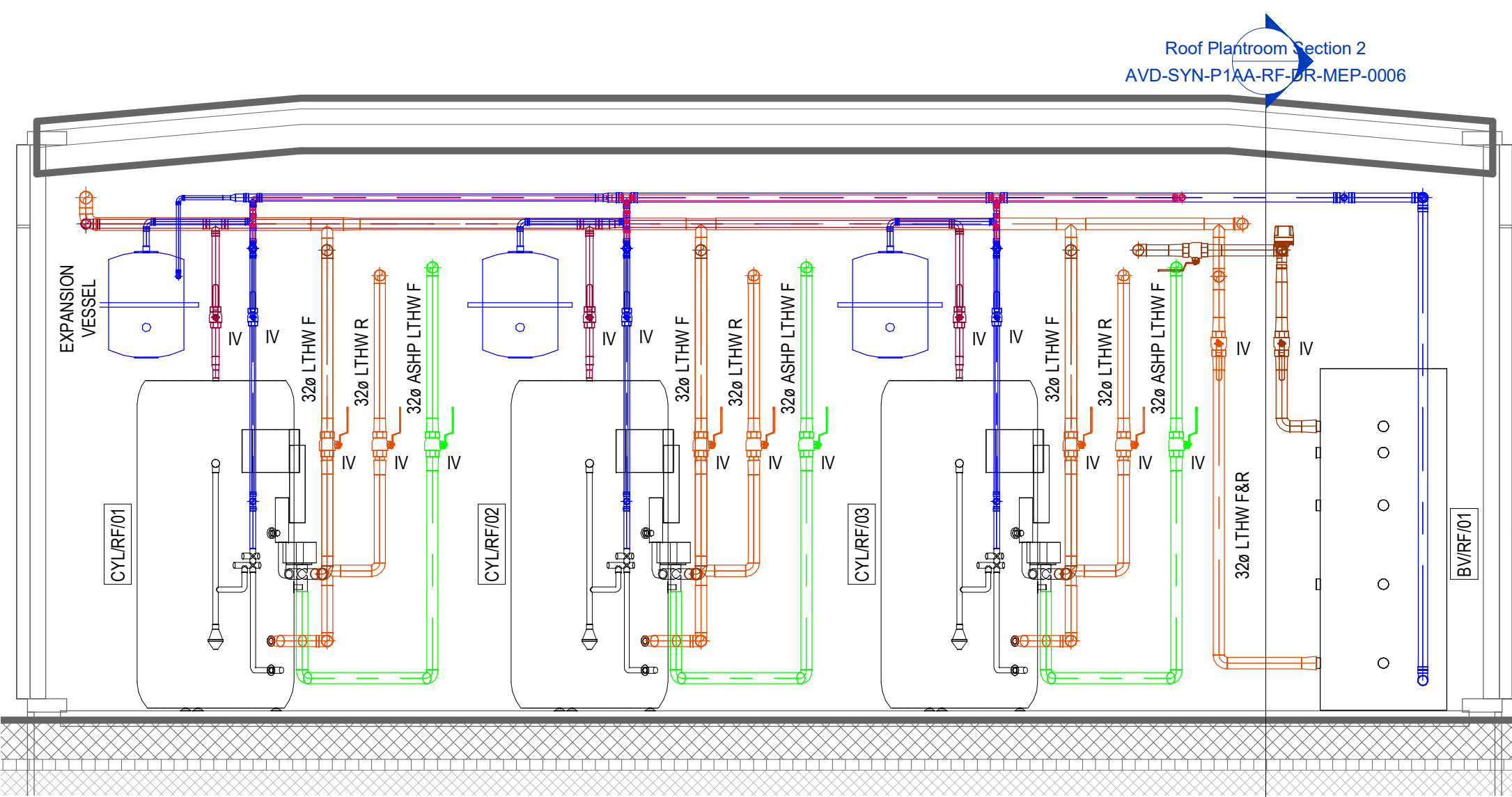
1 Roof Plantroom Layout
1 : 20



2 Roof Plantroom Section 2
1 : 20



3 Roof Plantroom Section 3
1 : 20



4 Roof Plantroom Section 1
1 : 20

Notes

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PRELIMINARY

LEGEND:	
MCWS	MAINS COLD WATER SERVICE
BCWS	BOOSTED COLD WATER SERVICE
CAT 5	CATEGORY 5 WATER SERVICE
LTHW F&R	LOW TEMPERATURE HOT WATER
XXXXXX	EQUIPMENT REFERENCE
2PV	2 PORT VALVE
3PV	3 PORT VALVE
AAV	AUTOMATIC AIR VENT
CS	COMMISSIONING STATION
DRV	DOUBLE REGULATING VALVE
DC	DRAIN COCK
GC	GAS COCK
IV	ISOLATING VALVE
LSV	LOCK SHIELD VALVE
NC	NORMALLY CLOSED VALVE
NRV	NON RETURN VALVE
PRV	PRESSURE REDUCING VALVE
STR	STRAINER
H/L	HIGH LEVEL
L/L	LOW LEVEL
F/A	FROM ABOVE
F/B	FROM BELOW
T/A	TO ABOVE
T/B	TO BELOW
P	PRESSURE GAUGE
T	TEMPERATURE GAUGE

P01	Preliminary	NO	29.02.24
Rev.	Amendment	Initial	Date

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Client

Higgins Partnerships

Project

Avondale Drive Estate

Drawing Title

ROOF PLANTROOM LAYOUT

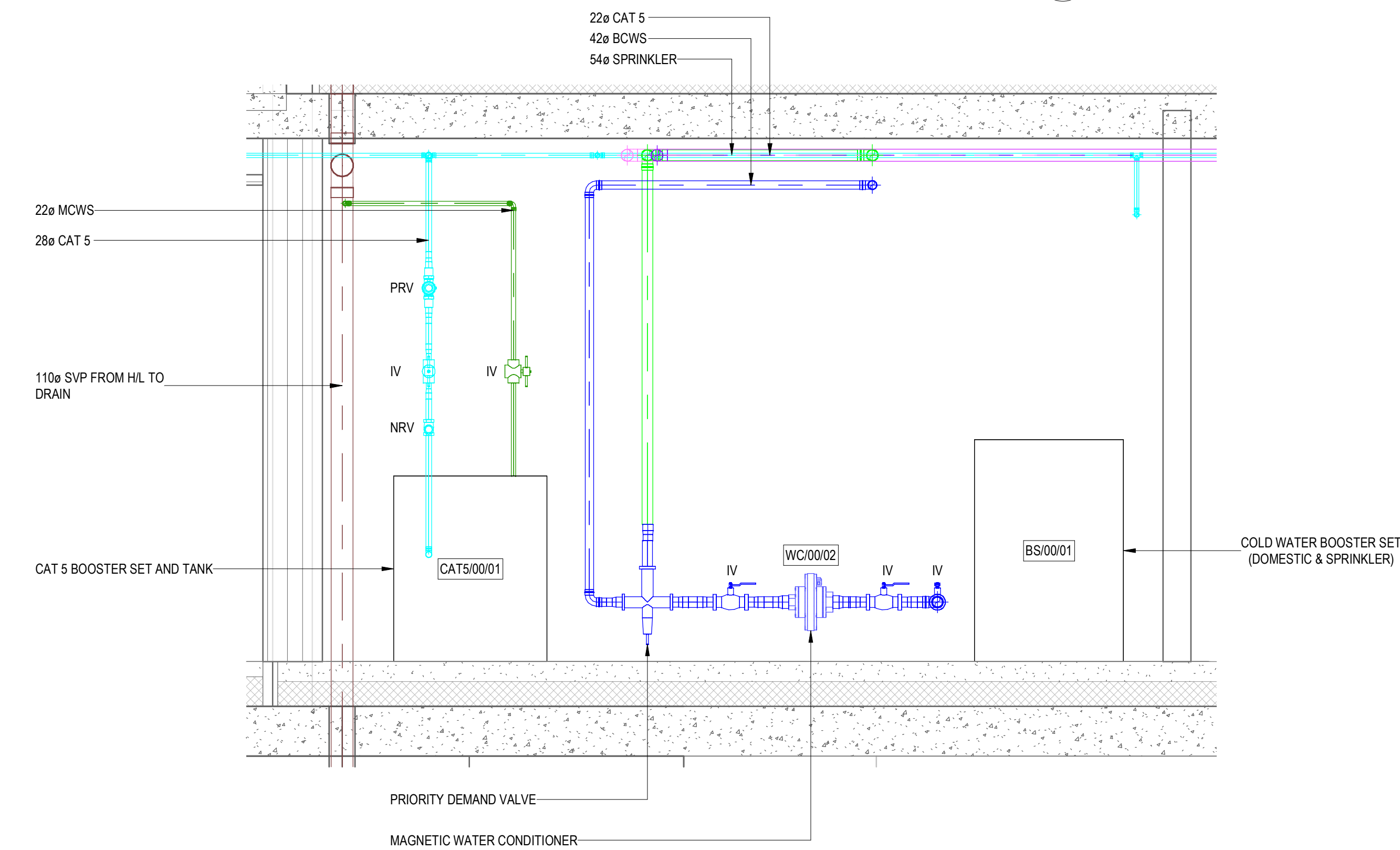
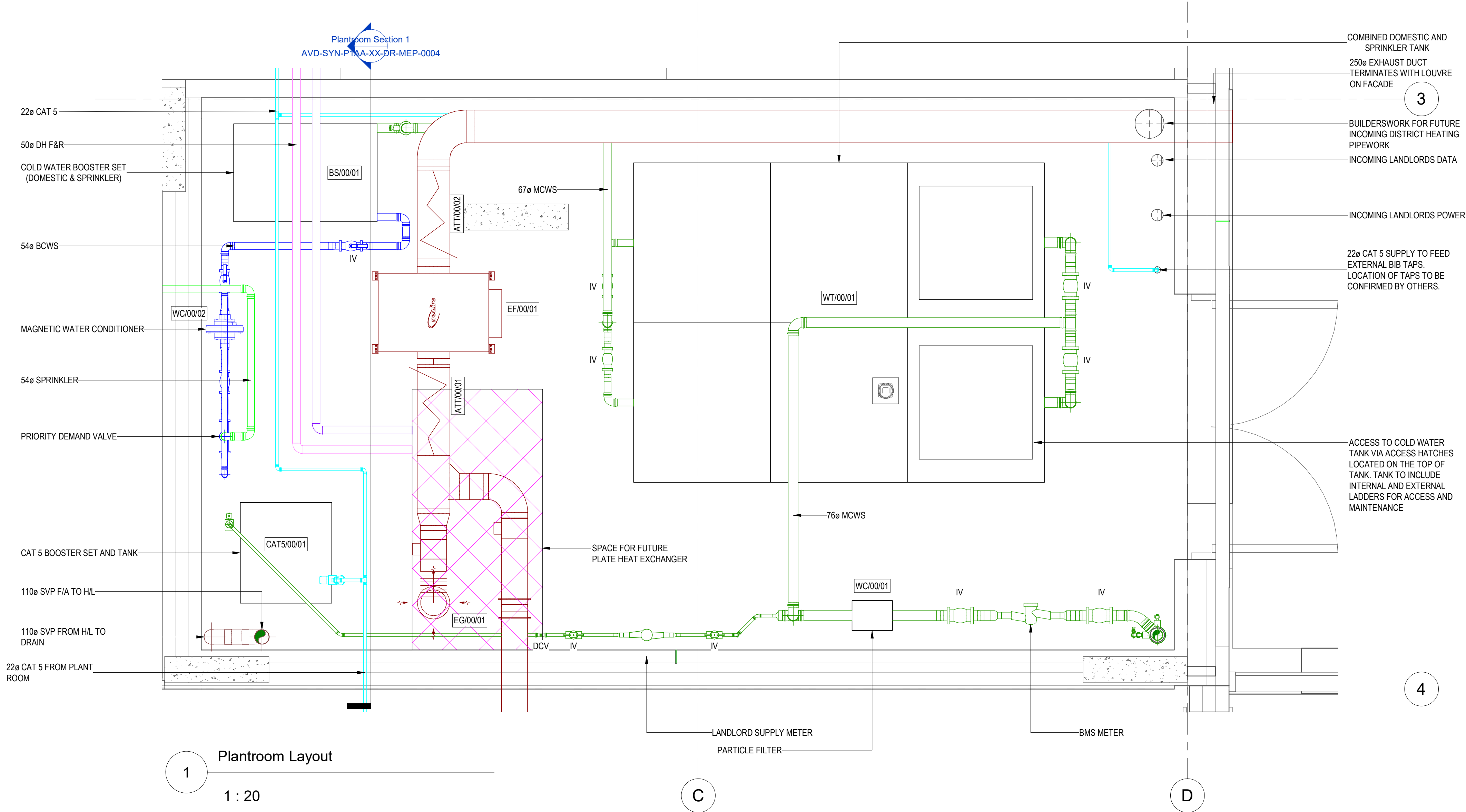
Scale(s)	1 : 20 @ A1				
Drawn Date	29/02/24	Initial	NO	Approved	JG
Job Number	07900	Status	PRELIMINARY		
Purpose of Issue	S1-PRELIMINARY				

Dwg.

AVD-SYN-P1AA-RF-DR-MEP-0006

Rev.

P01



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TENDER

LEGEND:

MCWS MAINS COLD WATER SERVICE
BCWS BOOSTED COLD WATER SERVICE
CAT 5 CATEGORY 5 WATER SERVICE

EQUIPMENT REFERENCE

2PV 2 PORT VALVE
3PV 3 PORT VALVE
AAV AUTOMATIC AIR VENT
CS COMMISSIONING STATION
DRV DOUBLE REGULATING VALVE
DC DRAIN COCK
GC GAS COCK
IV ISOLATING VALVE
LSV LOCK SHIELD VALVE
NC NORMALLY CLOSED VALVE
NRV NON RETURN VALVE
PRV PRESSURE REDUCING VALVE
STR STRAINER
GSV GAS SOLENOID VALVE
PICV PRESSURE INDEPENDENT CONTROL VALVE

H/L HIGH LEVEL
L/L LOW LEVEL
F/A FROM ABOVE
F/B FROM BELOW
T/A TO ABOVE
T/B TO BELOW

P PRESSURE GAUGE
T TEMPERATURE GAUGE

T01	Tender	NO	09.10.23
P01	Preliminary	NO	07.09.23
Rev.	Amendment	Initial	Date

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Client
Higgins Partnerships

Project
Avondale Drive Estate

Drawing Title
PLANTROOM LAYOUT

Scale(s)	1 : 20 @ A1				
Drawn Date	07/09/23	Initial	NO	Approved	AF
Job Number	07900	Status	TENDER		
Purpose of Issue	S4-TENDER				

Dwg. AVD-SYN-P1AA-XX-DR-MEP-0004 Rev. T01

Date: 08/09/2023
Status: S1-PRELIMINARY
Revision: P01
Project: AVONDALE DRIVE ESTATE
Reference: AVD-SYN-P1AA-XX-SCH-0105

EQUIPMENT SCHEDULE

COLD WATER BOOSTER SETS

REFERENCE	BS/00/01	CAT5/00/02	
Location	Ground Floor Water Services Plantroom	Ground Floor Water Services Plantroom	
System	Combined Sprinkler and Residential Boosted Cold Water	Landlords CAT 5 Boosted Cold Water	
Main Pump Design Duty (l/s)	3.67	0.5	
Design Pressure (Bar)	4.33	4.12	
Maximum Working Pressure (Bar)	8.2	7.2	
Pump Connections	2" BSPM	1" BSPM	
PUMP DETAILS			
Pump Type	Variable Speed	Variable Speed	
Number of Pumps	3 @ 50%	1	
Pump Operation	Duty-Assist-Standby	Duty	
Pump Speed (rpm)	2900	2900	
ELECTRICAL DETAILS			
Electrical Supply (V/Ph/Hz)	400V/3ph/50Hz	240V/1ph/50Hz	
Motor Power	3 x 1.5kW 3.9 Amps	0.5kW 3.07 Amps	
Pump Starter	3 x Inverters	DOL	
VESSEL DETAILS			
Vessel Volume (l)	1 x 24	1 x 8	
Type	-	-	
SUPPLIER DETAILS			
Manufacturer	KGN Pillinger	KGN Pillinger	
Model Reference	AV-1-24/3PV511 KGN	BTC/EV-1-8/1PH1HME08/PW90	
Additional Equipment	Mimic Control Panel wall mounted monitoring device with battery backed alarm. Anti Surge Arrestors at top of riser.	90 litre BREAK TANK (sized assuming mains supply equal or greater than booster flow rate).	
Controls	Control Panel with Auto Duty sequence chnagover	Inverter Control	

Date: 08/09/2023
Status: S1-PRELIMINARY
Revision: P01
Project: AVONDALE DRIVE ESTATE
Reference: AVD-SYN-P1AA-XX-SCH-0105

EQUIPMENT SCHEDULE

COLD WATER BOOSTER SETS

REFERENCE	BS/00/01	CAT5/00/02	
Location	Ground Floor Water Services Plantroom	Ground Floor Water Services Plantroom	
System	Combined Sprinkler and Residential Boosted Cold Water	Landlords CAT 5 Boosted Cold Water	
Main Pump Design Duty (l/s)	3.67	0.5	
Design Pressure (Bar)	4.33	4.12	
Maximum Working Pressure (Bar)	8.2	7.2	
Pump Connections	2" BSPM	1" BSPM	
PUMP DETAILS			
Pump Type	Variable Speed	Variable Speed	
Number of Pumps	3 @ 50%	1	
Pump Operation	Duty-Assist-Standby	Duty	
Pump Speed (rpm)	2900	2900	
ELECTRICAL DETAILS			
Electrical Supply (V/Ph/Hz)	400V/3ph/50Hz	240V/1ph/50Hz	
Motor Power	3 x 1.5kW 3.9 Amps	0.5kW 3.07 Amps	
Pump Starter	3 x Inverters	DOL	
VESSEL DETAILS			
Vessel Volume (l)	1 x 24	1 x 8	
Type	-	-	
SUPPLIER DETAILS			
Manufacturer	KGN Pillinger	KGN Pillinger	
Model Reference	AV-1-24/3PV511 KGN	BTC/EV-1-8/1PH1HME08/PW90	
Additional Equipment	Mimic Control Panel wall mounted monitoring device with battery backed alarm. Anti Surge Arrestors at top of riser.	90 litre BREAK TANK (sized assuming mains supply equal or greater than booster flow rate).	
Controls	Control Panel with Auto Duty sequence chnagover	Inverter Control	

Date: 01/03/2024
Status: S1-PRELIMINARY
Revision: P01
Project: AVONDALE DRIVE ESTATE
Reference: AVD-SYN-P1AA-XX-SCH-0118

EQUIPMENT SCHEDULE

AIR SOURCE HEAT PUMP

REFERENCE	ASHP/RF/01	ASHP/RF/02	ASHP/RF/03	
LOCATION	Roof	Roof	Roof	
Heating Capacity	12kW	12kW	12kW	
Sound Power Level A7/W55	60 dB(A)	60 dB(A)	60 dB(A)	
Sound Pressure level @ 1m	52 dB(A)	52 dB(A)	52 dB(A)	
Max. flow temperature	75°C	75°C	75°C	
Design flow temperature	65°C	65°C	65°C	
Compressor Type	Scroll	Scroll	Scroll	
Weight (kg)	194kg	194kg	194kg	
ELECTRICAL DETAILS				
Rated Voltage	230V/1ph	230V/1ph	230V/1ph	
Rated Power, Maximum (kW)	5.4 kW	5.4 kW	5.4 kW	
Rated Current, Maximum(A)	23.30 A	23.30 A	23.30 A	
SUPPLIER DETAILS				
Size (mm)	1,100w x 1565h x 450d	1,100w x 1565h x 450d	1,100w x 1565h x 450d	
Model Reference	Arotherm Plus 12kW VWL 125/6	Arotherm Plus 12kW VWL 125/6	Arotherm Plus 12kW VWL 125/6	
Manufacturer	Vaillant	Vaillant	Vaillant	
Notes				



Air-to-water heat pumps • aroTHERM plus

Technical
information

Be ready for the energy change



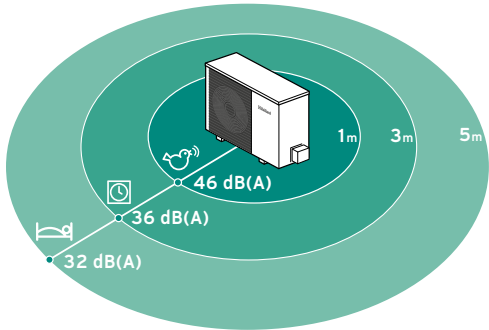
Vaillant Comfort for your home



SCOP and heating output

aroTHERM output		35°C flow		40°C flow		45°C flow		50°C flow		55°C flow	
		Output	SCOP	Output	SCOP	Output	SCOP	Output	SCOP	Output	SCOP
3.5kW	-5°C	4.2	4.41	4.1	4.03	4	3.65	3.9	3.37	3.8	3.10
	-3°C	4.6		4.4		4.3		4.2		4	
	0°C	4.7		4.7		4.6		4.5		4.4	
	2°C	4.9		4.9		4.9		4.7		4.6	
5kW	-5°C	6.3	4.48	6	4.13	5.6	3.77	5.5	3.41	5.4	3.06
	-3°C	6.8		6.4		6.1		5.9		5.8	
	0°C	6.9		6.7		6.6		6.4		6.2	
	2°C	7.1		7		6.9		6.7		6.5	
7kW	-5°C	8.2	4.36	8.1	4.13	8	3.91	7.5	3.65	7	3.39
	-3°C	8.8		8.6		8.4		7.9		7.4	
	0°C	9.5		9.3		9.1		8.6		8.1	
	2°C	10		9.8		9.6		9		8.5	
10kW	-5°C	9.9	5.03	9.7	4.58	9.4	4.13	9.1	3.85	8.8	3.58
	-3°C	10.7		10.3		10		9.6		9.2	
	0°C	11.9		11.6		11.3		10.7		10.2	
	2°C	12.8		12.5		12.1		11.5		10.9	
12kW	-5°C	13.1	4.88	12.8	4.55	12.5	4.21	11.7	3.92	10.8	3.63
	-3°C	13.9		13.4		12.9		12.1		11.2	
	0°C	15.2		14.6		14.1		13.2		12.3	
	2°C	16		15.5		14.9		13.9		13	

Sound power



Model	Sound Power Level A7/W55	Sound Pressure Level		
		1m distance	3m distance	5m distance
aroTHERM plus 3.5kW	54 dB	46 dB(A)	36 dB(A)	32 dB(A)
aroTHERM plus 5kW	54 dB	46 dB(A)	36 dB(A)	32 dB(A)
aroTHERM plus 7kW	55 dB	47 dB(A)	37 dB(A)	33 dB(A)
aroTHERM plus 10kW	60 dB	52 dB(A)	42 dB(A)	38 dB(A)
aroTHERM plus 12kW	60 dB	52 dB(A)	42 dB(A)	38 dB(A)

Date: 01/03/2024
Status: S1-PRELIMINARY
Revision: P01
Project: AVONDALE DRIVE ESTATE
Reference: AVD-SYN-P1AA-XX-SCH-0119

EQUIPMENT SCHEDULE

WATER SOURCE HEAT PUMP

REFERENCE	WSHP/RF/01			
LOCATION	Roof Plantroom			
Heating Capacity	7kW			
Sound Pressure level @ 3m	TBC			
Max. flow temperature	65°C			
Design flow temperature	65°C			
Weight	139kg			
ELECTRICAL DETAILS				
Rated Voltage	230V/1ph			
Rated Power, Maximum (kW)	1.8			
Starting Current (A)	18.2			
Typical Running Current (A)	8.4			
Maximum Running Current(A)	18.5			
SUPPLIER DETAILS				
Size (mm)	580w x 1145h x 570d			
Model Reference	Evo 7kW K70-S1H			
Manufacturer	Kensa			
Notes				



Kensa Evo Heat Pump Series

Features & Benefits

- Available in 7kW, 9kW, 13kW, 15kW and 17kW
- 15% gain in efficiency*
- ERP A+++ rated series
- Increased SCOP performance*
- 60°C heat pump output (excluding 17kW model)
- Significantly reduced noise outputs*
- Custom built control panel
- Designed for easy installation
- UK manufactured

Product Description

The ERP A+++ rated Evo series delivers heating and hot water efficiencies of SCOPs up to 4.7 at 35°C along with significantly reduced noise outputs, packaged in a contemporary contoured gunmetal and gloss-white finish, punctuated by a custom built control panel unique to the Kensa series.

Performance: Each model in the Kensa Evo series has optimised sized stainless steel heat exchangers, which allows the compressor to respond more efficiently, increasing SCOP performance and delivering up to 60°C from the heat pump. (Excluding the 17kW which is designed solely for space heating)

Appearance: The ergonomic steel casing has been designed with a focus on ease of access, whilst providing sturdy yet stylish protection from ageing and wear and tear.

Installation: The Evo has been designed to be easy to handle and install. With cross head screws in its unique bevelled front panel, the Evo's electrical component and wiring terminals are easily accessible.



The heat pump has four rear water connections, two for the ground collectors and two for the property's heating distribution system. The connections consist of four 28mm straight brass fittings designed with tight tolerances, ensuring compatibility with easy to install push fittings.

The external side panels feature a curved cut-out offering the installer an extra level of flexibility to install the Evo according to the demands of the site, with vertical and horizontal pipework exit points from the sides and top of the unit.

Controls: Kensa has developed its own control board which is the brain of the new Evo heat pump. The customer interface is an intuitive touch screen that facilitates commissioning and parameter settings, and provides live status readings supported by LED light indicators.

The custom built software also permits the control board to pre-empt system irregularities using warning safety levels, which may previously have resulted in a fault if left unchecked. This pro-active system will ultimately reduce costs and call outs and enable better diagnostics and system resolution, aided by Kensa's technical support and UK wide installation network.

* against equivalent Kensa compact units



Single Phase					Three Phase
Nominal thermal kW rating	7	9	13	17	15
Refrigerant circuit					
Process medium	R407C				
Fill volume kg	1.9	1.9	2	2.1	2
Compressor type	Scroll				
Dimensions					
Nominal H x W x L (mm)	1145 x 580 x 570				
Nominal Dry weight kg (Approx)	153	154	167	167	150
Operating pressure					
Brine circuit min (primary) bar g	Settable at commissioning				
Heating water circuit min (secondary) bar g	Settable at commissioning				
Low pressure reset bar g	Settable at commissioning				
Connection sizes					
Primary IN and OUT (brass stubs) mm	28				
Heating flow and return (brass stubs) mm	28				
Performance (based on Average Climate) at 35°C					
ErP rating	A+++	A+++	A++	A++	A++
SCOP	4.72	4.64	4.40	4.06	4.47
Seasonal space heating energy efficiency	181%	177%	168%	155%	171%
Performance (based on Average Climate) at 55°C					
ErP rating	A++	A++	A++	A+	A++
SCOP	3.7	3.62	3.48	3.16	3.58
Seasonal space heating energy efficiency	140%	137%	131%	118%	135%
Sound Power Level					
Sound Power Level (dB)	49.4	56.1	49.7	56.2	49.2

* The COP figure quoted is calculated as per EN14511.

** In-built immersion heaters will increase running costs and CO₂ emissions as they use direct electricity, because of this Kensa heat pumps do not include them.

*** By increasing the flow temperature from the heat pump the efficiency of the unit will drop and the COP decreases.

**** Kensa Evo heat pumps incorporate smart starts as standard to limit the starting current of the compressors. For full details on how the starting currents are calculated please contact Kensa.

Note: Design flowrates are for a ground temperature of 0 and –4°C and a load temperature of 30°C and 35°C

The 17kW is sold for space heating applications only.

Date: 01/03/2024
Status: S1-PRELIMINARY
Revision: P01
Project: AVONDALE DRIVE ESTATE
Reference: AVD-SYN-P1AA-XX-SCH-0116

EQUIPMENT SCHEDULE

CIRCULATION PUMPS

REFERENCE	P/RF/01	P/RF/02	
LOCATION	Roof Plantroom	West and East Block Heating Plant Room	
System	LTHW Circuit	DHW Return	
Selection Duty (l/s)	1.06	0.2	
Selection Pressure (kPa)	25 kPa	25 kPa	
Working Temperature Range (°C)	Heating 43- 38 Cooling 6-12	45-55	
Maximum Temperature (°C)	110 deg C	80 deg C	
Minimum Temperature (°C)	-10 deg C	TBC	
Max Operating Pressure	10 bar	10 bar	
CONSTRUCTION			
Material	Stainless Steel	Stainless Steel	
Rated Pump Speed (rpm)	-	-	
Drive	Inverter	Inverter	
ELECTRICAL DETAILS			
Electrical Supply	1 ph / 230V / 50Hz	1 ph / 200-240V / 50Hz	
Power Input (kW)	0.10	0.050	
Rated Current (A)	0.91	0.46	
SUPPLIER DETAILS			
Manufacturer	Grundfos	Grundfos	
Model Reference	MAGNA 3 D 32-60	Grundfos Alpha 1 20-40 N	
Notes	Pipe Mounted, Twinpump	Pipe Mounted	



SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

UK Commercial enquiries T:029 2085 8200 UK Residential enquiries T:029 2085 8500 International enquiries T:+44.29 2085 8497

Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.

This data sheet produced on 11 Mar 2025 16:49 using software version 5.8.4600.0

Project: 24/14747/COM

AVONDALE DRIVE ESTATE PHASE 1A

Location: EF/00/01 - Plantroom and GF Cleaners Cupboard

Technical Data

DE - DAVE Extract Fans

Fan Code: **DE4-ES**

Installation Manual Links: 611280

Required duty: 0.135 m³/s at 90 Pa

Actual duty: 0.223 m³/s at 247 Pa

Actual at required flow: 0.135 m³/s at 387 Pa

When speed controlled to required duty (60.41%):

Motor Input Power: 0.04 kW

Specific Fan Power: 0.3 W/(l/s)

Velocity at required duty: 2.75 m/s

At full speed:

Motor Input Power: 0.182 kW

Specific Fan Power: 0.8 W/(l/s)

Maximum Fan Speed: 2,550 RPM

Electrical Supply: 230V, 1 Phase, 50 Hz

Nominal Motor Rating: 0.17 kW

Motor current (flc): 1.35 A

Motor starting current (sc): 1.35 A

Max. operating temp: 60°C

Weight: 35 kg

All Ecosmart fans feature soft-starting and stepless variable speed control. A switch disconnector is required to isolate the fan from the electrical supply.

Sound Data

Acoustic performance to ISO 13347 and AMCA 300.

Noise calculated speed controlled to required duty (60.41%)

Sound Power Levels re 1 pWatts (Hz):

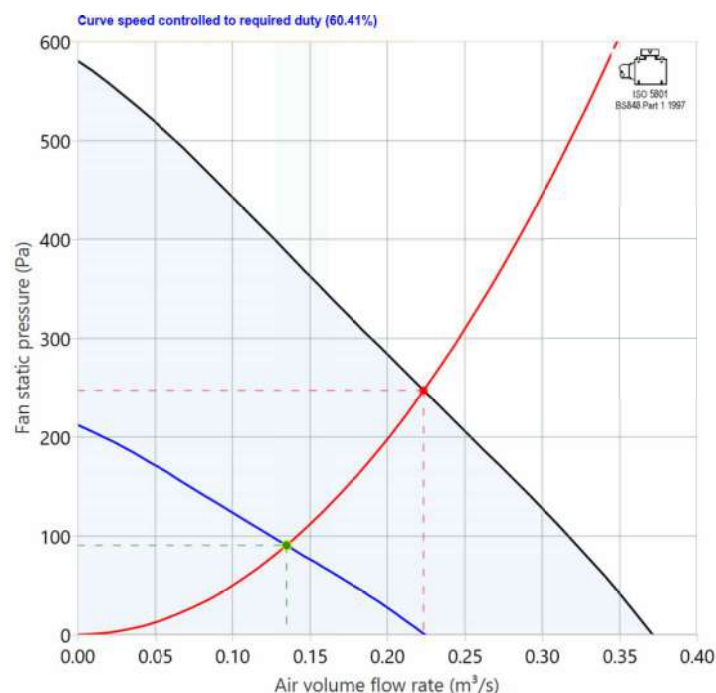
Hz	63	125	250	500	1k	2k	4k	8k	dBA
Induct Inlet	70	68	56	55	45	43	44	43	
Induct Outlet	78	78	59	52	48	48	42	44	
Breakout	54	52	42	35	26	22	17	<16	22
For 100% speed:	+3	+4	+6	+8	+11	+11	+11	+11	

dBA is hemi-spherical at 3 metres. For spherical deduct 3 dBA.

Values shown are for inlet Lw, outlet Lw sound power & breakout levels for: Installation Type D: ducted inlet, ducted outlet. Ratings include the effects of duct end correction.

Please note that the noise data stated on this data sheet for the unit and/or silencer is tested in accordance with UK, European and International industry laboratory standards. However onsite conditions may vary and we would recommend that this information is verified by an acoustic specialist in order to ensure its suitability for the intended application.

Performance Chart



Additional Notes

Selected Ancillaries

2 x CFCH25 Hi-temp flexible connector

CFCH25 - Hi-temp flexible connector

Weight: 0.5 kg

Specification

Dave high performance extract fan, standard case with patented 'Floating fan' construction. Single skin, with infill panels and manufactured from heavy gauge, corrosion resistant Magnelis steel. The unit is suitable for internal or external mounting, in any orientation and incorporates a full length top or bottom access panel. The fan impeller and EC motors are selected to provide optimum performance and energy efficiency conforming to Part L regulations. Units are suitable for operation in ambient temperatures of up to 60°C (sizes 1-5), 40°C (sizes 6-7) and are Class L2 leakage. The unit shall be controlled by an integrated Ecosmart control mounted externally to the case. The fans shall have the following energy saving and operational functions integrally installed with in it, all components will be pre-wired and fitted by the manufacturer:

- Integral Frequency inverter/speed controller.
- Integral adjustable run-on timer.
- Maximum and minimum speed adjustment/setting (trickle and boost).
- Volt free run & failure/status indication.
- 0-10V BMS interface for remote operation.
- Multiple low voltage sockets for interconnection of sensors or fans.
- Background ventilation/trickle enable switch.

The unit is supplied with circular spigots and set of four mounting brackets. The Fan unit shall have a 5 year warranty. The product warranty applies to the UK mainland and in accordance with Clause 14 of our Conditions of Sale. Customers purchasing from outside of the UK should contact Nuaire International Sales office for further details.

CFCH25

Circular flexible connector without flanges. Flexible duct material is flameproof and resistance to heat up to 400°C, chemicals, ozone, oil and grease. The material is airtight, waterproof and tested to BS476 Part 7. Supplied complete with fixing straps.



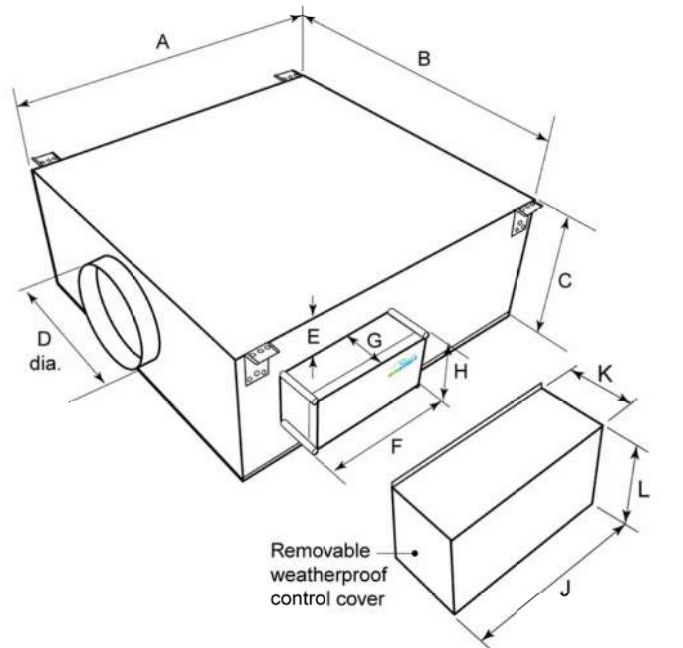
SUMMARY FAN DATA SHEET

Nuaire, Western Industrial Estate, Caerphilly, CF83 1NA, United Kingdom. email:info@nuaire.co.uk

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Whilst the information given on this data sheet is fan specific, it is in summary and reference to the product selection catalogue and installation & maintenance documents is recommended.
This data sheet produced on 11 Mar 2025 16:49 using software version 5.8.4600.0

Fan Dimensions



A	B	C	D	E	F	G	H	J
605	848	380	250	131	370	96	150	470
K	L	kg						
120	170	35.0						
Length: Width: Height:								
605	848	380						

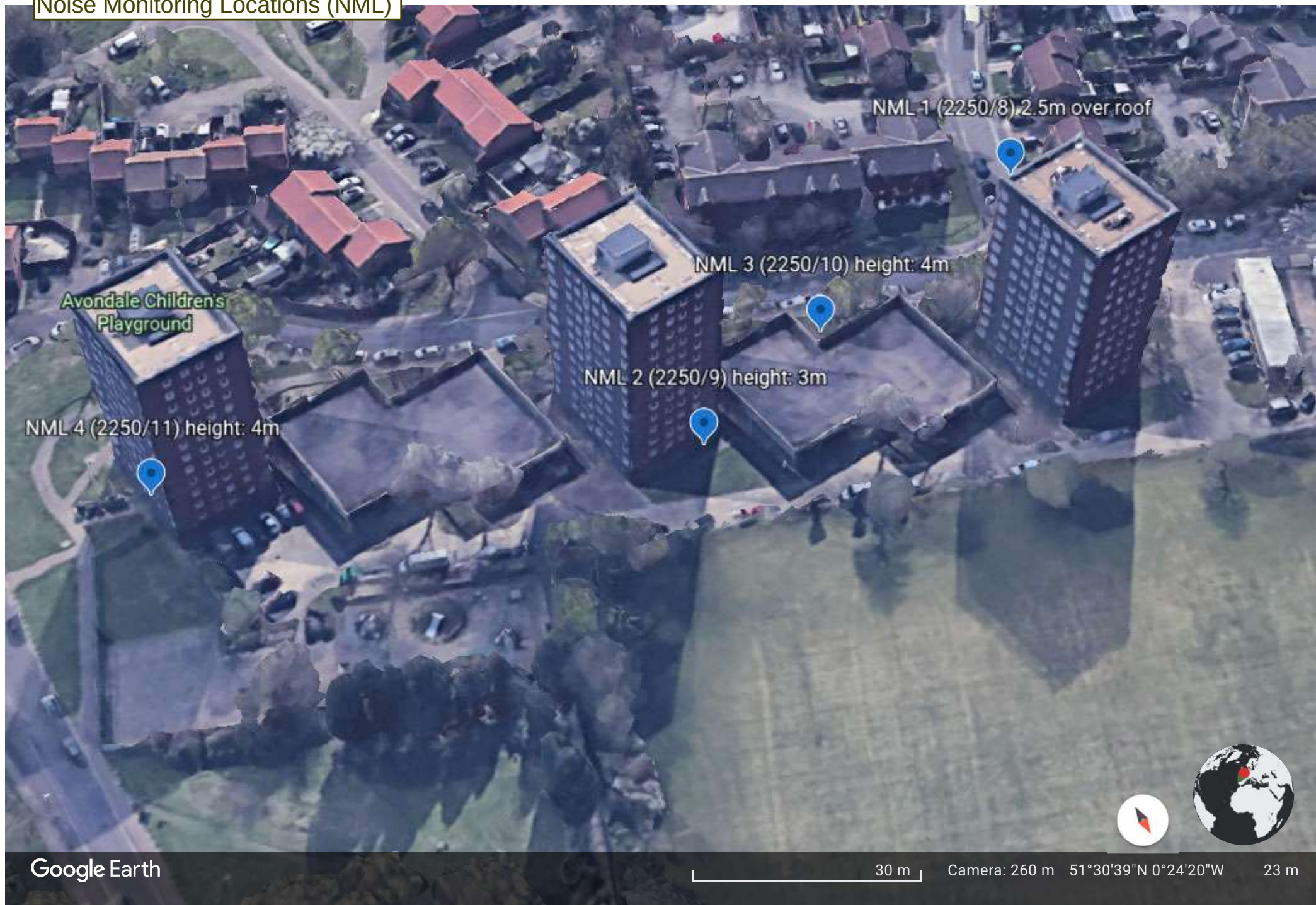
Drawing is for dimensional purposes only. Dimensions in mm.

Please see selected ancillaries section for additional dimensions for any requested additional ancillaries.

A P P E N D I X C

Noise monitoring locations and results

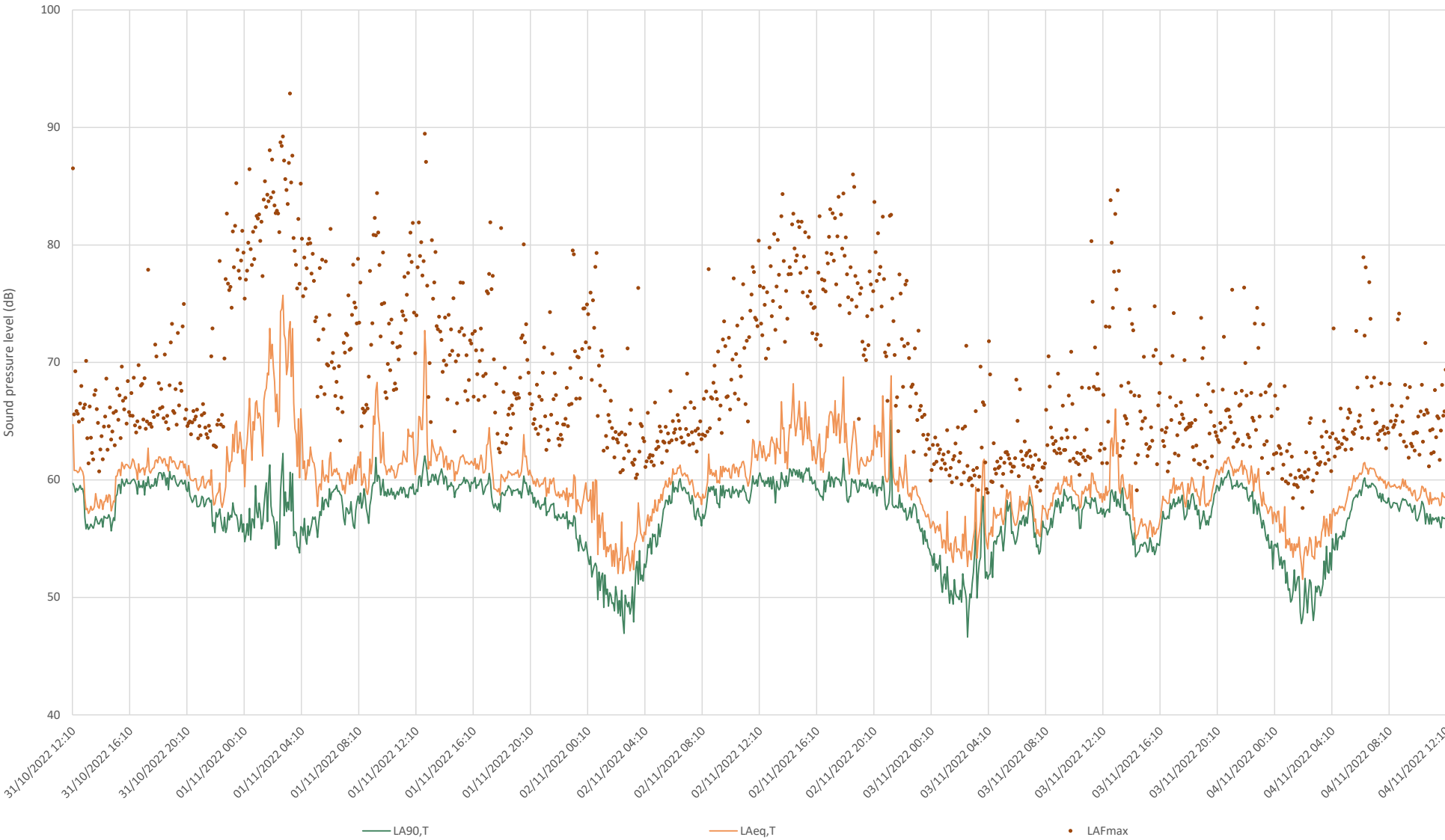
Noise Monitoring Locations (NML)



NML 1: Roof of Glenister House



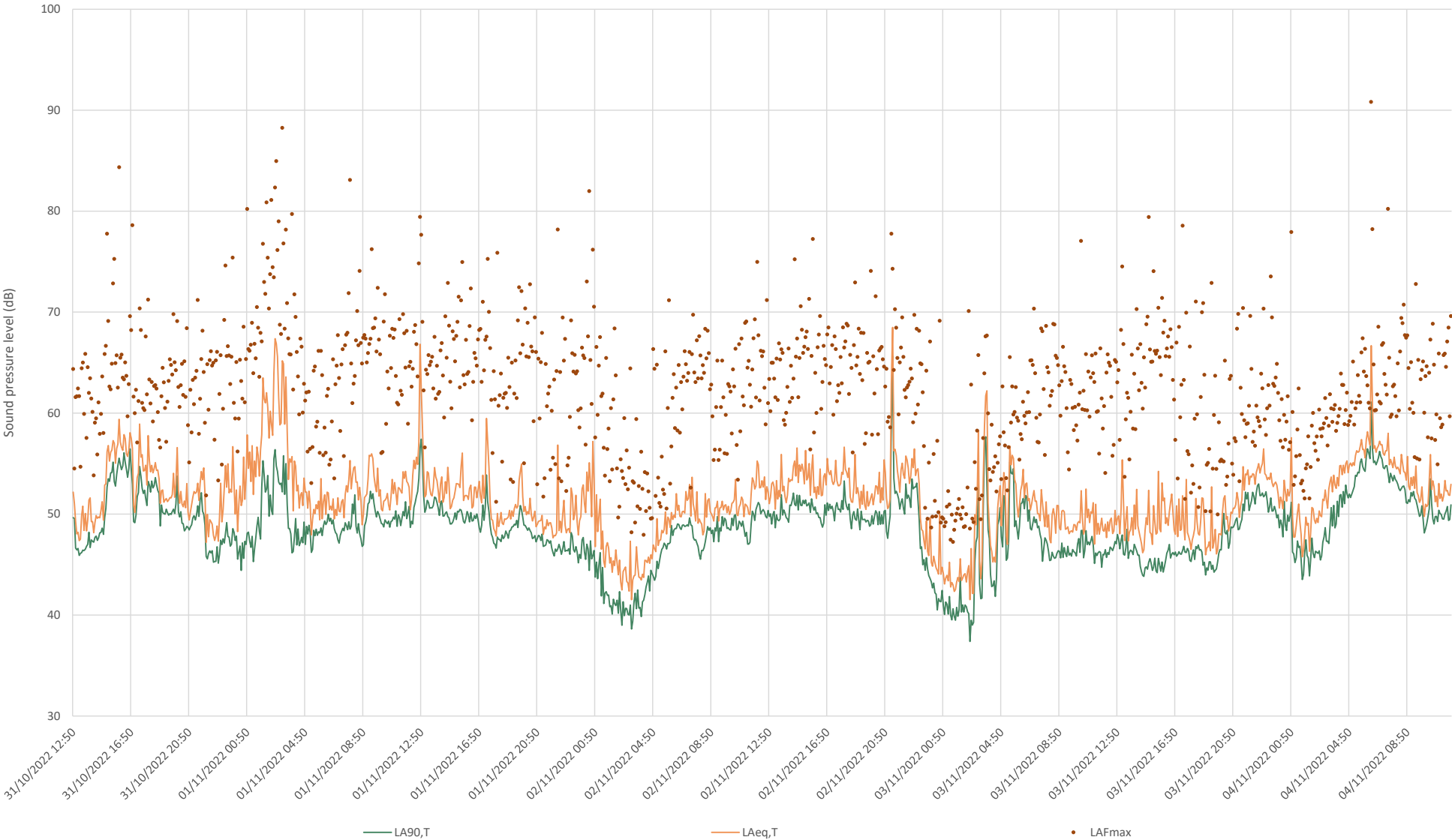
Measured sound level (T = 5min)



NML 2: Rear of Fitzgerald House



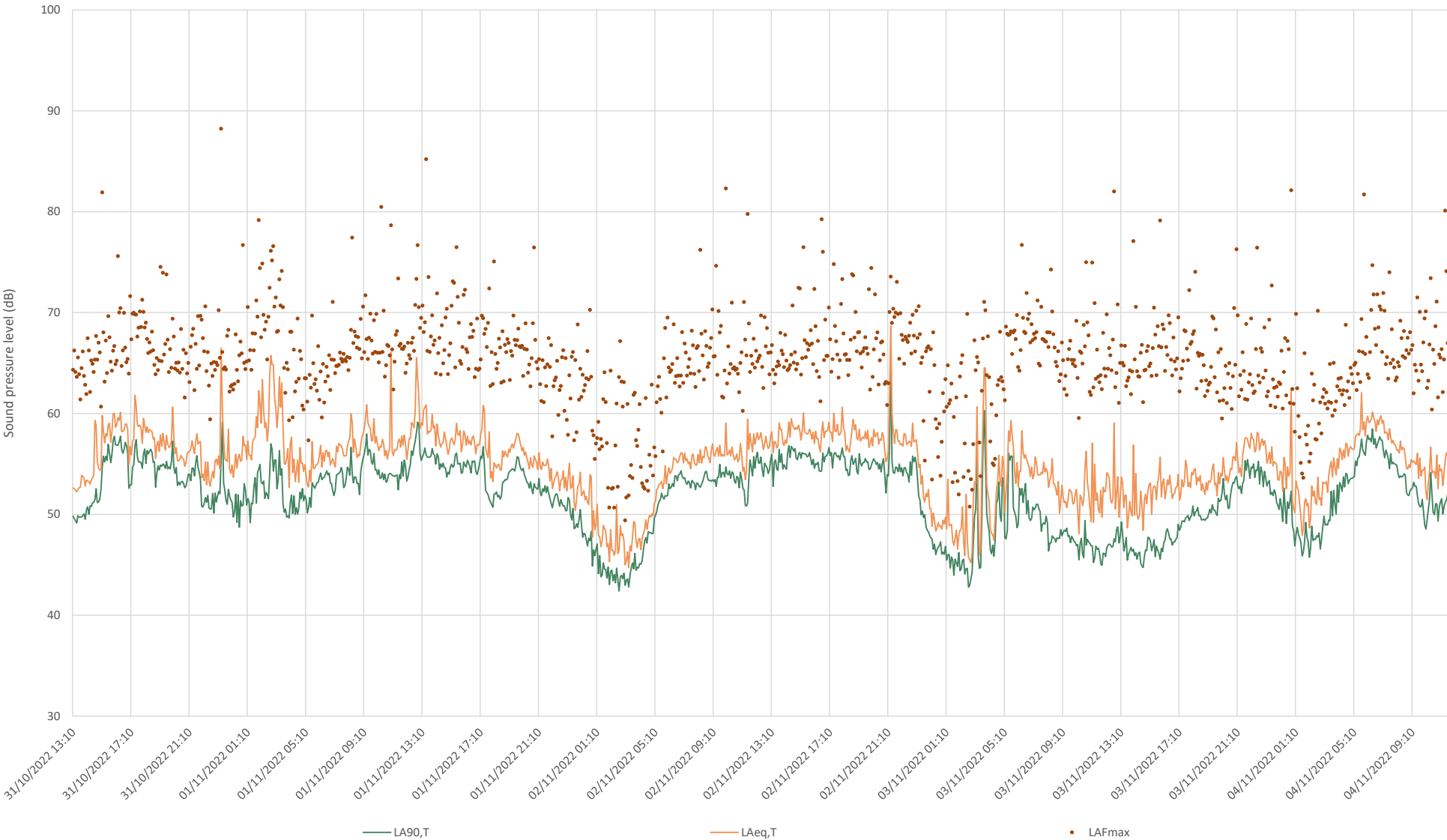
Measured sound level (T = 5min)



NML 3: Overlooking Avondale Drive



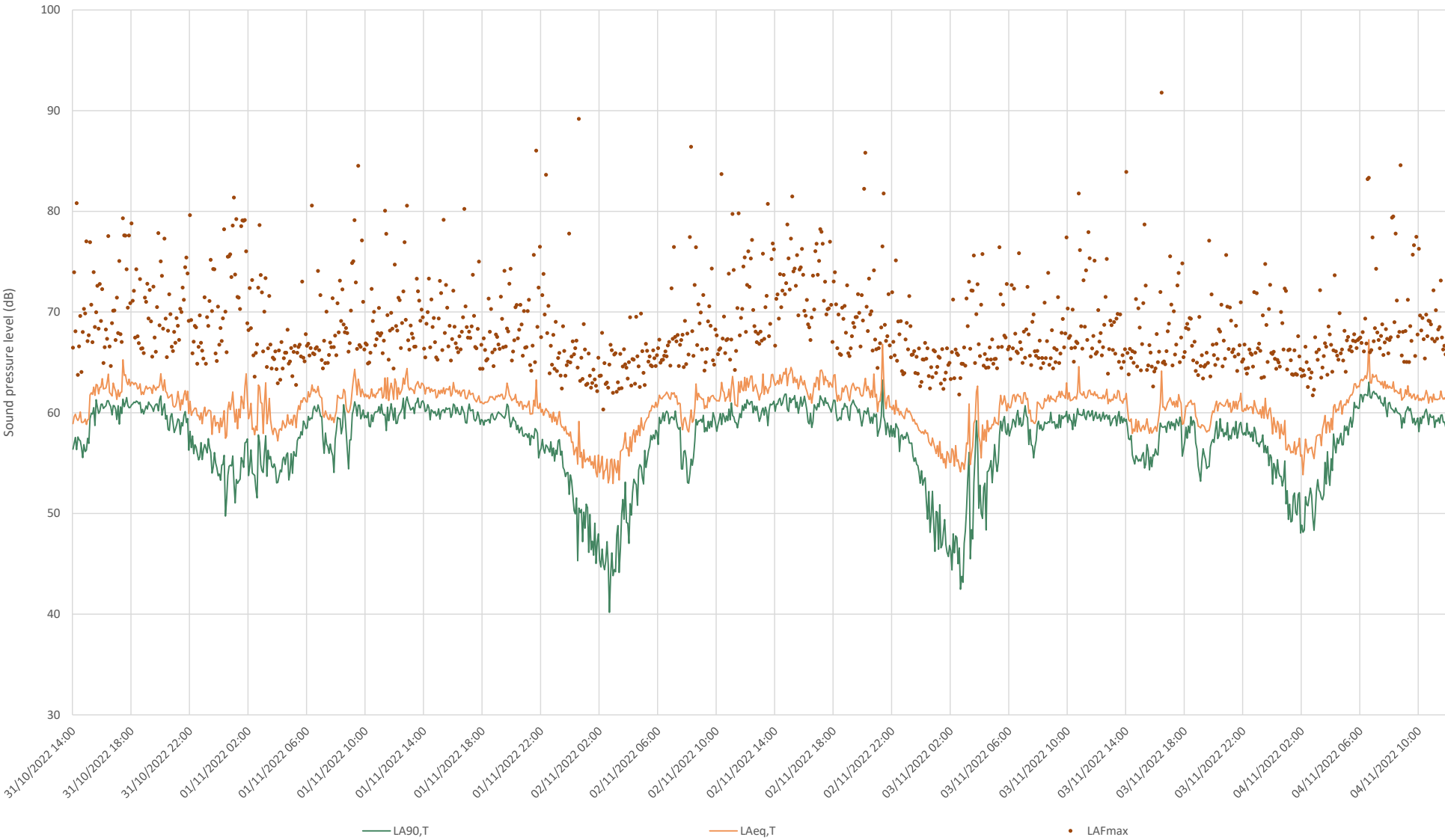
Measured sound level (T = 5min)



NML 4: 1F window of Wellings House (east facing)

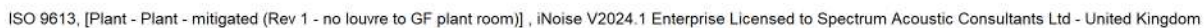


Measured sound level (T = 5min)



A P P E N D I X D

Noise model results



Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1A_A	4.50	40	--	21	37	30	30	30	31	25	25
Ph1A_A	1.50	36	--	17	33	26	27	26	28	21	21
Ph1A_B	7.50	34	--	15	31	24	25	24	26	19	18
Ph1A_B	7.50	32	--	13	29	22	23	22	24	17	16
Ph1A_A	1.50	31	--	12	27	21	22	21	22	15	14
Ph1A_A	1.50	30	--	11	27	20	21	20	22	15	14
Ph1A_B	7.50	30	--	11	26	20	20	20	21	14	13
Ph1A_B	7.50	29	--	10	26	19	20	19	20	14	13
Ph1A_C	13.50	29	--	10	25	19	20	19	20	13	12
Ph1A_C	13.50	28	--	9	25	19	19	18	19	12	11
Ph1A_C	13.50	27	--	8	24	18	19	18	19	12	10
Ph1A_A	1.50	27	--	8	24	17	18	17	18	11	10
Ph1A_C	13.50	27	--	8	23	17	17	17	18	11	10
Ph1A_B	7.50	26	--	7	23	16	17	16	18	11	10
Ph1A_C	13.50	25	--	6	22	16	16	15	16	9	8
Ph1A_B	7.50	25	--	5	20	19	18	17	11	3	-5
Ph2 (1)_A	1.50	25	--	5	21	15	15	15	16	9	7
Ph2 (1)_B	7.50	24	--	4	21	15	16	15	16	9	7
Ph2 (1)_A	1.50	24	--	5	20	15	16	15	16	10	8
Ph1A_A	1.50	24	--	1	17	18	18	18	14	7	1
Ph2 (1)_B	7.50	24	--	5	20	15	16	15	16	9	8
Ph2 (1)_C	13.50	24	--	4	20	15	16	14	15	8	6
Ph2 (1)_D	19.50	24	--	4	20	16	17	15	14	7	5
Ph2 (1)_C	13.50	24	--	4	19	15	16	15	16	8	7
Ph2 (1)_D	19.50	24	--	4	19	16	17	15	15	7	5
Ph2 (1)_A	1.50	24	--	5	21	14	15	14	15	8	7
Ph2 (1)_A	1.50	24	--	5	20	14	15	14	15	8	7
Ph2 (1)_B	7.50	24	--	5	20	14	15	14	15	8	6
Ph2 (1)_D	19.50	24	--	4	19	16	17	15	14	7	4
Ph2 (1)_B	7.50	24	--	5	20	14	15	14	15	8	6
Ph2 (1)_C	13.50	23	--	4	20	15	15	14	14	7	5
Ph2 (1)_D	19.50	23	--	4	19	16	16	15	14	7	4
Ph2 (1)_D	19.50	23	--	4	19	16	16	14	13	6	3
Ph2 (1)_C	13.50	23	--	4	19	14	15	14	14	7	5
Ph1A_C	13.50	23	--	1	16	17	17	16	12	4	-5
Ph1A_A	4.50	23	--	5	19	17	16	13	9	2	-4
Ph2 (1)_A	1.50	23	--	4	20	13	14	13	14	7	5
Ph2 (1)_B	7.50	23	--	4	20	14	14	13	14	7	5
Ph2 (1)_C	13.50	23	--	4	19	14	14	13	14	7	4
Ph1A_B	7.50	21	--	-2	13	14	15	15	11	4	-3
Ph1A_C	13.50	21	--	1	12	16	15	13	9	3	-6
Ph1A_C	13.50	20	--	0	12	15	15	13	9	2	-6
Ph1A_C	13.50	20	--	0	11	15	15	13	9	2	-6
Ph1A_C	13.50	20	--	0	13	14	14	12	8	1	-8
Ph2 (1)_D	19.50	20	--	0	13	14	14	11	8	2	-3
Ph1A_A	1.50	19	--	-3	12	13	13	13	9	1	-6
Ph1A_B	7.50	19	--	0	14	13	13	11	7	0	-8
Ph1A_C	13.50	19	--	-1	10	13	14	12	8	1	-8
Ph1A_A	1.50	18	--	1	16	9	9	7	8	1	-1
Ph1A_B	7.50	18	--	1	16	9	9	7	8	1	-1

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1A_B	7.50	18	--	-4	11	12	13	12	8	1	-7
Ph1A_C	13.50	18	--	1	15	10	10	8	8	1	-2
Ph1A_C	13.50	18	--	-3	10	12	12	12	9	2	-6
Ph1A_B	7.50	18	--	-2	11	12	12	11	7	0	-8
Ph1A_B	7.50	18	--	-2	10	12	12	11	7	0	-8
Ph1A_C	13.50	18	--	-3	10	12	12	11	7	0	-8
Ph1A_B	7.50	17	--	-3	9	11	12	11	7	0	-8
Ph1A_C	13.50	17	--	-3	9	11	12	10	6	-1	-10
Ph1A_C	13.50	17	--	-3	9	11	11	10	6	-1	-9
Ph1A_A	1.50	17	--	0	13	11	9	7	4	-4	-11
Ph1A_A	1.50	17	--	-5	9	10	11	10	6	-2	-9
Ph1A_B	7.50	17	--	-5	9	10	11	10	6	-1	-9
Ph1A_B	7.50	16	--	-4	8	9	11	10	6	-1	-9
Ph2 (1)_C	13.50	16	--	-2	13	9	8	6	5	-2	-6
Ph1A_C	13.50	16	--	-2	9	10	10	8	4	-3	-11
Ph2 (1)_A	1.50	16	--	-3	13	6	6	5	6	-2	-5
Ph2 (1)_B	7.50	16	--	-2	13	7	6	5	6	-2	-5
Ph1A_C	13.50	15	--	-3	8	10	9	8	4	-3	-11
Ph1A_A	1.50	15	--	-3	10	9	8	7	3	-4	-11
Ph1A_C	13.50	15	--	-4	8	9	9	8	4	-3	-11
Ph1A_C	13.50	15	--	-2	10	9	9	7	3	-4	-12
Ph1A_B	7.50	15	--	-5	7	8	10	9	5	-2	-11
Ph1A_C	13.50	15	--	-3	7	9	9	8	5	-2	-11
Ph1A_B	7.50	15	--	-6	8	8	9	8	4	-3	-11
Ph1A_A	1.50	15	--	-4	9	8	8	8	4	-3	-11
Ph1A_A	1.50	15	--	-6	8	8	9	8	4	-4	-11
Ph1A_A	1.50	14	--	-5	7	7	8	8	4	-3	-11
Ph1A_B	7.50	14	--	-3	9	6	7	6	2	-5	-13
Ph1A_C	13.50	14	--	-5	7	8	7	6	3	-5	-13
Ph1A_B	7.50	14	--	-4	7	7	8	7	3	-4	-12
Ph1A_A	1.50	13	--	-6	6	7	7	7	3	-4	-12
Ph1A_C	13.50	13	--	-3	9	7	7	4	1	-7	-14
Ph1A_B	7.50	13	--	-6	7	7	7	6	3	-5	-12
Ph1A_B	7.50	13	--	-5	6	6	8	6	3	-4	-13
Ph1A_A	1.50	13	--	-3	9	5	6	4	1	-6	-13
Ph1A_A	1.50	13	--	-7	6	6	7	6	3	-5	-12
Ph1A_C	13.50	13	--	-5	7	7	7	5	2	-6	-14
Ph1A_A	1.50	13	--	-6	6	6	7	6	2	-5	-14
Ph1A_B	7.50	13	--	-6	5	6	7	6	2	-5	-13
Ph1A_B	7.50	12	--	-7	6	6	6	5	2	-6	-13
Ph2 (1)_D	19.50	12	--	-5	5	7	7	4	-1	-10	-19
Ph1A_C	13.50	12	--	-6	6	6	6	5	1	-7	-15
Ph1A_A	1.50	12	--	-5	6	5	6	5	1	-6	-14
Ph2 (1)_D	19.50	12	--	-5	8	6	5	2	-2	-11	-19
Ph1A_B	7.50	12	--	-4	9	4	5	3	0	-8	-13
Ph1A_A	1.50	12	--	-7	6	5	6	5	2	-7	-13
Ph1A_B	7.50	12	--	-7	6	5	5	4	1	-7	-14
Ph1A_A	1.50	12	--	-6	5	4	6	5	1	-6	-14
Ph1A_A	1.50	11	--	-7	6	5	5	4	1	-7	-14
Ph1A_A	1.50	11	--	-4	8	3	3	1	-1	-8	-13

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1A_A	1.50	11	--	-7	4	4	6	4	1	-6	-15
Ph1A_C	13.50	11	--	-5	6	5	4	2	-1	-9	-16
Ph2 (1)_D	19.50	11	--	-6	4	6	5	2	-4	-12	-21
Ph2 (1)_A	1.50	11	--	-6	8	2	2	-1	-3	-12	-18
Ph1A_B	7.50	10	--	-6	6	2	3	1	-2	-9	-15
Ph2 (1)_D	19.50	10	--	-7	4	5	4	0	-5	-14	-22
Ph2 (1)_C	13.50	10	--	-7	7	1	0	-1	-4	-12	-18
Ph2 (1)_B	7.50	9	--	-7	7	0	0	-2	-4	-12	-18
Ph2 (1)_A	1.50	9	--	-7	7	0	0	-2	-4	-12	-18
Ph1A_A	1.50	9	--	-7	6	1	2	1	-2	-10	-15
Ph2 (1)_D	19.50	9	--	-7	5	3	2	-1	-5	-13	-21
Ph2 (1)_D	19.50	9	--	-8	3	4	3	0	-6	-15	-23
Ph2 (1)_D	19.50	7	--	-9	3	1	0	-2	-6	-14	-22
Ph2 (1)_C	13.50	7	--	-9	4	-2	-1	-3	-6	-14	-20
Ph2 (1)_B	7.50	7	--	-10	4	-2	-2	-3	-6	-14	-20
Ph2 (1)_A	1.50	7	--	-10	4	-2	-2	-3	-6	-14	-20
Ph2 (1)_A	1.50	6	--	-13	-1	0	1	0	-4	-12	-21
Ph2 (1)_C	13.50	6	--	-10	2	-1	-1	-3	-6	-14	-22
Ph2 (1)_D	19.50	6	--	-10	1	1	0	-3	-8	-16	-24
Ph2 (1)_D	19.50	6	--	-10	0	1	0	-3	-8	-16	-24
Ph2 (2)_D	19.50	6	--	-12	-1	1	1	-3	-9	-19	-29
Ph2 (1)_D	19.50	6	--	-10	2	0	-1	-3	-7	-15	-23
Ph2 (1)_C	13.50	6	--	-11	1	-1	-1	-3	-7	-15	-23
Ph2 (1)_C	13.50	6	--	-11	0	-1	-1	-2	-5	-13	-19
Ph2 (1)_A	1.50	5	--	-12	2	-3	-2	-3	-6	-13	-21
Ph2 (2)_D	19.50	5	--	-13	-2	0	0	-3	-9	-19	-30
Ph2 (1)_B	7.50	5	--	-11	2	-3	-2	-3	-6	-14	-21
Ph2 (3)_E	25.50	5	--	-15	-3	0	0	-3	-7	-17	-30
Ph2 (1)_B	7.50	5	--	-12	-1	-2	-1	-2	-5	-13	-19
Ph2 (1)_A	1.50	5	--	-15	-2	-2	-1	-1	-5	-13	-22
Ph2 (1)_C	13.50	5	--	-12	-1	-2	-2	-3	-7	-14	-21
Ph2 (2)_D	19.50	5	--	-12	-1	0	-1	-4	-10	-19	-29
Ph2 (3)_E	25.50	5	--	-15	-3	-1	0	-3	-8	-18	-30
Ph2 (1)_A	1.50	5	--	-13	0	-3	-2	-3	-6	-14	-21
Ph2 (2)_D	19.50	5	--	-14	-3	0	0	-4	-10	-20	-31
Ph2 (1)_D	19.50	5	--	-12	-2	-1	-1	-3	-8	-16	-24
Ph2 (1)_A	1.50	5	--	-13	-1	-2	-2	-3	-6	-13	-19
Ph2 (1)_A	1.50	5	--	-15	-3	-2	-2	-1	-5	-13	-23
Ph2 (1)_D	19.50	5	--	-12	-1	-1	-2	-4	-8	-16	-24
Ph2 (1)_C	13.50	4	--	-12	-1	-2	-2	-4	-7	-15	-22
Ph2 (1)_C	13.50	4	--	-13	-1	-2	-2	-4	-8	-16	-23
Ph2 (1)_D	19.50	4	--	-12	-2	-1	-2	-4	-8	-16	-23
Ph2 (1)_B	7.50	4	--	-13	-2	-3	-2	-3	-7	-14	-20
Ph2 (1)_D	19.50	4	--	-12	-2	-2	-2	-4	-8	-16	-23
Ph2 (1)_B	7.50	4	--	-13	0	-4	-3	-4	-7	-15	-23
Ph2 (2)_D	19.50	4	--	-14	-3	-1	-1	-4	-10	-20	-31
Ph2 (1)_A	1.50	4	--	-13	-2	-3	-2	-4	-6	-14	-21
Ph2 (1)_A	1.50	4	--	-14	-2	-3	-2	-3	-7	-14	-20
Ph2 (1)_C	13.50	4	--	-13	-2	-2	-2	-4	-8	-16	-24
Ph2 (1)_C	13.50	4	--	-13	-2	-2	-2	-4	-8	-16	-24

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph2 (2)_C	13.50	4	--	-14	-2	-2	-2	-5	-10	-18	-28
Ph2 (1)_A	1.50	4	--	-16	-3	-3	-3	-2	-6	-15	-24
Ph2 (1)_C	13.50	4	--	-13	-2	-3	-2	-4	-8	-15	-23
Ph2 (3)_E	25.50	3	--	-15	-4	-2	-2	-4	-8	-18	-30
Ph2 (1)_C	13.50	3	--	-14	-3	-3	-2	-4	-8	-15	-23
Ph2 (1)_C	13.50	3	--	-14	-4	-3	-3	-4	-7	-15	-22
Ph2 (2)_D	19.50	3	--	-13	-3	-2	-3	-6	-11	-19	-28
Ph2 (2)_D	19.50	3	--	-13	-3	-2	-3	-6	-11	-19	-29
Ph2 (2)_D	19.50	3	--	-13	-3	-2	-3	-6	-11	-19	-29
Ph2 (2)_C	13.50	3	--	-14	-2	-2	-3	-6	-11	-19	-28
Ph2 (1)_C	13.50	3	--	-14	-4	-3	-3	-5	-8	-15	-23
Ph2 (1)_A	1.50	3	--	-17	-4	-4	-3	-4	-8	-17	-26
Ph2 (1)_B	7.50	3	--	-15	-4	-5	-3	-4	-7	-15	-23
Ph2 (2)_C	13.50	3	--	-14	-3	-3	-4	-6	-10	-18	-27
Ph2 (1)_B	7.50	3	--	-15	-4	-4	-3	-4	-8	-15	-23
Ph2 (1)_B	7.50	3	--	-16	-5	-5	-4	-3	-7	-14	-22
Ph2 (2)_C	13.50	3	--	-17	-4	-3	-3	-5	-9	-17	-28
Ph2 (1)_B	7.50	3	--	-15	-4	-5	-3	-4	-8	-15	-22
Ph2 (3)_D	19.50	3	--	-15	-4	-2	-3	-6	-12	-23	-36
Ph2 (2)_D	19.50	3	--	-14	-3	-3	-4	-7	-11	-19	-29
Ph2 (1)_B	7.50	3	--	-15	-4	-4	-3	-5	-8	-16	-23
Ph2(1)_A	1.50	2	--	-15	-4	-5	-3	-4	-8	-15	-24
Ph2 (1)_B	7.50	2	--	-15	-4	-4	-3	-5	-8	-16	-23
Ph2 (3)_D	19.50	2	--	-15	-5	-3	-3	-6	-13	-23	-36
Ph2 (1)_B	7.50	2	--	-15	-5	-5	-4	-5	-8	-16	-23
Ph2 (2)_D	19.50	2	--	-14	-3	-3	-4	-7	-12	-20	-29
Ph2 (1)_B	7.50	2	--	-16	-5	-5	-4	-5	-8	-15	-23
Ph2 (3)_D	19.50	2	--	-16	-5	-3	-3	-7	-13	-23	-35
Ph2(1)_A	1.50	2	--	-16	-5	-5	-4	-4	-7	-15	-24
Ph2 (3)_E	25.50	2	--	-15	-4	-3	-3	-7	-12	-22	-32
Ph2 (2)_C	13.50	2	--	-18	-5	-4	-4	-5	-9	-18	-29
Ph2 (2)_C	13.50	2	--	-14	-4	-4	-5	-6	-10	-18	-27
Ph2(1)_A	1.50	2	--	-15	-4	-6	-4	-5	-8	-16	-25
Ph2 (2)_D	19.50	2	--	-16	-5	-3	-4	-7	-12	-21	-32
Ph2 (2)_A	1.50	2	--	-19	-5	-4	-4	-5	-10	-18	-29
Ph2 (2)_B	7.50	2	--	-18	-5	-4	-4	-6	-10	-19	-29
Ph2 (3)_E	25.50	2	--	-15	-5	-3	-4	-8	-13	-23	-33
Ph2(1)_A	1.50	2	--	-15	-4	-5	-5	-6	-9	-17	-26
Ph2(1)_A	1.50	2	--	-16	-5	-5	-4	-6	-9	-17	-25
Ph2(1)_A	1.50	2	--	-16	-5	-5	-4	-6	-8	-16	-25
Ph2 (2)_C	13.50	2	--	-15	-4	-4	-5	-7	-10	-19	-28
Ph2 (3)_E	25.50	2	--	-15	-5	-3	-4	-8	-13	-23	-33
Ph2(1)_A	1.50	2	--	-15	-5	-5	-4	-6	-9	-17	-26
Ph2(1)_A	1.50	2	--	-16	-5	-5	-4	-6	-9	-17	-25
Ph2 (2)_C	13.50	1	--	-15	-5	-5	-6	-6	-9	-17	-27
Ph2 (2)_D	19.50	1	--	-16	-5	-4	-4	-8	-12	-20	-30
Ph2 (2)_C	13.50	1	--	-15	-4	-5	-5	-7	-10	-18	-28
Ph2 (3)_E	25.50	1	--	-18	-7	-5	-4	-6	-10	-20	-34
Ph2 (3)_D	19.50	1	--	-17	-6	-4	-4	-8	-14	-24	-36
Ph2 (2)_C	13.50	1	--	-16	-4	-6	-5	-7	-11	-19	-28

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph2 (2)_C	13.50	1	--	-18	-5	-5	-5	-6	-11	-19	-30
Ph1B (1)_F	31.50	1	--	-16	-5	-4	-5	-8	-14	-25	-37
Ph2 (2)_A	1.50	1	--	-20	-6	-5	-5	-6	-10	-19	-29
Ph2 (2)_B	7.50	1	--	-16	-4	-5	-6	-8	-11	-19	-29
Ph1B (1)_F	31.50	1	--	-16	-5	-4	-5	-8	-14	-25	-37
Ph1B (1)_F	31.50	1	--	-17	-6	-4	-5	-8	-14	-25	-37
Ph2 (2)_D	19.50	1	--	-16	-5	-4	-5	-8	-13	-21	-31
Ph1B (1)_F	31.50	1	--	-17	-6	-4	-4	-8	-14	-25	-37
Ph2 (3)_E	25.50	1	--	-18	-8	-5	-4	-7	-11	-21	-34
Ph2 (2)_B	7.50	1	--	-19	-6	-6	-5	-6	-11	-19	-29
Ph2 (2)_D	19.50	1	--	-17	-6	-4	-5	-8	-13	-21	-32
Ph2 (2)_C	13.50	1	--	-19	-6	-5	-5	-7	-11	-20	-31
Ph1B (1)_F	31.50	1	--	-16	-5	-4	-5	-9	-15	-25	-38
Ph2 (2)_A	1.50	1	--	-20	-6	-6	-5	-6	-10	-19	-30
Ph2 (3)_E	25.50	1	--	-19	-8	-5	-5	-7	-11	-21	-35
Ph2 (2)_C	13.50	0	--	-16	-5	-6	-6	-8	-11	-20	-29
Ph1B (1)_F	31.50	0	--	-16	-6	-5	-5	-9	-15	-25	-37
Ph2 (2)_D	19.50	0	--	-17	-6	-5	-5	-9	-13	-21	-32
Ph2 (2)_B	7.50	0	--	-20	-6	-6	-5	-7	-11	-19	-30
Ph1B (1)_F	31.50	0	--	-16	-6	-5	-5	-9	-15	-25	-37
Ph2 (2)_A	1.50	0	--	-21	-7	-6	-5	-7	-11	-19	-30
Ph1B (1)_F	31.50	0	--	-18	-7	-5	-5	-9	-14	-25	-38
Ph2 (2)_B	7.50	0	--	-16	-5	-7	-6	-7	-10	-18	-27
Ph2 (2)_D	19.50	0	--	-17	-6	-5	-5	-9	-13	-21	-32
Ph2 (2)_B	7.50	0	--	-17	-6	-7	-6	-7	-10	-18	-28
Ph2 (2)_B	7.50	0	--	-17	-5	-8	-6	-7	-11	-19	-28
Ph2 (2)_A	1.50	0	--	-18	-5	-8	-7	-7	-10	-18	-28
Ph2 (2)_B	7.50	0	--	-16	-6	-6	-7	-7	-11	-19	-27
Ph2 (3)_D	19.50	0	--	-17	-7	-5	-5	-9	-14	-24	-36
Ph2 (2)_A	1.50	0	--	-20	-7	-6	-6	-7	-11	-20	-31
Ph2 (2)_B	7.50	0	--	-16	-5	-6	-7	-8	-12	-20	-29
Ph2 (2)_A	1.50	0	--	-18	-6	-8	-6	-6	-10	-18	-28
Ph2 (2)_B	7.50	0	--	-16	-6	-7	-6	-7	-11	-19	-27
Ph1B (1)_F	31.50	0	--	-18	-7	-5	-5	-9	-14	-26	-39
Ph2 (2)_B	7.50	0	--	-20	-7	-6	-6	-7	-11	-20	-31
Ph2 (3)_C	13.50	0	--	-18	-6	-5	-6	-9	-15	-24	-36
Ph2 (2)_B	7.50	0	--	-17	-6	-7	-6	-7	-11	-19	-28
Ph2 (2)_A	1.50	0	--	-20	-7	-6	-6	-7	-11	-20	-32
Ph2 (2)_A	1.50	0	--	-21	-8	-8	-6	-6	-9	-17	-29
Ph2 (3)_D	19.50	0	--	-19	-7	-6	-6	-8	-13	-23	-35
Ph2 (2)_C	13.50	0	--	-18	-7	-6	-6	-8	-13	-21	-32
Ph2 (2)_A	1.50	0	--	-21	-7	-7	-6	-7	-12	-20	-32
Ph2 (2)_B	7.50	0	--	-18	-6	-8	-7	-8	-11	-19	-29
Ph2 (3)_A	1.50	0	--	-23	-9	-8	-7	-5	-10	-19	-32
Ph2 (2)_C	13.50	0	--	-18	-7	-6	-6	-9	-13	-22	-32
Ph2 (2)_C	13.50	0	--	-18	-7	-6	-6	-9	-13	-21	-32
Ph2 (2)_A	1.50	-1	--	-21	-7	-7	-6	-7	-12	-21	-33
Ph2 (3)_D	19.50	-1	--	-17	-7	-6	-6	-10	-15	-24	-36
Ph2 (3)_D	19.50	-1	--	-17	-7	-6	-6	-10	-15	-24	-36
Ph2 (2)_A	1.50	-1	--	-20	-8	-8	-6	-7	-10	-18	-29

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph2 (2)_C	13.50	-1	--	-18	-7	-7	-6	-8	-12	-20	-30
Ph2 (3)_D	19.50	-1	--	-20	-7	-6	-6	-8	-14	-23	-36
Ph2 (3)_D	19.50	-1	--	-17	-7	-6	-6	-10	-15	-24	-36
Ph1B (1)_E	25.50	-1	--	-17	-6	-6	-7	-10	-15	-25	-37
Ph1B (1)_E	25.50	-1	--	-17	-6	-6	-7	-10	-16	-25	-37
Ph2 (3)_C	13.50	-1	--	-18	-7	-6	-6	-10	-15	-24	-36
Ph2 (3)_A	1.50	-1	--	-23	-8	-8	-6	-7	-12	-21	-34
Ph1B (1)_E	25.50	-1	--	-18	-6	-6	-7	-10	-16	-26	-37
Ph2 (3)_D	19.50	-1	--	-20	-8	-6	-7	-9	-14	-24	-37
Ph2 (3)_C	13.50	-1	--	-19	-8	-6	-6	-10	-15	-24	-36
Ph2 (3)_C	13.50	-1	--	-20	-8	-7	-7	-8	-13	-23	-35
Ph2 (2)_C	13.50	-1	--	-19	-8	-8	-7	-8	-12	-21	-31
Ph1B (1)_F	31.50	-1	--	-19	-8	-6	-6	-10	-16	-27	-40
Ph2 (3)_A	1.50	-1	--	-23	-9	-8	-8	-6	-11	-20	-32
Ph1B (1)_E	25.50	-1	--	-18	-7	-6	-7	-11	-16	-26	-39
Ph2 (2)_C	13.50	-1	--	-19	-8	-7	-7	-9	-12	-21	-32
Ph2 (2)_C	13.50	-1	--	-19	-8	-7	-7	-9	-13	-21	-32
Ph2 (3)_D	19.50	-1	--	-20	-8	-7	-7	-9	-14	-24	-38
Ph2 (3)_C	13.50	-1	--	-21	-8	-7	-7	-9	-14	-23	-36
Ph2 (2)_B	7.50	-1	--	-20	-9	-9	-8	-8	-10	-19	-30
Ph2 (3)_A	1.50	-1	--	-23	-8	-8	-7	-9	-13	-22	-34
Ph2 (2)_B	7.50	-2	--	-20	-8	-9	-8	-8	-12	-20	-30
Ph2(2)_A	1.50	-2	--	-21	-9	-9	-8	-8	-10	-19	-31
Ph2(2)_A	1.50	-2	--	-20	-9	-9	-8	-8	-10	-19	-32
Ph2 (3)_E	25.50	-2	--	-18	-7	-7	-8	-11	-15	-24	-36
Ph2 (2)_C	13.50	-2	--	-20	-9	-8	-7	-9	-13	-21	-32
Ph2(2)_A	1.50	-2	--	-20	-9	-8	-8	-9	-10	-19	-32
Ph2 (2)_C	13.50	-2	--	-20	-9	-8	-7	-9	-13	-21	-31
Ph2 (3)_C	13.50	-2	--	-21	-9	-7	-7	-9	-14	-23	-37
Ph2(2)_A	1.50	-2	--	-21	-10	-9	-8	-8	-10	-19	-31
Ph2(2)_A	1.50	-2	--	-20	-9	-8	-8	-9	-10	-20	-32
Ph2(2)_A	1.50	-2	--	-21	-10	-9	-8	-8	-10	-19	-31
Ph2(2)_A	1.50	-2	--	-21	-10	-9	-8	-8	-10	-19	-32
Ph2 (2)_B	7.50	-2	--	-20	-9	-8	-8	-9	-13	-21	-31
Ph2 (2)_B	7.50	-2	--	-21	-9	-9	-8	-9	-12	-20	-31
Ph2 (3)_C	13.50	-2	--	-21	-9	-8	-8	-10	-14	-24	-36
Ph2(2)_A	1.50	-2	--	-21	-10	-9	-8	-9	-10	-20	-32
Ph1B (1)_D	19.50	-2	--	-18	-8	-7	-8	-12	-17	-27	-40
Ph2 (3)_E	25.50	-2	--	-20	-9	-7	-8	-11	-15	-24	-37
Ph1B (1)_D	19.50	-2	--	-19	-8	-7	-8	-12	-17	-27	-41
Ph2 (3)_B	7.50	-2	--	-23	-9	-8	-8	-9	-14	-23	-35
Ph2 (2)_B	7.50	-2	--	-21	-10	-8	-8	-10	-13	-21	-32
Ph1B (1)_D	19.50	-2	--	-18	-8	-8	-8	-12	-17	-27	-40
Ph2 (3)_B	7.50	-2	--	-23	-9	-9	-9	-9	-12	-21	-34
Ph1B (3)_D	19.50	-2	--	-21	-9	-7	-8	-11	-17	-27	-42
Ph2 (2)_B	7.50	-2	--	-21	-10	-8	-8	-10	-13	-22	-32
Ph2 (2)_B	7.50	-2	--	-21	-10	-9	-8	-9	-12	-20	-31
Ph1B (1)_D	19.50	-2	--	-19	-8	-8	-8	-12	-17	-26	-40
Ph2 (3)_E	25.50	-2	--	-20	-9	-8	-8	-11	-15	-24	-37
Ph2 (3)_E	25.50	-2	--	-20	-9	-7	-8	-11	-16	-25	-38

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph2 (2)_B	7.50	-2	--	-21	-10	-9	-8	-10	-13	-21	-31
Ph2 (3)_C	13.50	-2	--	-20	-9	-8	-8	-11	-15	-24	-36
Ph2 (3)_A	1.50	-2	--	-22	-9	-10	-9	-9	-11	-20	-34
Ph2 (3)_B	7.50	-2	--	-21	-9	-10	-9	-10	-11	-21	-34
Ph2 (2)_B	7.50	-2	--	-21	-10	-9	-8	-10	-13	-21	-31
Ph2 (3)_B	7.50	-2	--	-23	-9	-9	-8	-10	-14	-23	-35
Ph1B (1)_E	25.50	-3	--	-20	-9	-8	-8	-12	-17	-27	-40
Ph2 (3)_B	7.50	-3	--	-23	-10	-9	-9	-9	-13	-22	-33
Ph2 (3)_C	13.50	-3	--	-20	-9	-8	-8	-11	-16	-24	-36
Ph1B (3)_A	1.50	-3	--	-24	-10	-9	-8	-10	-14	-24	-39
Ph2 (3)_E	25.50	-3	--	-20	-9	-8	-9	-12	-16	-25	-38
Ph1B (3)_D	19.50	-3	--	-22	-10	-8	-8	-10	-15	-25	-40
Ph2 (3)_C	13.50	-3	--	-20	-9	-8	-9	-11	-15	-23	-35
Ph2 (3)_D	19.50	-3	--	-21	-10	-8	-8	-11	-17	-26	-39
Ph1B (1)_C	13.50	-3	--	-19	-8	-8	-9	-12	-17	-27	-40
Ph2 (3)_B	7.50	-3	--	-21	-10	-10	-9	-10	-12	-21	-34
Ph2 (3)_C	13.50	-3	--	-20	-9	-8	-9	-11	-16	-24	-35
Ph2 (3)_C	13.50	-3	--	-20	-9	-8	-9	-12	-15	-24	-35
Ph2 (3)_D	19.50	-3	--	-20	-9	-10	-9	-11	-15	-24	-36
Ph2 (3)_C	13.50	-3	--	-20	-9	-10	-9	-11	-15	-24	-36
Ph1B (1)_C	13.50	-3	--	-19	-9	-8	-9	-13	-17	-26	-40
Ph1B (1)_C	13.50	-3	--	-20	-9	-9	-9	-13	-17	-27	-40
Ph1B (3)_A	1.50	-3	--	-25	-11	-10	-10	-9	-14	-24	-40
Ph2 (3)_D	19.50	-3	--	-21	-10	-8	-9	-12	-17	-25	-38
Ph1B (1)_E	25.50	-3	--	-21	-10	-8	-9	-13	-18	-27	-41
Ph1B (3)_C	13.50	-3	--	-23	-10	-9	-9	-11	-15	-25	-40
Ph1B (3)_A	1.50	-3	--	-25	-11	-10	-10	-10	-12	-22	-38
Ph2 (3)_A	1.50	-3	--	-24	-11	-11	-9	-10	-11	-20	-34
Ph1B (1)_B	7.50	-3	--	-19	-9	-9	-10	-13	-14	-25	-39
Ph2 (3)_A	1.50	-3	--	-24	-11	-11	-9	-10	-11	-20	-35
Ph1B (1)_C	13.50	-3	--	-20	-9	-9	-9	-13	-17	-26	-39
Ph2 (3)_B	7.50	-3	--	-23	-11	-10	-9	-11	-12	-21	-35
Ph1B (1)_F	31.50	-3	--	-21	-10	-8	-9	-12	-18	-28	-42
Ph1B (1)_A	1.50	-3	--	-21	-10	-11	-10	-11	-12	-22	-37
Ph2 (3)_B	7.50	-4	--	-21	-11	-10	-10	-11	-12	-21	-34
Ph1B (1)_B	7.50	-4	--	-20	-9	-9	-10	-12	-14	-24	-39
Ph1B (3)_D	19.50	-4	--	-23	-10	-9	-9	-11	-17	-27	-42
Ph2 (3)_B	7.50	-4	--	-21	-11	-10	-10	-12	-13	-22	-35
Ph2 (3)_E	25.50	-4	--	-21	-10	-9	-9	-13	-17	-26	-39
Ph2 (3)_D	19.50	-4	--	-22	-11	-9	-9	-12	-17	-26	-39
Ph1B (3)_A	1.50	-4	--	-24	-10	-10	-9	-11	-15	-25	-40
Ph2 (3)_A	1.50	-4	--	-24	-12	-11	-9	-10	-13	-22	-35
Ph2 (3)_B	7.50	-4	--	-23	-11	-10	-10	-11	-12	-21	-35
Ph1B (3)_C	13.50	-4	--	-22	-10	-9	-10	-12	-17	-27	-40
Ph2 (3)_D	19.50	-4	--	-22	-11	-10	-9	-11	-15	-24	-37
Ph2 (3)_B	7.50	-4	--	-22	-11	-10	-10	-12	-12	-22	-34
Ph2 (3)_C	13.50	-4	--	-23	-11	-10	-9	-11	-15	-24	-36
Ph1B (3)_D	19.50	-4	--	-23	-10	-9	-10	-12	-17	-27	-43
Ph1B (1)_B	7.50	-4	--	-20	-9	-10	-10	-13	-15	-25	-39
Ph1B (1)_B	7.50	-4	--	-21	-10	-10	-10	-13	-14	-24	-38

All shown dB values are A-weighted

Phase 1A Plant

Report:	Table of Results
Model:	Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave:	total results for receivers
Group:	(main group)
Group Reduction:	No

Name		Night									
Receiver	Height	Total	31	63	125	250	500	1000	2000	4000	8000
Ph1B (3)_D	19.50	-4	--	-21	-10	-9	-10	-13	-19	-28	-42
Ph2 (3)_B	7.50	-4	--	-22	-11	-10	-10	-12	-12	-22	-34
Ph2 (3)_B	7.50	-4	--	-22	-11	-10	-10	-12	-13	-22	-35
Ph2 (3)_D	19.50	-4	--	-22	-11	-10	-10	-11	-15	-24	-37
Ph1B (1)_A	1.50	-4	--	-21	-10	-12	-10	-11	-14	-24	-38
Ph2 (3)_C	13.50	-4	--	-23	-11	-10	-10	-11	-15	-24	-37
Ph2 (3)_E	25.50	-4	--	-22	-11	-9	-10	-13	-17	-26	-39
Ph1B (3)_B	7.50	-4	--	-24	-11	-10	-10	-11	-15	-25	-40
Ph1B (3)_D	19.50	-4	--	-23	-11	-10	-10	-12	-17	-27	-43
Ph1B (1)_F	31.50	-4	--	-21	-10	-9	-10	-13	-18	-27	-41
Ph1B (1)_E	25.50	-4	--	-22	-11	-9	-9	-13	-19	-28	-41
Ph1B (3)_C	13.50	-4	--	-24	-11	-10	-10	-12	-16	-27	-42
Ph2 (3)_A	1.50	-4	--	-25	-13	-11	-10	-10	-13	-22	-36
Ph2 (3)_D	19.50	-4	--	-22	-11	-11	-10	-11	-16	-24	-37
Ph1B (3)_A	1.50	-4	--	-26	-11	-10	-10	-11	-16	-26	-42
Ph2 (3)_B	7.50	-4	--	-24	-12	-11	-10	-11	-15	-24	-36
Ph1B (1)_A	1.50	-4	--	-23	-11	-12	-10	-11	-14	-23	-37
Ph2 (3)_C	13.50	-4	--	-23	-12	-11	-10	-11	-15	-24	-37
Ph1B (1)_E	25.50	-4	--	-22	-11	-9	-10	-13	-19	-28	-42
Ph1B (3)_C	13.50	-4	--	-24	-11	-10	-10	-12	-17	-27	-43
Ph1B (3)_D	19.50	-4	--	-22	-11	-9	-10	-14	-19	-28	-42
Ph2 (3)_E	25.50	-4	--	-22	-11	-10	-10	-13	-18	-26	-39
Ph1B (1)_E	25.50	-4	--	-22	-12	-9	-10	-14	-20	-29	-42
Ph2 (3)_A	1.50	-4	--	-27	-14	-12	-10	-10	-14	-22	-36
Ph2 (3)_A	1.50	-5	--	-26	-14	-12	-10	-10	-14	-23	-36
Ph2 (3)_D	19.50	-5	--	-23	-12	-10	-10	-13	-17	-26	-39
Ph1B (1)_F	31.50	-5	--	-22	-11	-10	-10	-14	-18	-27	-42
Ph1B (1)_A	1.50	-5	--	-20	-10	-13	-11	-11	-14	-24	-38
Ph2 (3)_D	19.50	-5	--	-23	-12	-11	-10	-12	-16	-25	-37
Ph1B (1)_A	1.50	-5	--	-20	-10	-13	-11	-11	-15	-24	-39
Ph2 (3)_C	13.50	-5	--	-23	-12	-10	-10	-13	-17	-26	-39
Ph2 (3)_D	19.50	-5	--	-23	-12	-10	-10	-13	-17	-25	-38
Ph1B (3)_C	13.50	-5	--	-24	-11	-10	-10	-12	-17	-27	-43
Ph1B (1)_E	25.50	-5	--	-23	-12	-9	-10	-14	-20	-29	-43
Ph1B (1)_A	1.50	-5	--	-28	-15	-13	-10	-11	-13	-22	-36
Ph1B (1)_D	19.50	-5	--	-22	-10	-11	-11	-13	-17	-26	-39
Ph1B (1)_B	7.50	-5	--	-24	-13	-12	-11	-13	-11	-21	-35
Ph2 (3)_A	1.50	-5	--	-25	-13	-12	-10	-11	-15	-23	-37
Ph1B (1)_F	31.50	-5	--	-22	-12	-10	-10	-14	-19	-28	-43
Ph1B (3)_B	7.50	-5	--	-24	-11	-11	-11	-13	-17	-27	-41
Ph2 (3)_A	1.50	-5	--	-25	-13	-11	-10	-12	-15	-23	-37
Ph2 (3)_A	1.50	-5	--	-26	-13	-12	-10	-11	-15	-23	-37
Ph1B (1)_F	31.50	-5	--	-22	-11	-10	-11	-14	-18	-28	-42
Ph1B (1)_F	31.50	-5	--	-23	-12	-10	-10	-14	-19	-28	-43
Ph1B (1)_F	31.50	-5	--	-23	-12	-10	-10	-14	-19	-28	-43
Ph1B (1)_F	31.50	-5	--	-23	-12	-10	-10	-14	-19	-28	-43
Ph1B (1)_F	31.50	-5	--	-23	-12	-10	-10	-14	-19	-28	-43
Ph1B (1)_F	31.50	-5	--	-23	-12	-10	-10	-14	-19	-28	-43
Ph2 (3)_A	1.50	-5	--	-25	-13	-12	-11	-12	-15	-23	-37
Ph1B (1)_B	7.50	-5	--	-24	-12	-11	-11	-13	-15	-25	-40
Ph1B (3)_B	7.50	-5	--	-26	-12	-11	-11	-12	-17	-27	-42

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph2 (3)_C	13.50	-5	--	-24	-12	-12	-11	-12	-16	-24	-37
Ph1B (1)_B	7.50	-5	--	-25	-13	-12	-12	-13	-11	-21	-36
Ph1B (1)_C	13.50	-5	--	-22	-11	-12	-11	-13	-17	-26	-39
Ph2 (3)_C	13.50	-5	--	-23	-12	-11	-11	-13	-17	-25	-38
Ph1B (1)_B	7.50	-5	--	-22	-11	-12	-11	-13	-17	-26	-39
Ph2 (3)_B	7.50	-5	--	-25	-13	-12	-11	-12	-15	-24	-37
Ph1B (3)_B	7.50	-5	--	-26	-12	-11	-11	-13	-16	-24	-40
Ph2 (3)_A	1.50	-5	--	-25	-13	-12	-11	-12	-15	-24	-37
Ph1B (1)_F	31.50	-5	--	-22	-11	-10	-11	-14	-18	-28	-43
Ph1B (1)_A	1.50	-5	--	-26	-13	-13	-10	-12	-15	-23	-37
Ph1B (1)_E	25.50	-5	--	-23	-12	-11	-11	-13	-18	-27	-41
Ph1B (1)_D	19.50	-5	--	-23	-12	-11	-11	-13	-17	-27	-41
Ph1B (1)_C	13.50	-5	--	-23	-12	-11	-11	-13	-17	-27	-41
Ph2 (3)_C	13.50	-5	--	-24	-13	-11	-11	-13	-17	-26	-38
Ph1B (1)_A	1.50	-5	--	-26	-14	-14	-12	-12	-11	-21	-35
Ph1B (1)_B	7.50	-5	--	-25	-14	-12	-12	-14	-12	-22	-36
Ph1B (2)_A	1.50	-6	--	-26	-14	-13	-10	-12	-16	-25	-39
Ph1B (2)_A	1.50	-6	--	-26	-14	-14	-10	-12	-14	-24	-38
Ph2 (3)_C	13.50	-6	--	-26	-14	-12	-11	-12	-16	-25	-37
Ph1B (3)_B	7.50	-6	--	-26	-12	-12	-11	-13	-18	-28	-43
Ph1B (2)_A	1.50	-6	--	-27	-14	-13	-11	-12	-14	-24	-38
Ph1B (1)_A	1.50	-6	--	-25	-14	-16	-12	-12	-11	-21	-35
Ph1B (6)_D	19.50	-6	--	-23	-12	-10	-11	-15	-21	-31	-47
Ph1B (1)_E	25.50	-6	--	-23	-12	-12	-11	-13	-18	-27	-41
Ph2 (3)_C	13.50	-6	--	-24	-13	-12	-11	-13	-17	-25	-38
Ph2 (3)_C	13.50	-6	--	-24	-13	-12	-11	-13	-17	-25	-38
Ph1B (1)_C	13.50	-6	--	-24	-12	-12	-11	-13	-18	-27	-41
Ph1B (1)_D	19.50	-6	--	-24	-13	-12	-11	-13	-18	-27	-41
Ph1B (6)_A	1.50	-6	--	-27	-12	-12	-11	-13	-18	-28	-45
Ph2 (3)_B	7.50	-6	--	-25	-13	-12	-11	-13	-17	-25	-38
Ph2 (3)_E	25.50	-6	--	-23	-12	-11	-12	-14	-18	-27	-39
Ph1B (3)_C	13.50	-6	--	-23	-12	-11	-12	-14	-18	-27	-39
Ph1B (1)_E	25.50	-6	--	-24	-13	-11	-11	-14	-19	-28	-43
Ph2 (3)_C	13.50	-6	--	-26	-14	-12	-11	-12	-16	-25	-37
Ph1B (6)_D	19.50	-6	--	-25	-12	-11	-12	-14	-19	-30	-47
Ph1B (4)_E	25.50	-6	--	-24	-13	-11	-11	-15	-21	-31	-46
Ph1B (6)_A	1.50	-6	--	-27	-12	-12	-12	-13	-18	-28	-46
Ph2 (3)_B	7.50	-6	--	-27	-14	-13	-11	-12	-16	-25	-37
Ph2 (3)_D	19.50	-6	--	-24	-13	-12	-11	-13	-18	-26	-39
Ph1B (1)_D	19.50	-6	--	-24	-12	-12	-12	-14	-18	-27	-40
Ph1B (3)_D	19.50	-6	--	-24	-13	-11	-11	-14	-20	-29	-44
Ph2 (3)_B	7.50	-6	--	-27	-14	-13	-11	-12	-16	-24	-37
Ph2 (3)_B	7.50	-6	--	-25	-13	-12	-12	-13	-17	-25	-37
Ph1B (3)_A	1.50	-6	--	-25	-13	-12	-12	-13	-17	-26	-37
Ph1B (3)_D	19.50	-6	--	-23	-12	-11	-12	-15	-19	-28	-42
Ph1B (1)_E	25.50	-6	--	-24	-13	-12	-12	-14	-18	-28	-42
Ph1B (4)_E	25.50	-6	--	-24	-13	-11	-11	-15	-22	-31	-47
Ph2 (3)_B	7.50	-6	--	-25	-14	-12	-12	-13	-16	-25	-38
Ph2 (3)_B	7.50	-6	--	-26	-14	-13	-12	-13	-16	-25	-38
Ph1B (6)_A	1.50	-6	--	-27	-13	-12	-12	-13	-18	-29	-46

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1B (1)_C	13.50	-6	--	-24	-13	-12	-12	-14	-18	-27	-42
Ph1B (1)_D	19.50	-6	--	-24	-13	-12	-12	-14	-18	-27	-42
Ph1B (4)_D	19.50	-6	--	-24	-13	-11	-12	-15	-20	-29	-46
Ph1B (4)_D	19.50	-6	--	-24	-13	-11	-12	-15	-20	-29	-45
Ph2 (3)_B	7.50	-6	--	-26	-14	-13	-12	-13	-16	-25	-38
Ph1B (4)_D	19.50	-6	--	-26	-13	-11	-12	-15	-20	-29	-45
Ph1B (6)_D	19.50	-6	--	-25	-13	-12	-12	-14	-19	-30	-47
Ph1B (6)_A	1.50	-6	--	-27	-13	-12	-12	-14	-18	-29	-47
Ph1B (4)_E	25.50	-6	--	-24	-13	-11	-12	-15	-22	-32	-48
Ph1B (3)_D	19.50	-6	--	-24	-13	-12	-12	-15	-19	-28	-42
Ph1B (1)_A	1.50	-6	--	-26	-14	-15	-14	-13	-12	-22	-36
Ph1B_A	1.50	-6	--	-26	-14	-13	-12	-13	-17	-26	-42
Ph1B (1)_E	25.50	-6	--	-24	-13	-12	-12	-14	-18	-28	-42
Ph1B (6)_D	19.50	-6	--	-25	-13	-12	-12	-14	-20	-30	-48
Ph1B (6)_C	13.50	-6	--	-26	-13	-12	-12	-14	-19	-30	-47
Ph1B (3)_D	19.50	-6	--	-24	-13	-12	-12	-15	-20	-29	-44
Ph1B (1)_C	13.50	-6	--	-25	-13	-12	-12	-14	-18	-28	-42
Ph1B (4)_E	25.50	-6	--	-24	-13	-11	-12	-16	-22	-32	-48
Ph1B (1)_C	13.50	-6	--	-25	-13	-13	-12	-14	-18	-27	-39
Ph1B (1)_D	19.50	-6	--	-25	-13	-12	-12	-14	-18	-28	-42
Ph1B (2)_C	13.50	-6	--	-25	-14	-13	-12	-13	-17	-26	-39
Ph1B (1)_A	1.50	-6	--	-25	-14	-16	-12	-12	-15	-24	-39
Ph1B (1)_B	7.50	-6	--	-25	-13	-13	-12	-14	-17	-26	-39
Ph1B (3)_A	1.50	-6	--	-26	-14	-13	-12	-13	-17	-26	-40
Ph1B (3)_A	1.50	-6	--	-26	-14	-13	-12	-14	-17	-26	-40
Ph1B (3)_C	13.50	-7	--	-24	-13	-12	-13	-15	-18	-28	-42
Ph1B (1)_C	13.50	-7	--	-26	-15	-14	-12	-13	-16	-25	-38
Ph1B (6)_D	19.50	-7	--	-26	-13	-12	-12	-15	-20	-31	-49
Ph1B (6)_C	13.50	-7	--	-26	-13	-12	-12	-14	-19	-30	-47
Ph1B_A	1.50	-7	--	-26	-14	-14	-12	-13	-16	-26	-42
Ph1B_A	1.50	-7	--	-27	-15	-13	-12	-13	-16	-26	-41
Ph1B (1)_B	7.50	-7	--	-27	-15	-14	-12	-13	-16	-25	-38
Ph1B (1)_E	25.50	-7	--	-25	-14	-12	-12	-15	-19	-28	-43
Ph1B (3)_D	19.50	-7	--	-24	-13	-12	-13	-15	-19	-28	-42
Ph1B (6)_D	19.50	-7	--	-24	-13	-11	-12	-16	-22	-32	-48
Ph1B (1)_D	19.50	-7	--	-25	-14	-13	-12	-15	-19	-28	-43
Ph1B (2)_B	7.50	-7	--	-26	-15	-14	-12	-13	-17	-25	-39
Ph1B (1)_D	19.50	-7	--	-25	-14	-13	-12	-15	-19	-28	-42
Ph1B (6)_C	13.50	-7	--	-26	-13	-12	-12	-15	-20	-30	-48
Ph1B (1)_D	19.50	-7	--	-26	-15	-13	-12	-14	-18	-28	-42
Ph1B (1)_D	19.50	-7	--	-25	-14	-13	-12	-15	-19	-28	-42
Ph2 (3)_D	19.50	-7	--	-26	-14	-14	-13	-13	-18	-26	-39
Ph1B (3)_D	19.50	-7	--	-25	-14	-12	-12	-15	-20	-29	-44
Ph1B (2)_C	13.50	-7	--	-25	-14	-14	-12	-14	-18	-27	-40
Ph1B_A	1.50	-7	--	-28	-15	-14	-12	-14	-17	-26	-41
Ph1B (6)_C	13.50	-7	--	-27	-14	-13	-13	-15	-20	-31	-48
Ph1B_A	1.50	-7	--	-28	-15	-14	-12	-14	-17	-26	-42
Ph1B (2)_B	7.50	-7	--	-26	-14	-14	-12	-14	-18	-27	-39
Ph1B (3)_C	13.50	-7	--	-25	-14	-13	-13	-15	-18	-28	-42
Ph1B (1)_D	19.50	-7	--	-26	-14	-14	-12	-14	-19	-27	-41

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1B (2)_C	13.50	-7	--	-25	-14	-14	-13	-14	-18	-27	-40
Ph1B (1)_E	25.50	-7	--	-25	-14	-13	-13	-15	-19	-28	-43
Ph1B (3)_D	19.50	-7	--	-25	-14	-12	-13	-15	-20	-29	-44
Ph1B (3)_B	7.50	-7	--	-25	-14	-13	-13	-15	-19	-27	-39
Ph1B (3)_D	19.50	-7	--	-25	-14	-13	-13	-15	-20	-29	-44
Ph1B (6)_B	7.50	-7	--	-28	-14	-13	-13	-15	-19	-30	-47
Ph1B (1)_E	25.50	-7	--	-26	-14	-13	-13	-15	-19	-28	-42
Ph1B (2)_B	7.50	-7	--	-26	-15	-14	-13	-14	-18	-27	-40
Ph1B (3)_D	19.50	-7	--	-25	-14	-13	-13	-15	-20	-29	-44
Ph1B_A	1.50	-7	--	-26	-15	-14	-13	-14	-18	-28	-44
Ph1B_A	1.50	-7	--	-27	-16	-13	-13	-14	-18	-26	-41
Ph1B_A	1.50	-7	--	-26	-15	-13	-13	-14	-18	-28	-44
Ph1B (1)_E	25.50	-7	--	-26	-15	-13	-13	-15	-19	-28	-43
Ph1B (1)_D	19.50	-7	--	-26	-14	-13	-13	-15	-19	-28	-42
Ph1B (6)_D	19.50	-7	--	-25	-14	-12	-13	-17	-22	-32	-48
Ph1B (1)_E	25.50	-7	--	-26	-15	-13	-13	-15	-19	-28	-43
Ph1B (6)_C	13.50	-7	--	-25	-13	-13	-14	-16	-21	-31	-47
Ph1B (6)_B	7.50	-7	--	-28	-14	-13	-13	-15	-20	-30	-47
Ph1B (3)_A	1.50	-7	--	-28	-16	-14	-13	-14	-17	-26	-41
Ph1B (1)_C	13.50	-7	--	-26	-15	-14	-13	-15	-18	-28	-42
Ph1B (4)_A	1.50	-7	--	-26	-14	-13	-13	-15	-19	-28	-45
Ph1B (3)_C	13.50	-8	--	-26	-15	-13	-13	-16	-20	-29	-44
Ph1B_A	1.50	-8	--	-27	-15	-14	-13	-14	-18	-27	-43
Ph1B (1)_B	7.50	-8	--	-27	-15	-14	-13	-15	-18	-27	-42
Ph1B (1)_C	13.50	-8	--	-27	-15	-14	-13	-15	-18	-27	-41
Ph1B_A	1.50	-8	--	-27	-15	-14	-13	-14	-18	-27	-43
Ph1B_A	1.50	-8	--	-27	-15	-14	-13	-14	-18	-27	-43
Ph1B (3)_B	7.50	-8	--	-26	-14	-14	-13	-15	-19	-28	-41
Ph1B (6)_B	7.50	-8	--	-28	-14	-13	-13	-15	-20	-31	-48
Ph1B_A	1.50	-8	--	-26	-15	-14	-13	-14	-18	-28	-44
Ph1B (3)_B	7.50	-8	--	-26	-15	-14	-13	-15	-19	-28	-41
Ph1B (4)_A	1.50	-8	--	-26	-15	-14	-13	-15	-19	-28	-44
Ph1B (4)_C	13.50	-8	--	-25	-15	-13	-14	-16	-20	-29	-45
Ph1B (4)_C	13.50	-8	--	-25	-15	-13	-14	-16	-20	-29	-45
Ph1B (4)_C	13.50	-8	--	-27	-15	-13	-14	-16	-20	-29	-45
Ph1B (6)_B	7.50	-8	--	-28	-14	-14	-14	-15	-20	-31	-49
Ph1B_A	1.50	-8	--	-28	-16	-16	-13	-14	-18	-27	-42
Ph1B (1)_D	19.50	-8	--	-27	-15	-14	-14	-15	-19	-28	-43
Ph1B (4)_A	1.50	-8	--	-27	-15	-14	-13	-16	-19	-29	-45
Ph1B (1)_B	7.50	-8	--	-28	-16	-15	-13	-15	-18	-27	-41
Ph1B (1)_D	19.50	-8	--	-27	-15	-14	-14	-15	-19	-28	-42
Ph1B (4)_A	1.50	-8	--	-27	-15	-14	-14	-16	-19	-29	-45
Ph1B (4)_E	25.50	-8	--	-25	-14	-13	-14	-17	-21	-30	-46
Ph1B (1)_B	7.50	-8	--	-28	-16	-15	-14	-15	-18	-27	-42
Ph1B (1)_C	13.50	-8	--	-28	-16	-15	-13	-15	-19	-28	-43
Ph1B (3)_C	13.50	-8	--	-26	-15	-14	-14	-16	-20	-29	-44
Ph1B (1)_D	19.50	-8	--	-27	-16	-14	-14	-15	-19	-28	-42
Ph1B (3)_C	13.50	-8	--	-26	-15	-14	-14	-15	-19	-28	-41
Ph1B (1)_C	13.50	-8	--	-28	-16	-15	-14	-15	-19	-28	-42
Ph1B (3)_D	19.50	-8	--	-26	-15	-14	-14	-16	-19	-28	-43

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1B (1)_B	7.50	-8	--	-29	-16	-15	-14	-15	-18	-27	-41
Ph1B (1)_D	19.50	-8	--	-28	-16	-15	-14	-15	-19	-28	-42
Ph1B_A	1.50	-8	--	-28	-16	-15	-14	-15	-17	-27	-43
Ph1B (3)_D	19.50	-8	--	-26	-15	-14	-14	-16	-20	-29	-43
Ph1B (6)_D	19.50	-8	--	-26	-15	-13	-14	-18	-22	-32	-48
Ph1B (1)_C	13.50	-8	--	-28	-16	-15	-14	-15	-19	-28	-42
Ph1B (5)_D	19.50	-8	--	-26	-15	-13	-14	-18	-22	-32	-46
Ph1B (1)_B	7.50	-8	--	-29	-16	-15	-14	-15	-18	-27	-41
Ph1B (3)_C	13.50	-8	--	-27	-16	-14	-14	-16	-20	-29	-44
Ph1B (5)_D	19.50	-8	--	-26	-15	-13	-14	-17	-22	-32	-47
Ph1B (1)_C	13.50	-8	--	-29	-16	-15	-14	-15	-19	-28	-42
Ph1B (3)_C	13.50	-8	--	-27	-16	-14	-14	-16	-20	-29	-43
Ph1B (4)_E	25.50	-8	--	-26	-15	-14	-14	-17	-21	-31	-45
Ph1B (3)_C	13.50	-8	--	-27	-16	-14	-14	-16	-20	-29	-44
Ph1B (1)_B	7.50	-8	--	-29	-16	-15	-14	-15	-18	-28	-41
Ph1B (3)_C	13.50	-8	--	-27	-16	-14	-14	-16	-20	-29	-44
Ph1B (6)_D	19.50	-8	--	-26	-15	-13	-14	-18	-22	-32	-47
Ph1B (3)_B	7.50	-9	--	-28	-16	-15	-14	-15	-19	-28	-41
Ph1B (4)_E	25.50	-9	--	-26	-15	-14	-14	-17	-21	-31	-47
Ph1B (2)_C	13.50	-9	--	-29	-17	-17	-13	-15	-18	-26	-41
Ph1B (3)_B	7.50	-9	--	-28	-16	-15	-14	-16	-20	-29	-44
Ph1B (4)_E	25.50	-9	--	-26	-15	-14	-15	-17	-21	-31	-45
Ph1B (4)_B	7.50	-9	--	-27	-16	-15	-15	-16	-20	-29	-45
Ph1B (4)_B	7.50	-9	--	-29	-16	-15	-15	-16	-20	-29	-44
Ph1B (4)_D	19.50	-9	--	-26	-15	-15	-15	-17	-21	-30	-45
Ph1B (4)_B	7.50	-9	--	-27	-16	-15	-15	-16	-20	-29	-45
Ph1B (6)_B	7.50	-9	--	-27	-15	-15	-15	-17	-21	-31	-47
Ph1B (4)_C	13.50	-9	--	-27	-15	-15	-14	-17	-21	-31	-46
Ph1B (4)_D	19.50	-9	--	-27	-15	-15	-14	-17	-21	-31	-47
Ph1B (4)_B	7.50	-9	--	-27	-16	-15	-14	-17	-20	-30	-46
Ph1B (4)_E	25.50	-9	--	-26	-15	-15	-15	-17	-21	-31	-47
Ph1B (4)_C	13.50	-9	--	-27	-15	-15	-15	-17	-21	-30	-45
Ph1B (3)_B	7.50	-9	--	-28	-17	-15	-14	-16	-19	-28	-43
Ph1B (2)_B	7.50	-9	--	-30	-18	-17	-14	-15	-18	-26	-41
Ph1B (3)_B	7.50	-9	--	-28	-16	-15	-15	-16	-20	-29	-44
Ph1B (2)_C	13.50	-9	--	-28	-17	-17	-14	-16	-19	-28	-42
Ph1B (3)_B	7.50	-9	--	-28	-17	-15	-15	-16	-19	-29	-43
Ph1B (4)_E	25.50	-9	--	-26	-15	-14	-15	-17	-21	-31	-46
Ph1B (6)_C	13.50	-9	--	-26	-15	-14	-15	-18	-22	-31	-47
Ph1B (4)_B	7.50	-9	--	-27	-16	-15	-15	-17	-21	-30	-45
Ph1B (4)_A	1.50	-9	--	-29	-16	-15	-14	-16	-20	-29	-46
Ph1B (3)_B	7.50	-9	--	-28	-17	-15	-15	-16	-19	-29	-43
Ph1B (3)_B	7.50	-9	--	-28	-17	-15	-15	-16	-20	-29	-44
Ph1B (3)_C	13.50	-9	--	-28	-17	-16	-14	-16	-19	-28	-43
Ph1B (4)_B	7.50	-9	--	-28	-16	-15	-15	-17	-20	-30	-46
Ph1B (4)_E	25.50	-9	--	-27	-15	-14	-15	-17	-22	-31	-46
Ph1B (4)_D	19.50	-9	--	-27	-16	-15	-15	-17	-21	-31	-46
Ph1B (4)_C	13.50	-9	--	-27	-16	-15	-15	-17	-21	-31	-46
Ph1B (4)_E	25.50	-9	--	-27	-15	-15	-15	-17	-22	-31	-47
Ph1B (3)_B	7.50	-9	--	-30	-17	-16	-14	-16	-19	-28	-43

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1B (2)_B	7.50	-9	--	-30	-18	-17	-14	-16	-19	-28	-42
Ph1B (4)_B	7.50	-9	--	-28	-16	-15	-15	-17	-20	-30	-46
Ph1B (4)_E	25.50	-9	--	-27	-16	-15	-15	-17	-22	-32	-48
Ph1B (4)_C	13.50	-9	--	-28	-16	-15	-15	-17	-21	-31	-47
Ph1B (4)_D	19.50	-9	--	-27	-16	-15	-15	-17	-22	-31	-47
Ph1B (4)_D	19.50	-9	--	-27	-16	-16	-15	-17	-21	-31	-45
Ph1B (4)_B	7.50	-10	--	-28	-16	-16	-15	-17	-20	-30	-47
Ph1B (4)_C	13.50	-10	--	-28	-16	-16	-15	-17	-21	-30	-45
Ph1B (4)_B	7.50	-10	--	-28	-17	-16	-15	-17	-20	-30	-45
Ph1B (4)_C	13.50	-10	--	-28	-16	-16	-15	-17	-22	-31	-47
Ph1B (4)_D	19.50	-10	--	-28	-16	-16	-15	-17	-22	-32	-48
Ph1B (6)_C	13.50	-10	--	-27	-16	-15	-16	-18	-22	-31	-47
Ph1B (5)_D	19.50	-10	--	-27	-16	-15	-15	-19	-23	-33	-49
Ph1B (4)_A	1.50	-10	--	-30	-17	-16	-15	-17	-20	-29	-46
Ph1B (4)_D	19.50	-10	--	-28	-16	-16	-16	-17	-21	-31	-45
Ph1B (5)_C	13.50	-10	--	-27	-16	-15	-16	-18	-22	-31	-47
Ph1B (4)_B	7.50	-10	--	-29	-17	-17	-16	-17	-19	-29	-44
Ph1B (5)_C	13.50	-10	--	-27	-17	-15	-16	-18	-22	-31	-46
Ph1B (4)_C	13.50	-10	--	-29	-17	-16	-16	-17	-21	-30	-45
Ph1B (4)_A	1.50	-10	--	-31	-18	-17	-15	-17	-21	-29	-46
Ph1B (4)_D	19.50	-10	--	-28	-17	-16	-16	-17	-21	-31	-45
Ph1B (4)_B	7.50	-10	--	-30	-18	-17	-16	-17	-19	-29	-44
Ph1B (4)_A	1.50	-10	--	-31	-18	-17	-16	-17	-21	-30	-46
Ph1B (4)_D	19.50	-10	--	-28	-17	-17	-16	-17	-21	-31	-46
Ph1B (4)_B	7.50	-10	--	-30	-18	-17	-16	-18	-19	-29	-45
Ph1B (4)_E	25.50	-10	--	-28	-17	-16	-16	-18	-22	-32	-48
Ph1B (6)_B	7.50	-10	--	-28	-17	-16	-16	-18	-22	-32	-47
Ph1B (6)_C	13.50	-10	--	-28	-17	-16	-17	-18	-22	-32	-47
Ph1B (4)_C	13.50	-10	--	-29	-17	-17	-16	-17	-21	-30	-45
Ph1B (4)_A	1.50	-10	--	-32	-18	-17	-16	-17	-21	-30	-46
Ph1B (6)_A	1.50	-10	--	-30	-18	-17	-16	-18	-21	-31	-48
Ph1B (4)_C	13.50	-10	--	-29	-18	-17	-16	-17	-21	-30	-45
Ph1B (5)_A	1.50	-10	--	-32	-18	-17	-16	-17	-21	-30	-47
Ph1B (6)_C	13.50	-11	--	-28	-17	-16	-17	-18	-22	-31	-47
Ph1B (5)_A	1.50	-11	--	-31	-18	-17	-16	-17	-21	-31	-47
Ph1B (5)_D	19.50	-11	--	-28	-17	-16	-17	-19	-23	-32	-48
Ph1B (5)_A	1.50	-11	--	-31	-19	-17	-16	-17	-21	-30	-46
Ph1B (4)_D	19.50	-11	--	-29	-18	-17	-16	-18	-22	-32	-48
Ph1B (4)_C	13.50	-11	--	-30	-18	-17	-16	-18	-22	-32	-47
Ph1B (5)_D	19.50	-11	--	-28	-17	-16	-17	-19	-23	-33	-48
Ph1B (4)_B	7.50	-11	--	-30	-18	-17	-16	-18	-22	-32	-47
Ph1B (6)_B	7.50	-11	--	-29	-17	-17	-16	-18	-22	-32	-47
Ph1B (5)_A	1.50	-11	--	-31	-19	-17	-16	-18	-21	-31	-46
Ph1B (6)_A	1.50	-11	--	-31	-19	-17	-16	-18	-21	-31	-48
Ph1B (5)_B	7.50	-11	--	-29	-18	-17	-17	-18	-22	-31	-47
Ph1B (6)_A	1.50	-11	--	-32	-19	-17	-16	-18	-21	-31	-46
Ph1B (6)_A	1.50	-11	--	-32	-19	-17	-16	-18	-21	-31	-48
Ph1B (6)_A	1.50	-11	--	-32	-19	-17	-16	-18	-21	-31	-48
Ph1B (4)_E	25.50	-11	--	-29	-18	-17	-17	-18	-22	-32	-48
Ph1B (6)_A	1.50	-11	--	-32	-19	-17	-16	-18	-21	-31	-48

All shown dB values are A-weighted

Avondale Drive, Hayes
Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name Receiver	Height	Night Total	31	63	125	250	500	1000	2000	4000	8000
Ph1B (6)_D	19.50	-11	--	-29	-18	-17	-17	-19	-23	-33	-50
Ph1B (5)_B	7.50	-11	--	-29	-18	-17	-17	-18	-22	-31	-45
Ph1B (4)_E	25.50	-11	--	-29	-18	-17	-17	-18	-22	-32	-49
Ph1B (4)_E	25.50	-11	--	-29	-18	-17	-17	-18	-23	-32	-49
Ph1B (4)_E	25.50	-11	--	-29	-18	-18	-17	-18	-23	-32	-49
Ph1B (6)_C	13.50	-11	--	-30	-19	-17	-17	-19	-23	-33	-50
Ph1B (6)_B	7.50	-11	--	-30	-18	-18	-17	-18	-22	-31	-47
Ph1B (4)_C	13.50	-11	--	-31	-19	-18	-17	-18	-22	-32	-47
Ph1B (4)_D	19.50	-11	--	-31	-19	-18	-17	-18	-22	-32	-48
Ph1B (4)_B	7.50	-11	--	-32	-19	-18	-17	-18	-22	-31	-47
Ph1B (6)_D	19.50	-11	--	-29	-18	-17	-18	-19	-23	-33	-48
Ph1B (6)_B	7.50	-11	--	-30	-19	-18	-17	-18	-22	-31	-47
Ph1B (4)_D	19.50	-12	--	-31	-19	-18	-17	-19	-23	-32	-48
Ph1B (4)_C	13.50	-12	--	-32	-19	-18	-17	-19	-22	-32	-47
Ph1B (4)_B	7.50	-12	--	-32	-19	-18	-17	-19	-22	-32	-47
Ph1B (4)_C	13.50	-12	--	-32	-19	-19	-17	-19	-22	-32	-48
Ph1B (4)_D	19.50	-12	--	-31	-19	-18	-17	-19	-23	-32	-49
Ph1B (4)_B	7.50	-12	--	-33	-19	-19	-17	-19	-22	-32	-48
Ph1B (6)_D	19.50	-12	--	-30	-19	-18	-18	-19	-24	-33	-50
Ph1B (6)_B	7.50	-12	--	-31	-19	-18	-17	-19	-23	-33	-50
Ph1B (4)_C	13.50	-12	--	-32	-20	-19	-17	-19	-22	-32	-48
Ph1B (4)_D	19.50	-12	--	-32	-20	-19	-17	-19	-23	-32	-49
Ph1B (4)_B	7.50	-12	--	-33	-20	-19	-17	-19	-22	-32	-47
Ph1B (6)_D	19.50	-12	--	-30	-19	-18	-18	-19	-24	-33	-50
Ph1B (5)_D	19.50	-12	--	-31	-20	-19	-17	-19	-23	-32	-49
Ph1B (5)_C	13.50	-12	--	-31	-19	-19	-18	-19	-23	-32	-49
Ph1B (6)_D	19.50	-12	--	-30	-19	-18	-18	-19	-24	-33	-50
Ph1B (6)_D	19.50	-12	--	-30	-19	-18	-18	-20	-24	-33	-50
Ph1B (5)_C	13.50	-12	--	-32	-20	-19	-17	-19	-23	-32	-48
Ph1B (5)_B	7.50	-12	--	-33	-20	-19	-18	-19	-23	-32	-48
Ph1B (6)_C	13.50	-12	--	-31	-20	-18	-18	-19	-23	-33	-50
Ph1B (5)_C	13.50	-12	--	-31	-19	-19	-18	-19	-23	-32	-47
Ph1B (5)_B	7.50	-12	--	-32	-20	-19	-18	-19	-23	-32	-49
Ph1B (5)_B	7.50	-12	--	-32	-20	-19	-18	-19	-23	-32	-47
Ph1B (5)_C	13.50	-12	--	-31	-20	-19	-18	-19	-23	-32	-48
Ph1B (6)_C	13.50	-12	--	-31	-20	-19	-18	-19	-23	-33	-48
Ph1B (6)_C	13.50	-12	--	-32	-20	-19	-18	-19	-23	-33	-50
Ph1B (6)_B	7.50	-12	--	-32	-20	-19	-18	-19	-23	-33	-50
Ph1B (5)_B	7.50	-12	--	-32	-20	-19	-18	-19	-23	-32	-48
Ph1B (6)_C	13.50	-13	--	-32	-20	-19	-18	-19	-23	-33	-50
Ph1B (6)_B	7.50	-13	--	-32	-20	-19	-18	-19	-23	-33	-48
Ph1B (6)_C	13.50	-13	--	-32	-20	-19	-18	-19	-23	-33	-50
Ph1B (6)_B	7.50	-13	--	-33	-20	-19	-18	-19	-23	-33	-50
Ph1B (6)_B	7.50	-13	--	-33	-20	-19	-18	-20	-23	-33	-50
Ph1B (6)_B	7.50	-13	--	-33	-20	-19	-18	-20	-23	-33	-50
Ph2 (1)_A	1.50	--	--	--	--	--	--	--	--	--	--
Ph2 (1)_A	1.50	--	--	--	--	--	--	--	--	--	--
Ph2 (1)_A	1.50	--	--	--	--	--	--	--	--	--	--
Ph2 (1)_A	1.50	--	--	--	--	--	--	--	--	--	--
Ph2 (1)_A	1.50	--	--	--	--	--	--	--	--	--	--

All shown dB values are A-weighted

Phase 1A Plant

Report:	Table of Results
Model:	Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave:	total results for receivers
Group:	(main group)
Group Reduction:	No

[illegible]

All shown dB values are A-weighted

Avondale Drive, Hayes

Phase 1A Plant

Report: Table of Results
Model: Plant - mitigated (Rev 1 - no louvre to GF plant room)
LAeq per octave: total results for receivers
Group: (main group)
Group Reduction: No

Name		Night										
Receiver	Height	Total	31	63	125	250	500	1000	2000	4000	8000	
Ph1B (4)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (4)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (4)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (5)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (5)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (6)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (6)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (6)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (6)_A	1.50	--	--	--	--	--	--	--	--	--	--	--
Ph1B (6)_A	1.50	--	--	--	--	--	--	--	--	--	--	--

All shown dB values are A-weighted

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