INTRODUCTION 9.1

Company 9.1.1

WYG

Author 9.1.2

9.1.2.1 Emma Aspinall, MGeol (Hons)

Emma has over 3 years' experience undertaking noise assessments including noise surveys and noise modelling using CADNA noise modelling software for various schemes both within and outside the UK.

9.1.2.2 Graham Davis, BA (Hons), PGdip AMIOA

Graham has over 9 years' experience managing, co-ordinating and directing noise assessments, including noise modelling using CADNA modelling software for aviation, major highways schemes, and industrial noise sources for various schemes both within and outside the UK.

9.1.2.3 Nigel Mann, BSc (Hons), MSc, MIOA

Nigel has over 21 years' experience managing, co-ordinating and directing noise assessments, including noise modelling using CADNA modelling software for large scale urban design projects, wind farms and transportation noise for various schemes both within and outside the UK.

9.1.3 **Chapter Purpose**

This chapter of the ES assesses the likely significant effects of the proposed development on the environment in terms of noise and vibration. The chapter and its supporting appendices describe the planning policy context, the assessment methodology; the baseline conditions at the application site and surroundings; the likely significant effects; the mitigation measures required to prevent, reduce or offset any significant adverse effects; the likely residual effects after these measures have been employed; and the cumulative effects. In summary, the objectives of the chapter are to:

- Assess the impact of noise and vibration from the proposed development during the construction phase;
- Assess the impact of noise and vibration from the completed proposed development during the operational phase; and
- Identify any mitigation measures associated with the construction and operational phase.

9.1.4 **Chapter Updates for Revised Layout**

This ES chapter relating to noise and vibration has been reviewed against the following aspects and for each it has been confirmed that there are no amendments required to the content of the chapter:

Baseline data validity: there have been no relevant changes to the baseline data, and the results of the noise survey presented in Section



5.0 of the submitted Noise & Vibration Assessment (Appendix 9.1, ES Volume III) remain valid; and

• Operational traffic data: no relevant changes have been made to operational traffic data, as confirmed by Mott MacDonald, transport consultant.

Further information on the changes to the operational traffic trip figures and distribution brought about by the December 2020 scheme changes is provided in Section 7.1.4 in Chapter 7 Transport. The results demonstrate that the revised application quanta will generate 25 fewer traffic trips in the morning peak and 67 fewer trips in the evening peak hour than the March 2020 scheme, while the traffic distribution is expected to remain broadly the same. On this basis, it is considered that the previous March 2020 traffic data represents a robust, worst case scenario, and has therefore been retained for use in this revised ES chapter.

In accordance with the methodology outlined in Chapter 2, a Level 2 update has been undertaken. Due to:

• the relevance and scale of the proposed development amendments (including amendments to the building locations and uses and, consequently, the proposed receptor locations).

The sections that have been updated are:

- Section 9.2.9
- Figure 9.1
- Figure 9.2
- Figure 9.3
- Figure 9.4
- Section 9.6.7
- Section 9.6.8
- Section 9.6.9
- Section 9.6.10
- Section 9.6.11
- Section 9.7
- Section 9.8

Appendices 9.1.5

Appendix 9.1 Noise & Vibration Technical Assessment

METHODOLOGY 9.2

Legislation, Policy and Guidance 9.2.1

Legislation, planning policy and guidance relating to developments and their potential effects on noise and vibration are set out below.

9.2.1.1 Planning Policy

Section 38(6) of the Planning and Compulsory Purchase Act 2004 and Section 70(2) of the Town & Country Planning Act 1990 requires planning applications to be determined in accordance with the statutory development plan, unless material considerations indicate otherwise. The statutory development plan for the City of Liverpool currently comprises the Unitary Development Plan (adopted 2002).

The statutory development plan policies relevant to the application proposal are summarised below. The following policies and guidance are material considerations which also inform the assessment:

- National Planning Policy Framework (February 2019);
- Planning Practice Guidance (2014 and as amended); and
- Liverpool Local Plan (Submission Draft, May 2018);

Liverpool Unitary Development Plan (2002)

to noise:

Pollution – Policy EP11

"1. Planning permission will not be granted for development which has the potential to create unacceptable air, water, noise or other pollution or nuisance.

environmental problems, the City Council will:

problems;

- iv. take enforcement action where appropriate; and
- v. in appropriate circumstances, compulsorily acquire the premises whilst endeavouring to assist in the relocation of the firm, where

resources permit.

3. In the case of new development close to existing uses which are authorised or licensed under pollution control legislation, and which are a potential nuisance to the proposed development, planning permission will not be granted unless the City Council is satisfied that sufficient measures can and will be taken to protect amenity and environmental health.

Paragraph 13.103 also states:

"In determining whether a development is likely to cause unacceptable levels of pollution, the City Council will consider:

Chapter 13 of the UDP (2002) [4] contains the relevant policies with respect

- 2. Where existing uses adversely affect the environment through noise, vibration, soot, grit, dust, smoke, fumes, smell, vehicle obstruction or other
 - i. seek to reduce the problem on site;
 - ii. refuse planning permission for development which would result in a consolidation or expansion of uses giving rise to environmental
 - iii. impose appropriate conditions on any permission which may be granted and/or obtain legal agreements in relation to such permission, in order to regulate uses;

- national and international standards and regulations;
- the advice of the pollution and control authorities;
- Government guidance;
- neighbouring land uses; and
- the cumulative effect that may result i.e. where emissions, noise, discharge or nuisance from the development would combine with those already existing to reach unacceptable levels."

National Planning Policy Framework (2019)

The National Planning Policy Framework (NPPF) [1] sets out the Government's planning policies for England and how these should be applied. In relation to noise and vibration, the NPPF specifies in paragraphs 170, 180, 182 and 183 that planning policies and decisions should aim to:

"170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans."

Two further statements are presented at paragraph 180, which read:

"180. Planning policies and decisions should also ensure that new development is appropriate for its location taking into account the likely effects (including cumulative effects) of pollution on health, living conditions and the natural environment, as well as the potential sensitivity of the site or the wider area to impacts that could arise from the development. In doing so they should:

"a) mitigate and reduce to a minimum potential adverse impacts resulting from noise from new development – and avoid noise giving rise to significant adverse impacts on health and the quality of life

b) identify and protect tranguil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason..."

Furthermore, paragraphs 182 and 183 state:

"182. Planning policies and decisions should ensure that new development can be integrated effectively with existing businesses and community facilities (such as places of worship, pubs, music venues and sports clubs). Existing businesses and facilities should not have unreasonable restrictions placed on them as a result of development



permitted after they were established. Where the operation of an existing business or community facility could have a significant adverse effect on new development (including changes of use) in its vicinity, the applicant (or 'agent of change') should be required to provide suitable mitigation before the development has been completed.

183. The focus of planning policies and decisions should be on whether proposed development is an acceptable use of land, rather than the control of processes or emissions (where these are subject to separate pollution control regimes). Planning decisions should assume that these regimes will operate effectively. Equally, where a planning decision has been made on a particular development, the planning issues should not be revisited through the permitting regimes operated by pollution control authorities."

Planning Practice Guidance (2014 and as amended, 2019)

The Planning Practice Guidance [3] web-based resource was launched by the Ministry for Housing, Communities and Local Government on 6 March 2014 and most recently updated in July 2019, to support the National Planning Policy Framework. For the purpose of this assessment the relating target noise level criteria are found in the noise technical report.

With respect to Government policy for noise, the national Planning Practice Guidance (PPG: Noise) provides a summary table of the effects of noise exposure that gives more definition to the terms used in the Noise Policy Statement for England March 2010 (and NPPF). A summary of this table is shown in Table 9.1 below. These definitions help to confirm the change in noise levels in the magnitude of impact tables (Table 9. and Table 9.9).

Table 9.1

Summary of Noise Exposure Hierarchy

PERCEPTION	EXAMPLES OF OUTCOME
	No Observed Effect Level
Not present	No Effect
	No Observed Adverse Effect Level
Present and not intrusive	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.
	Lowest Observed Adverse Effect Level (LOAEL)
Present and intrusive	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.

PERCEPTION	EVAINILES
	Significant O
Present and disruptive	The noise cau physiological intrusion; wh closed most of resulting in d in getting bac character of t
Present and very disruptive	Extensive and response and psychological appetite, sigr auditory.

Noise Policy Statement for England (2010)

The Noise Policy Statement for England (NPSE) [2] was published on 15 March 2010. It sets out the long-term vision of government noise policy in paragraph 1.6 to "promote good health and a good quality of life through the management of noise within the context of Government policy on sustainable development".

The aims of the NPSE are detailed in paragraph 1.7 'Noise Policy Aims':

policy on sustainable development:

- life."

Since the publication of the NPSE, this document and the accompanying Explanatory Note form the basis for noise consideration within the National Planning Policy Framework (NPPF) and the national Planning Practice Guidance (PPG). The content of these documents is explained in more detail in the Noise & Vibration Technical Report. This includes further reference to the following concepts introduced within the NPSE:

NOEL – No Observed Effect level

This is the level below which no effect can be detected and below which there is no detectable effect on health and quality of life due to noise.

LOAEL – Lowest Observable Adverse Effect Level

can be detected.

OF OUTCOME

bserved Adverse Effect Level (SOAEL)

uses a material change in behaviour, attitude or other response, e.g. avoiding certain activities during periods of ere there is no alternative ventilation, having to keep windows of the time because of the noise. Potential for sleep disturbance ifficulty in getting to sleep, premature awakening and difficulty ck to sleep. Quality of life diminished due to change in acoustic he area.

d regular changes in behaviour, attitude or other physiological I/or an inability to mitigate effect of noise leading to l stress, e.g. regular sleep deprivation/awakening; loss of nificant, medically definable harm, e.g. auditory and non-

"Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government

avoid significant adverse impacts on health and quality of life;

mitigate and minimise adverse impacts on health and quality of life; and where possible, contribute to the improvement of health and quality of

This is the level above which adverse effects on health and quality of life

SOAEL – Significant Observed Adverse Effect Level

This is the level above which significant adverse effects on health and quality of life occur.

However, specific noise measures such as limits or thresholds are not presented and it states in paragraph 2.22 that:

"It is not possible to have a single objective based measure that defines 'significant effect levels' that is applicable to all sources of noise in all situations." As such, there remains the requirement to establish relevant criteria based on currently available guidance documents and standards such as the WHO Guidelines and DMRB."

Emerging Liverpool City Council Local Plan 2013-2033 (2018)

The emerging Liverpool City Council (LCC) Local Plan 2013-2033 (Submission Version, May 2018)[5] also contains the following relevant policies with respect to noise.

Policy SP4 (Food and Drink Uses and Hot Food Take-aways):

"5. Proposals for all food and drink uses including hot food take-aways both within and outside designated centres should demonstrate that:

(a) There would be no adverse impact on residential amenity in terms of noise, customer activity, vibrations, odours, traffic disturbance and litter;

(d) Appropriate fume extraction systems and/ or noise insulation are provided;"

Policy R1 Pollution:

"1. Development proposals which are likely to have a pollution impact should demonstrate that:

a. Appropriate measures are incorporated to avoid pollution to air, water and soil;

b. The impact of noise, vibration and lighting will not be significant;

c. The proposal will not undermine the achievement of Air Quality Management Area (AQMA) objectives; and

d. It will not lead to a significant decline in air quality

2. Where existing uses adversely affect the environment through noise, vibration, dust, smoke, fumes, smell, vehicle obstruction or other environmental problems the City Council will:

a. Refuse planning permission for proposals which would result in a consolidation or expansion of uses giving rise to environmental problems. b. Impose appropriate conditions on any permission which may be granted and/or obtain legal agreements in relation to such a permission in order to regulate uses.

3. New development proposals close to existing uses which are authorised or licenced under pollution control legislation, and which are a potential nuisance to the proposed development, will not be permitted unless the City



4. Where appropriate Major developments should incorporate measures to reduce and minimise air pollution."

Other Relevant Guidance

Other relevant guidance has been used to enable the assessment of the proposed development in terms of the LOAEL and the SOAEL. This guidance includes but is not limited to:

- World Health Organisation (WHO), 'Guidelines for Community Noise 1999' [6];
- Design Manual for Roads and Bridges (DMRB) [7];
- BS 8233:2014 Guidance on sound insulation and noise reduction for buildings – Code of practice [8];
- BS 4142:2014+A1:2019 'Methods for rating and assessing industrial and commercial sound [9];
- IEMA (Institute for Environmental Management and Assessment) 'Guidelines for Environmental Noise Impact Assessment October 2014' [10];
- BS 5228-1:2009+A1:2014 'Code of Practice for noise and vibration control on construction and open sites' [11]; and
- ISO 9613-2: 1996 Acoustics Attenuation of sound during propagation outdoors - Part 2: General Method of Calculation [12].

9.2.2 Consultees

Consultation regarding noise and vibration has been undertaken through the EIA scoping process, which is documented below.

Scoping 9.2.3

The noise and vibration assessment methodology within the EIA scoping report was submitted to LCC and relevant parties in May 2017. The formal scoping opinion was received, a summary of comments relating to noise and vibration is provided in Table 9.2 below.

9.2.4 **April 2020 Planning Application Consultation**

LCC provided a consultation response to the submitted full application (dated 3rd August 2020) regarding the previously submitted noise and vibration assessment. Within this document, a number of conditions relating to noise are proposed. These conditions are considered to be achievable, subject to the proposed clarification, which is detailed within the Noise and Vibration Technical Report (Appendix 9.1, ES Volume III).

Consideration of Climate Change 9.2.5

The climate change scenarios set out in Chapter 2 EIA Methodology of this ES have been reviewed and considered in the context of noise and vibration. It is considered unlikely that the climate change scenarios identified will affect or be affected by noise and vibration associated with the proposed development. Therefore, climate change has not been considered further within this ES Chapter.

9.2.6 **Consideration of Human Health**

The impact on human health from noise and vibration forms an integral part of the relevant British Standards used within this assessment and is detailed within the relevant policy and guidance above. As such, the consideration of the potential impacts of noise and vibration from the proposed development on human health are inherent within this assessment.

9.2.7 **Disasters**

Table 9.2

The major accidents and/or disasters identified within Chapter 2 EIA Methodology of this ES have been reviewed and are not considered to be relevant in terms of noise and vibration. As such, this topic has not been further considered within this ES Chapter.



Summary of Responses Relating to Noise and Vibration				
CONSULTEE	SCOPING OPINION COMMENTS	FURTHER INFORMATION		
Historic England	Due to the high grade of Anfield Cemetery and Stanley Park, they should be considered as sensitive receptors in the noise, air quality and shadowing chapters	Noise associated with the proposed development has been qualitatively assessed at Anfield Cemetery and Stanley Park given their greater distance from the site than equally sensitive residential receptors surrounding the development site and within the tranquillity assessment.		

Consideration of Risk of Major Accidents and/or

9.2.8 Alternatives

In regard to the traffic data that have informed this assessment, the baseline conditions that have been considered include an alternate future baseline scenario as follows:

- a 2019 existing baseline conditions;
- a 2028 base (no development) future baseline with cumulative development; and
- a 2032 base (no development) future baseline with cumulative development.

Further details on the traffic data that has formed the basis of the noise assessment may be found in Chapter 7 Transport and the traffic data used in the assessment is included at Appendix 7.2, ES Volume III.

9.2.9 Assessment Scenarios

To determine the effects of the proposed development, a number of different assessment scenarios have been tested. These are as follows:

- Construction phase noise associated with construction works across the site.
- Operational phase (road traffic) both opening year and future year scenarios have been assessed as below to represent worst-case traffic flows:
 - 2028 "Do Minimum (DM)" without development opening year
 - 2028 "Do Something (DS)" with development opening year (The Proposed Development + Cumulative Development)
 - 2032 "Do Minimum (DM)" without development future year
 - 2032 "Do Something (DS)" with development future year (The Proposed Development + Cumulative Development)
- Operational phase (building services plant) it is anticipated that there will be some form of building services plant associated with the development. The assessment specifies the maximum external noise emissions to ensure that noise levels fall at least 10 dB below existing background levels.
- Operational phase (proposed sensitive receptors within the application site) – a full noise intrusion assessment has been undertaken to determine internal noise levels within proposed sensitive spaces and within proposed external amenity areas with any additional mitigation measures identified.

9.2.9.1 Building Services Plant Assessment – Operational Phase

The location of proposed building services plant is currently unknown due to the outline nature of the scheme; however, robust assumptions have been made regarding the location of any proposed building services plant. For the purposes of the assessment, indicative building services plant was assessed in roof-mounted locations of proposed plots, at the shortest distance to the surrounding sensitive receptors. Although the detailed design and specification of building services plant will be subject to various spatial and functional requirements, the identified noise limits at the shorter distances to identified receptors represent a worst-case approach to specifying noise emission limits, as potential plant that is located at a greater distance, or that benefits from additional screening, would require a higher noise emission limit.

9.2.9.2 Noise Intrusion Assessment – Operational Phase

For the purposes of the noise intrusion assessment for future occupants, noise levels have been determined via the calculation of noise levels incident on the worst-case facades, adjacent to and facing the surrounding road network (which are the most exposed to road traffic noise); the results of the noise modelling calculations have been used to determine mitigation measures for all facades of the development, taking into account the attenuation provided by distance from the noise sources and screening provided by existing and proposed structures.

As described in Chapter 3 Site Description and Development Proposals, the proposals include a public open space, with soft and hard landscaping, in the centre of the site, broadly on the location of part of the current pitch area. External noise levels in this amenity area have been assessed in this chapter.

9.2.9.3 Construction Vibration

Vibration associated with construction has been assessed qualitatively inline with BS 5228-1:2009+A1:2014 'Code of Practice for noise and vibration control on construction and open sites' within the Noise & Vibration technical report within Appendix 9.1, ES Volume III. Measures to reduce construction vibration will be included within the CEMP in due course. With these measures in place, significant impacts on sensitive receptors from construction vibration are not anticipated. On this basis, an assessment of construction vibration has been scoped out of this ES chapter.

9.2.9.4 Cumulative Effects – Operational Phase

With respect to the consideration of cumulative effects, the operational traffic assessment includes contributions from one other cumulative scheme within the traffic flow data:

Scheme comprising part four/part five storey block comprising 106 residential apartments with associated car parking, landscaping, and ancillary works on a site bounded by Walton Lane, Bullens Road and Diana Street (Planning Ref. 18F/1316).

This cumulative scheme is located to the immediate east of the application site, on the opposite side of Bullens Road. It is the only cumulative scheme located within a 500 m radius of the application site

The greatest changes in road traffic volumes and off-site road traffic noise levels are expected to occur within 250 metres of the application site

boundary, where development-related traffic will access local roads. The results of the traffic noise assessment demonstrate that the worst-case change in traffic noise levels at existing receptors adjacent to the application site (summarised in section 9.6 of this chapter) are not expected to be significant. As such, any future cumulative development sites located along the same thoroughfares (e.g. the Residential development on the site bounded by Walton Lane, Bullens Road and Diana Street noted above (Planning Ref. 18F/1316)), or at greater distances from the site, are not expected to experience significant adverse impacts. The proposed cumulative schemes have therefore been scoped out of any further consideration as sensitive receptors within the operational phase traffic noise assessment in this chapter.

9.2.9.5 Cumulative Effects – Construction Phase

As noted above, the closest cumulative scheme to the application site is the proposed residential development on the adjacent site bounded by Walton Lane, Bullens Road, and Diana Street (Planning Ref. 18F/1316). A cumulative construction noise assessment has been undertaken, which considers potential construction activity at this site occurring simultaneously with the proposed development. With regards to the demolition phase of the construction assessment, this has not been cumulatively assessed as the adjacent cumulative site is a vacant, open site, as such the potential demolition activities associated with the adjacent site would be limited in scope and duration in comparison to the proposed demolition activities at the development site.

All other schemes on the agreed cumulative schemes list are located over 500m from the application site and would all likely be subject to a CEMP, which would reduce the potential for adverse construction noise effects. On this basis, cumulative construction noise effects are considered unlikely to arise in relation to these schemes and they have therefore been scoped out of further consideration in the construction noise assessment in this chapter.

9.2.10 Assessment of Baseline Conditions & Receptor Sensitivity

Baseline conditions were determined through an on-site noise survey (undertaken between Friday 20 April 2018 and Tuesday 1 May 2018). During this time, measurements were undertaken at twelve attended locations and one unattended location. Full details of the noise monitoring survey are presented in Section 5.0 of the Noise & Vibration Technical Report (Appendix 9.1).

As previously stated, for the purposes of the traffic assessment associated with the proposed development, two future baselines have been assessed, the 2028 opening year and the 2032 future year. The future baseline noise has been predicted using traffic flow data outlined in Chapter 7 Transport of this volume of the ES.

For the traffic assessment, the future baseline scenarios used are inclusive of cumulative developments within the study area. Therefore, the results presented can be considered a worst-case assessment of cumulative effects.



Table 9.3 sets out the scale of sensitivity that has been applied to receptors identified and considered within this assessment.

Table 9.3

Methodology for Assessing Sensitivity of Noise

SENSITIVITY	EXAMPLE OF RECEPTOR
High	Residential properties (permanent tenants) and schools and hospitals
	CPRE rated tranquillity (Zones 8-10)
Medium	Transient residential receptors such as users of hotels, Churches, Office spaces
	CPRE rated tranquillity (Zones 4-7)
Low	Commercial premises
	CPRE rated tranquillity (Zones 1-3)

The study area used for this assessment is detailed within SK01 of the Noise & Vibration Technical Report (Appendix 9.1).

A number of existing and proposed key receptors have been selected to enable an assessment to be undertaken for the potential noise effects of the construction and operation phases of the proposed development, as well as the effects on proposed sensitive receptors within the development itself, these are identified in Table 9.4 - 9.7 below.

Table 9.4

Existing and Proposed Sensitive Receptor Locations (Construction and Operational Noise)

REF.	DESCRIPTION	HEIGHT (M)
R01	9 Goodison Road	1.5
R02	29a Goodison Road	1.5
R03	41 Goodison Road	1.5
R04	St Lukes C of E Church, Goodison Road	1.5
R05	21 Gwladys Street	1.5
R06	63a Gwladys Street	1.5
R07	105 Gwladys Street	1.5
R08	Gwladys Street Community Primary and Nursery School	1.5
R09	2 Muriel Street	1.5
R10	1 Bullens Road	1.5
P01	Proposed Multi-Storey Residential Development, Walton Lane (Planning Ref. 18F/1316)	8.0

Table 9.5

Existing Sensitive Receptor Locations (Traffic Noise Assessment)

REF.	DESCRIPTION	HEIGHT (M)
TR01	161 Walton Lane	4.0
TRO2	56a Spellow Lane	4.0

wg.	
TECH COMPANY	

REF.	DESCRIPTION	HEIGHT (M)
TR03	Spellow Lane Church, Spellow Lane	4.0
TRO4	9 Goodison Road	4.0
TR05	37 Goodison Road	4.0
TRO6	59 Andrew Street	4.0
TR07	41 Nimrod Street	4.0
TRO8	71 Goodison Road	4.0
TR09	1 Frodsham Street	4.0
R10	77a City Road	4.0
R11	20 City Road	4.0
R12	61a Gwladys Street	4.0
R13	1 Bullens Road	4.0
R14	267 Walton Lane	4.0
R15	293 Walton Lane	4.0
FR16	333 Walton Lane	4.0

Table 9.6

Proposed Sensitive Receptor Locations within the Application Site (Noise Intrusion Assessment)

REF.	DESCRIPTI ON	USE CLASSIFICATION	HEIG HT (M)	RECEPTOR SENSITIVITY
PR1	Northern Façade — Plot E	C3 — Residential D1 — Community	4.0	High
PR2	Western Façade — Plot E	C3 — Residential D1 — Community	4.0	High
PR3	Southern Façade — Plot E	C3 — Residential D1 — Community	4.0	High
PR4	Eastern Façade — Plot E	C3 — Residential D1 — Community	4.0	High
PR5	Northern Façade — Plot C	C3 — Residential	4.0	High
PR6	Northern Façade — Plot C	GF: C3 — Residential & A1 / A2 / A3 / A4 / A5 — Retail UF: C3 — Residential	4.0	High

REF.	DESCRIPTI ON	USE CLASSIFICATION	HEIG HT (M)	RECEPTOR SENSITIVITY
PR7	Western Façade — Plot C	GF: C3 — Residential & A1 / A2 / A3 / A4 / A5 — Retail UF: C3 — Residential	4.0	High
PR8	Southern Façade— Plot C	GF: C3 — Residential & A1 / A2 / A3 / A4 / A5 — Retail UF: C3 — Residential	4.0	High
PR9	Southern Façade— Plot C	C3 — Residential	4.0	High
PR10	Eastern Façade— Plot C	C3 — Residential	4.0	High
PR11	Northern Façade — Plot A	C3 — Residential	4.0	High
PR12	Northern Façade — Plot A	GF: A1 / A2 / A3 / A4 / A5 — Retail UF: B1 — Commercial	4.0	Medium
PR13	Western Façade — Plot A	GF: A1 / A2 / A3 / A4 / A5 — Retail UF: B1 — Commercial	4.0	Medium
PR14	Western Façade — Plot A	GF: A1 / A2 / A3 / A4 / A5 — Retail UF: B1 — Commercial	4.0	Medium
PR15	Southern Façade— Plot A	B1 — Commercial	4.0	Medium
PR16	Eastern Façade— Plot A	B1 — Commercial	4.0	Medium
PR17	Eastern Façade— Plot A	C3 — Residential	4.0	High
PR18	Western Façade — Plot B	C3 — Residential	4.0	High

OISE & VIBRATION

			HEIG	
REF.	DESCRIPTI ON	USE CLASSIFICATION	НТ (M)	RECEPTOR SENSITIVITY
PR19	Western Façade — Plot B	C3 — Residential	4.0	High
PR20	Southern Façade — Plot B	C3 — Residential	4.0	High
PR21	Eastern Façade — Plot B	C3 — Residential	4.0	High
PR22	Northern Façade — Plot B	C3 — Residential	4.0	High
PR23	Southern Façade — Plot D	C2 — Residential Institution	4.0	High
PR24	Eastern Façade — Plot D	C2 — Residential Institution	4.0	High
PR25	Northern Façade — Plot D	C2 — Residential Institution	4.0	High
PR26	Western Façade — Plot D	C2 — Residential Institution	4.0	High
PR27	Southern Façade — Plot F	D1 — Community	4.0	High
PR28	Eastern Façade — Plot F	D1 — Community	4.0	High
PR29	Northern Façade — Plot F	D1 — Community	4.0	High
PR30	Western Façade — Plot F	D1 — Community	4.0	High
PR31	Southern Façade — Plot G	C3 — Residential	4.0	High

REF.	DESCRIPTI ON	USE CLASSIFICATION	HEIG HT (M)	RECEPTOR SENSITIVITY
PR32	Eastern Façade — Plot G	C3 — Residential	4.0	High
PR33	Northern Façade — Plot G	C3 — Residential	4.0	High
PR34	Western Façade — Plot G	C3 — Residential	4.0	High

Table 9.7	
Proposed Amenity Receptor Locations	(Noise Intrusion Assessment)

REF.	DESCRIPTION	HEIGHT (M)	RECEPTOR SENSITIVITY
G01	Amenity Space — Central Green Space	1.2	High

9.2.11 Assessment of Magnitude

The assessment was undertaken based on the description of development contained in Chapter 3 Application Site & Proposed Development and Chapter 4 Construction Strategy of this volume of the ES. Guidance with regard to assessing the magnitude of noise effect is available within the Guidelines for Environmental Noise Impact Assessment, published by IEMA in 2014 [10]. The guidance indicates broad parameters with respect to categorising the significance of the basic noise change. For the purpose of this ES, the categories outlined in Table 9. through to Table 9.11 form the basis of the impact magnitude for the assessment, along with the relevant fixed limit noise level criteria for the construction and operational phases.

Table 9.8

Methodology for Assessing the Magnitude of Impact (Construction Noise)

MAGNITUDE	NOISE LEVEL CRITERIA
Negligible (NOAEL)	In urban areas noise levels exceed 55 dB
Minor (LOAEL)	In urban areas noise levels exceed 65 dB
Noderate (SOAEL)	In urban areas noise levels exceed 75 dB
Najor (UOAEL)	In urban areas noise levels exceed 85 dB
lethodology for Asses	ssing the Magnitude of Impact (Operation - Traffic)
MAGNITUDE	NOISE LEVEL CRITERIA
MAGNITUDE Negligible	NOISE LEVEL CRITERIA L _{A10,18hour} change in noise is: < 1 dB (Short Term)
MAGNITUDE Negligible (NOAEL)	NOISE LEVEL CRITERIA L _{A10,18hour} change in noise is: < 1 dB (Short Term) L _{A10,18hour} change in noise is: < 3 dB (Long-Term)



Table 9.10
Methodology for Asses
Services Plant)
MAGNITUDE
Negligible (NOAEL)
Minor (LOAEL)
Moderate (SOAEL)
Major (UOAEL)

Table 9.11

(NOAEL)

Minor

(LOAEL)

Moderate

(SOAEL)

Methodology for Assessing the Magnitude of Impact (Operation –Noise Intrusion Proposed Receptors) MAGNITUDE Negligible



NOISE LEVEL CRITE	RIA
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 $L_{A10,18hour}$ change in noise is: < 5 dB (Long-Term) $L_{A10.18hour}$ change in noise is: < 5 dB (Short Term) $L_{A10,18hour}$ change in noise is: < 10 dB (Long-Term) $L_{A10,18hour}$ change in noise is: > 5 dB (Short Term) $L_{A10,18hour}$ change in noise is: > 10 dB (Long-Term)

sing the Magnitude of Impact (Operation – Building

NOISE LEVEL CRITERIA
BS4142 score of zero or lower
BS4142 score of 5 or lower
BS4142 score of greater than 5
BS4142 score of 10 or higher

NOISE LEVEL CRITERIA Noise levels less than: Bedrooms (night-time) — 30 dB LAeq, 8hours / 45 dB LAmax Living Rooms (daytime) $-35 \text{ dB } L_{\text{Aeg}, 16 \text{hours}}$ Classroom (daytime) – 35 dB L_{Aea, 16hours} Open Plan Office (daytime) – 45 dB L_{Aea,T} External Amenity Space (daytime) – 50 dB LAeg, 16hours Noise levels exceed: Bedrooms (night-time) - 30 dB LAeq, 8hours / 45 dB LAmax Living Rooms (daytime) – 35 dB LAeg, 16hours Classroom (daytime) – 35 dB L_{Aeq,16hours} Open Plan Office (daytime) $-45 \text{ dB } L_{\text{Aea},\text{T}}$ External Amenity Space (daytime) – 55 dB L_{Aea,16hours} Noise levels exceed: Bedrooms (night-time)— 35 LAea.8hours / 45 dB LAmax Living Rooms (daytime)— 45 L_{Aeq,16hours}

Classroom (daytime) – 35 dB L_{Aea, 16hours}

Open Plan Office (daytime) – 50 dB LAeg T

MAGNITUDE NOISE LEVEL CRITERIA

	External Amenity Space (daytime) $-$ 55 dB L _{Aeq, 16hours}
Major (UOAEL)	Noise levels exceed:
	Bedrooms (night-time) — 51 L _{Aeq,8hours} / 67 dB L _{Amax}
	Living Rooms (daytime) — 57 dB L _{Aeq,16hours}
	Classroom (daytime) — 45 dB $L_{Aeq, 16hours}$
	Open Plan Office (daytime) — 50 dB $L_{Aeq,T}$
	External Amenity Space (daytime) $-$ 65 dB L _{Aeq, 16hours}

9.2.12 Assessment of Significance

The assessment of significance within this chapter is determined by combining the magnitude of impact with the sensitivity of the receptor. Table 9. shows how the interaction of magnitude and sensitivity can be combined to determine the significance of an environmental effect.

If a significance of effect is negative then the resulting effect is described as being adverse, if a significance of effect is positive the resulting effect is classed as being beneficial.

Table 9.12

Significance of Effects Matrix

	SENSITIVITY OF RECEPTOR			
EFFECT	High	Medium	Low	Negligible
Major	Major	Major- Moderate	Moderate	Minor
Moderate	Major- Moderate	Moderate	Minor	Negligible
Minor	Moderate	Minor	Negligible	Negligible
Negligible	Minor	Negligible	Negligible	Negligible

For the purpose of this ES chapter, the threshold between significant and not significant in EIA terms is defined as follows:

- A construction phase effect identified as being of major-moderate significance or greater is considered to be significant. This equates to noise levels at identified sensitive receptors of greater than 75dB(A)(detailed in Table 9.6) as a result of construction work; and
- An operational effect associated with the traffic noise assessment identified in the long-term or short-term as being of major-moderate significance or greater is considered significant. This equates to a change of noise levels of ≥3dB in the short-term or ≥5dB in the long term as a result of the proposed development.

9.2.13 Relevant Associated Development

None of the proposed associated development is considered relevant to this ES chapter.

9.2.14 Assumptions/Limitations

In undertaking the noise assessment of the application site and wider surrounding area, there are a number of limitations and constraints affecting the outputs from this work. These include:

- Construction noise levels are based on typical fixed and mobile plant noise levels presented within BS5228-1:2009+A1:2014 and as detailed within Chapter 4 of this ES. The assessment is considered worst-case with construction operations located at the shortest distance to the noise sensitive receptor and operating simultaneously. In this respect, a medium to high degree of confidence is assigned to the predicted significance of the construction effects.
- The results of the traffic noise assessment are based on traffic flows provided by Mott MacDonald.
- The application is made in outline, and all end users of the application site are not yet confirmed at this stage. Accordingly, a number of assumptions have been made on the potential end users and uses of the site, which are detailed in Section 4 of the Noise & Vibration Technical Report in Appendix 9.1.



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Figure 9.1 Existing Sensitive Receptor Locations





Figure 9.2 Existing Sensitive Traffic Receptor Locations





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Figure 9.3

Proposed Sensitive Receptor Locations at the Application Site





Figure 9.4 Proposed Outdoor Amenity Receptor Locations





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9.3 **BASELINE CONDITIONS**

9.3.1 Existing Baseline – Construction and Operational Noise

KEY RECEPTORS	DESCRIPTION	SENSITIVITY
R01/TR04	9 Goodison Road — Two-storey terrace residential property located adjacent to the site boundary	High
R02	29a Goodison Road — Two-storey end terrace residential property located adjacent to the site boundary	High
R03	41 Goodison Road — Two-storey terrace residential property located adjacent to the site boundary	High
R04	St Luke's C of E Church, Goodison Road — Church of England parish Church located adjacent to the site boundary	Medium
R05	21 Gwladys Street — Two-storey terrace residential property located adjacent to the site boundary	High
R06/TR12	63a Gwladys Street — Two-storey terrace residential property located adjacent to the site boundary	High
R07	105 Gwladys Street — Two-storey terrace residential property located to the northeast of the site boundary	High
R08	Gwladys Street Community Primary and Nursery School — One-storey school premises adjacent to the site boundary	High
R09	2 Muriel Street — Two-storey end terrace residential property located adjacent to the site boundary	High
R10/TR13	1 Bullens Road — Two-storey end terrace residential property located adjacent to the site boundary	High
P01	Proposed Multi-Storey Flats, Walton Lane — Four/part five storey block comprising 106 no. flats with associated car parking, landscaping and ancillary works.	High
TR01	161 Walton Lane — Two-storey residential property located opposite Stanley Park	High
TRO2	56a Spellow Lane — Two-storey residential flats located to the southwest of the site boundary	High
TRO3	Spellow Lane Church, Spellow Lane — Evangelical church located to the southwest of the site boundary	Medium
TR05	37 Goodison Road — Two-storey terrace residential property located adjacent to the site boundary	High
TRO6	59 Andrew Street — Two-storey terrace residential property located northwest of the site boundary	High
TR07	41 Nimrod Street — Two-storey terrace residential property located northwest of the site boundary	High
TR08	71 Goodison Road — Two-storey terrace residential property located northwest of the site boundary	High
TR09	1 Frodsham Street — Two-storey end terrace residential property located north of the site boundary	High
TR10	77a City Road — Two-storey terrace residential property located north of the site boundary	High
TR11	20 City Road — Two-storey semi-detached residential property located north of the site boundary	High
TR14	267 Walton Lane — Two-storey semi-detached residential property located opposite Anfield Cemetery	High
TR15	293 Walton Lane — Two-storey terrace residential property located opposite Anfield Cemetery	High
TR16	333 Walton Lane — Two-storey terrace residential property located opposite Anfield Cemetery	High

The receptor sensitivity that has been applied to each of the proposed sensitive receptors at the application site is indicated in Tables 9.6 and 9.7 in Section 9.2.9 earlier in the chapter.

9.3.2 Future Baseline

It is considered that the future baseline at identified receptors will be broadly similar to the existing baseline given their locations in relation to the local road network. An assessment has been undertaken for the change in road traffic noise during the 2028 opening year and the 2032 future assessment year at identified sensitive receptors identified in Table 9.4.



	FURTHER INFORMATION
65.7	
65.7	
65.7	
68.3	
68.3	
58.7	
58.7	
58.7	
59.0	
59.0	
59.0	Full details of the noise
69.1	baseline monitoring and
66.3	detailed within Section 5.0 of
66.3	Appendix 9.1, ES Vol III.
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68.3	
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75.5	

9.4 POTENTIAL SIGNIFICANT IMPACTS

PHASE	DESCRIPTION	ADVERSE/BENEFICIAL
Construction	Potential noise impacts associated with demolition and construction works on sensitive receptors surrounding the application site during the construction phase	Adverse
Operation — Traffic (Short-Term)	Potential noise impacts associated with increased vehicle movements — this is inclusive of cumulative developments to represent a worst-case scenario	Adverse
Operation — Traffic (Long-term)	Potential effects from noise associated with increased vehicle movements — this is inclusive of cumulative developments to represent a worst-case scenario	Adverse
Operation — Building Services Plant	Potential effects from noise associated with roof-mounted building services plant brought forward at the site under the proposals	Adverse
Operation — Proposed Sensitive Receptors	Potential noise impacts upon future sensitive receptors within the application site from the surrounding road network	Adverse

9.5 **DESIGN INTERVENTIONS**

No design interventions have been made in relation to this technical topic.

9.6 ASSESSMENT PRE-MITIGATION (INCLUDING DESIGN INTERVENTIONS)

9.6.1 **Proposed Development Scenario – Construction Phase - Demolition**

PHASE	RECEPTOR(S) AFFECTED	PREDICTED NOISE LEVEL DB(A)	ІМРАСТ	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction Phase - Demolition	R01	70.9	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R02	72.0	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R03	68.1	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R04	70.2	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Minor Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R05	71.8	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R06	73.4	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R07	64.5	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R08	70.1	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	R09	67.4	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1



PHASE	RECEPTOR(S) AFFECTED	PREDICTED NOISE LEVEL DB(A)	ІМРАСТ	MAGNITUDE PRE-MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction Phase - Demolition	R10	67.9	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction Phase - Demolition	P01	70.8	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1

9.6.2 Proposed Development Scenario – Construction Phase - Construction

PHASE	RECEPTOR(S) AFFECTED	PREDICTED NOISE LEVEL DB(A)	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction — Construction Phase	RO1	65.5	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R02	63.7	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	RO3	64.5	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R04	65.2	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Minor Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R05	65.7	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	RO6	71.0	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R07	62.0	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R08	69.9	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R09	63.2	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.1 of Appendix 9.1
Construction — Construction Phase	R10	65.6	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.1 of Appendix 9.1





PHASE	RECEPTOR(S) AFFECTED	PREDICTED NOISE LEVEL DB(A)	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?
Construction — Construction Phase	P01	69.2	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes

9.6.3 Proposed Development Scenario – Cumulative Construction Phase - Construction

PHASE	RECEPTOR(S) AFFECTED	PREDICTED NOISE LEVEL DB(A)	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Construction — Cumulative Construction Phase	R01	65.7	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	RO2	64.1	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	RO3	64.7	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	RO4	65.3	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Minor Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	R05	65.8	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	R06	71.0	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	R07	62.2	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	RO8	69.9	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	R09	63.6	The noise level at this receptor does not exceed the minor impact magnitude threshold of 65 dB(A) defined in Table 9.8.	Negligible	Minor Adverse	Yes	Section 6.3 of Appendix 9.1
Construction — Cumulative Construction Phase	R10	67.7	The noise level at this receptor does not exceed the moderate impact magnitude threshold of 75 dB(A) defined in Table 9.8.	Minor	Moderate Adverse	Yes	Section 6.3 of Appendix 9.1



FURTHER INFORMATION

Section 6.1 of Appendix 9.1

NOISE & VIBRATION Poge9.15

		TRAFFIC NOISE	TRAFFIC						
PHASE	RECEPTOR(S) AFFECTED	WITHOUT DEVELOPMENT 2028 (L _{A10,18HR} DB(A))	NOISE WITH DEVELOPMENT 2028 (L _{A10,18HR} DB(A))	DIFFERENCE	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Traffic	TRO1	69.1	69.4	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TRO2	68.0	68.1	0.1	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR03	68.1	68.3	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Negligible	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR04	66.3	66.7	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR05	64.5	65.8	1.3	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR06	56.8	56.9	0.1	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR07	54.5	56.5	2.0	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR08	58.4	59.2	0.8	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR09	55.8	56.3	0.5	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR10	62.6	62.9	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR11	60.9	61.3	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR12	59.8	62.7	2.9	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR13	59.5	62.3	2.8	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR14	71.5	71.8	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR15	71.6	71.9	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR16	71.5	71.8	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1

9.6.4 Proposed Development Scenario – Operation (Traffic Short-term 2028) Including Cumulative Scheme



PHASE	RECEPTOR(S) AFFECTED	TRAFFIC NOISE WITHOUT DEVELOPMENT 2032 (L _{A10,18HR} DB(A))	TRAFFIC NOISE WITH DEVELOPMENT 2032 (L _{A10,18HR} DB(A))	DIFFERENCE	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Traffic	TR01	69.3	69.5	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR02	68.2	68.2	0.0	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR03	68.3	68.5	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Negligible	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TRO4	66.5	66.8	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR05	64.7	65.9	1.2	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR06	57.1	57.2	0.1	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR07	54.6	56.6	2.0	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR08	58.5	59.4	0.9	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR09	56.0	56.5	0.5	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR10	62.8	63.1	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR11	61.1	61.4	0.3	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR12	60.0	62.7	2.7	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR13	59.6	62.4	2.8	The noise level difference at this receptor does not exceed the minor impact magnitude change of 3 dB(A) defined in Table 9.9.	Minor	Moderate Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR14	71.7	71.9	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR15	71.8	72.0	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation — Traffic	TR16	71.7	71.9	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 1 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1

9.6.5 Proposed Development Scenario – Operation (Traffic Short-term 2032) Including Cumulative Scheme



NOISE & VIBRATION

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PHASE		RECEPTOR(S) AFFECTED	TRAFFIC NOISE WITHOUT DEVELOPMENT 2028 (L _{A10,18HR} DB(A))	TRAFFIC NOISE WITH DEVELOPMENT 2032 (L _{A10,18HR} DB(A))	DIFFERENCE	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation —	Traffic	TRO1	69.1	69.5	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TRO2	68.0	68.2	0.2	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR03	68.1	68.5	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Negligible	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TRO4	66.3	66.8	0.5	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR05	64.5	65.9	1.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR06	56.8	57.2	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR07	54.5	56.6	2.1	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR08	58.4	59.4	1.0	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR09	55.8	56.5	0.7	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR10	62.6	63.1	0.5	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR11	60.9	61.4	0.5	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR12	59.8	62.7	2.9	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR13	59.5	62.4	2.9	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR14	71.5	71.9	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR15	71.6	72.0	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 99.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1
Operation —	Traffic	TR16	71.5	71.9	0.4	The noise level difference at this receptor does not exceed the negligible impact magnitude change of 3 dB(A) defined in Table 9.9.	Negligible	Minor Adverse	No	Section 6.8 of Appendix 9.1

9.6.6 Proposed Development Scenario – Operation (Traffic Long-term 2028/2032) Including Cumulative Scheme



		MEASURED BA	ACKGROUND	RATING LEV PLANT	EL FROM	DIFFERENC	E					
PHASE	RECEPTOR(S) AFFECTED	DAYTIME 07:00-23:00	NIGHT-TIME 23:00-07:00	DAYTIME 07:00- 23:00	NIGHT- TIME 23:00- 07:00	DAYTIME 07:00- 23:00	NIGHT- TIME 23:00- 07:00	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Building Services Plant	RO1	52	49	32	28	-20	-21	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	RO2	52	49	34	30	-18	-19	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	RO3	52	49	38	34	-14	-15	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	RO4	49	43	37	33	-12	-10	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Negligible Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	R05	49	43	36	33	-13	-10	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	RO6	44	40	35	30	-10	-10	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	R07	44	40	28	24	-16	-17	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	R08	44	40	32	28	-12	-12	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	R09	49	46	31	26	-18	-20	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	R10	49	46	35	31	-14	-15	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1
Operation — Building Services Plant	P01	49	46	34	28	-15	-18	The noise level at this receptor does not exceed the negligible impact magnitude difference of 0 dB(A) or lower below background noise levels as defined in Table 9.10.	Negligible	Minor Adverse	No	Section 6.4 of Appendix 9.1

9.6.7 Proposed Development Scenario – Operation (Building Services Plant)



PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AEQ} WITH WINDOWS OPEN	INTERNAL L _{AEQ} WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR1	53.6	43.6	20.6	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR2	63.4	53.4	30.4	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR3	55.9	45.9	22.9	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR4	42.3	32.3	9.3	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR5	46.2	36.2	13.2	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR6	53.6	43.6	20.6	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR7	60.5	50.5	27.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR8	53.9	43.9	20.9	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR9	52.0	42.0	19.0	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1

9.6.8 Proposed Development Scenario – Operation (Proposed Receptors – Internal Daytime L_{Aeq,16hr} Noise Levels)

PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AEQ} WITH WINDOWS OPEN	INTERNAL L _{AEQ} WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR10	36.1	26.1	3.1	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR11	50.9	40.9	17.9	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR12	57.1	47.1	24.1	The noise level at this receptor exceeds the minor impact magnitude threshold of 45 dB(A) for an office space during the daytime with windows open as defined in Table 9.11.	Minor	Minor Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR13	64.1	54.1	31.1	The noise level at this receptor exceeds the moderate impact magnitude threshold of 50 dB(A) for an office space during the daytime with windows open as defined in Table 9.11.	Moderate	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR14	65.7	55.7	32.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 50 dB(A) for an office space during the daytime with windows open as defined in Table 9.11.	Moderate	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR15	69.7	59.7	36.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 50 dB(A) for an office space during the daytime with windows open as defined in Table 9.11.	Moderate	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR16	61.4	51.4	28.4	The noise level at this receptor exceeds the moderate impact magnitude threshold of 50 dB(A) for an office space during the daytime with windows open as defined in Table 9.11.	Moderate	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR17	53.0	43.0	20.0	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR18	36.6	26.6	3.6	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1



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PHASE	RECEPTOR(S) AFFECTED	EXTERNAL LAEQ NOISE LEVEL	INTERNAL LAEQ WITH WINDOWS OPEN	INTERNAL LAEQ WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR19	62.9	52.9	29.9	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR20	69.7	59.7	36.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR21	65.7	55.7	32.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR22	55.4	45.4	22.4	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR23	59.8	49.8	26.8	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR24	61.9	51.9	28.9	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR25	53.5	43.5	20.5	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR26	36.2	26.2	3.2	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR27	56.5	46.5	23.5	The noise level at this receptor exceed the moderate impact magnitude threshold of 35 dB(A) for a classroom during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR28	59.5	49.5	26.5	The noise level at this receptor exceed the moderate impact magnitude threshold of 35 dB(A) for a classroom during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1



PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AEQ} WITH WINDOWS OPEN	INTERNAL L _{AEQ} WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR29	54.5	44.5	21.5	The noise level at this receptor exceed the moderate impact magnitude threshold of 35 dB(A) for a classroom during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR30	40.3	30.3	7.3	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 35 dB(A) for a classroom during the daytime with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR31	52.3	42.3	19.3	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR32	58.5	48.5	25.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR33	60.6	50.6	27.6	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the daytime with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR34	53.8	43.8	20.8	The noise level at this receptor exceeds the minor impact magnitude threshold of 35 dB(A) during the daytime with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1

9.6.9 Proposed Development Scenario – Operation (Proposed Receptors – Internal Night-time L_{Aeq,8hr} Noise Levels)

PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AEQ} WITH WINDOWS OPEN	INTERNAL L _{AEQ} WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATI ON
Operation — Proposed Sensitive Receptors	PR1	46.3	36.3	13.3	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR2	55.1	45.1	22.1	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1



		EXTERNAL LAEQ NOISE LEVEL AT 1M				MAGNITUDE PRE-			FURTHER INFORMATI
Operation — Proposed Sensitive Receptors	PR3	48.3	38.3	15.3	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR4	36.1	26.1	3.1	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR5	39.6	29.6	6.6	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR6	46.3	36.3	13.3	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR7	52.5	42.5	19.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR8	46.5	36.5	13.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR9	44.8	34.8	11.8	The noise level at this receptor exceeds the minor impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR10	30.5	20.5	0.0	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR11	43.8	33.8	10.8	The noise level at this receptor exceeds the minor impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Minor	Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR17	45.7	35.7	12.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1



PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AEQ} WITH WINDOWS OPEN	INTERNAL LAEQ WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATI ON
Operation — Proposed Sensitive Receptors	PR18	31.0	21.0	0.0	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR19	54.6	44.6	21.6	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR20	60.8	50.8	27.8	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR21	57.2	47.2	24.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR22	47.9	37.9	14.9	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR23	51.9	41.9	18.9	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR24	53.7	43.7	20.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR25	46.2	36.2	13.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR26	30.6	20.6	0.0	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 30 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1



PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} NOISE LEVEL AT 1M FROM FACADE	INTERNAL LAEQ WITH WINDOWS OPEN	INTERNAL LAEQ WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE-MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATI ON
Operation — Proposed Sensitive Receptors	PR31	45.1	35.1	12.1	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR32	50.7	40.7	17.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR33	52.6	42.6	19.6	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR34	46.5	36.5	13.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 35 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1

9.6.10 Proposed Development Scenario – Operation (Proposed Receptors – Internal Night-time L_{Amax} Noise Levels)

PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AMAX} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AMAX} WITH WINDOWS OPEN	INTERNAL LAMAX WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR1	64.4	54.4	31.4	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR2	74.6	64.6	41.6	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR3	67.1	57.1	34.1	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR4	52.1	42.1	19.1	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1



PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AMAX} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AMAX} WITH WINDOWS OPEN	INTERNAL L _{AMAX} WITH WINDOWS <u>CLOSED</u>	імраст	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROP <u>OSED?</u>	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR5	57.2	47.2	24.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR6	64.8	54.8	31.8	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR7	71.5	61.5	38.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR8	65.2	55.2	32.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR9	63.4	53.4	30.4	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR10	47.6	37.6	14.6	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR11	62.3	52.3	29.3	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR17	65.0	55.0	32.0	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR18	48.2	38.2	15.2	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.5 of Appendix 9.1



PHASE	RECEPTOR(S) AFFECTED	EXTERNAL LAMAX NOISE LEVEL AT 1M FROM FACADE	INTERNAL LAMAX WITH WINDOWS OPEN	INTERNAL LAMAX WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION
Operation — Proposed Sensitive Receptors	PR19	75.0	65.0	42.0	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR20	81.7	71.7	48.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR21	77.2	67.2	44.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR22	65.8	55.8	32.8	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR23	71.2	61.2	38.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR24	71.9	61.9	38.9	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR25	57.5	47.5	24.5	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR26	47.3	37.3	14.3	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Negligible
Operation — Proposed Sensitive Receptors	PR31	55.1	45.1	22.1	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate
Operation — Proposed Sensitive Receptors	PR32	61.7	51.7	28.7	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate



SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Minor Adverse	No	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1

PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AMAX} NOISE LEVEL AT 1M FROM FACADE	INTERNAL L _{AMAX} WITH WINDOWS OPEN	INTERNAL LAMAX WITH WINDOWS CLOSED	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Sensitive Receptors	PR33	68.1	58.1	35.1	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1
Operation — Proposed Sensitive Receptors	PR34	61.2	51.2	28.2	The noise level at this receptor exceeds the moderate impact magnitude threshold of 45 dB(A) during the night-time with windows open as defined in Table 9.11.	Moderate	Major-Moderate Adverse	Yes	Section 6.5 of Appendix 9.1

9.6.11 Proposed Development Scenario – Operation (Proposed External Amenity Receptors – Daytime L_{Aeq,16hr} Noise Levels)

PHASE	RECEPTOR(S) AFFECTED	EXTERNAL L _{AEQ} DAYTIME NOISE LEVELS	ІМРАСТ	MAGNITUDE PRE- MITIGATION	SIGNIFICANCE PRE- MITIGATION	MITIGATION PROPOSED?	FURTHER INFORMATION
Operation — Proposed Amenity Receptors	G01	44.7	The noise level at this receptor does not exceed the negligible impact magnitude threshold of 50 dB(A) during the daytime within external amenity spaces as defined in Table 9.11.	Negligible	Minor Adverse	No	Section 6.6 of Appendix 9.1

9.7 MITIGATION & ENHANCEMENT MEASURES

PHASE	POSSIBLE EFFECT BEING MITIGATED	MITIGATION MEASURE	HOW SECURED / TRIGGER	MAGNITUDE POST- MITIGATION	ADVERSE/BENEFICIAL	FURTHER INFORMATION
Construction	Noise associated with demolition and other construction works on sensitive receptors surrounding the proposed development site during the construction phase.	Best practice noise mitigation techniques, set out in full in Appendix C of Appendix 9.1, ES Vol III, to be incorporated into the CEMP. 2.4m solid hoarding to be erected around the site boundary.	CEMP, secured by planning condition	Minor	Adverse	Appendix C of Appendix 9.1
Operation — Building Services Plant	Potential noise breakout from Building Services Plant	Noise emission limits in relation to breakout from building services plant has been specified at 64.9 dB(A) at 1m or 55.3 dB(A) at 3m during the daytime, and 59.5 dB(A) at 1m or 49.9 dB(A) at 3m during the night-time, to achieve levels at least 10 dB below background noise levels.	Secured by planning condition, built into the scheme upon construction	Minor	Adverse	Section 6.4 of Appendix 9.1



PHASE	POSSIBLE EFFECT BEING MITIGATED	MITIGATION MEASURE	HOW SECURED / TRIGGER
Operation — Proposed Sensitive Receptors at the application site	Noise intrusion from surrounding existing sources, primarily from road traffic noise surrounding the proposed development site	Residential spaces on façades which are exposed to Walton Lane to the south of the site will feature enhanced glazing with a specification of $R_w + C_r 37 dB$ and an alternative means of ventilation which matches the performance of this glazing. This can be provided in several ways from acoustic trickle vents (which need to have a minimum sound reduction equal to or greater than the glazing) to other passive and mechanical ventilation will be required for façades adjacent to the surrounding road network. Internal noise levels within proposed indicative educational spaces (Plot F) are expected to meet internal noise criteria assuming a windows-closed scenario, featuring standard double glazing with a sound reduction of $R_w + C_t$ 33 dB. Façades adjacent to the road network will require an alternative means of ventilation which can be provided in several ways from acoustic trickle vents (which need to have a minimum sound reduction of $R_w + C_t$ 33 dB. Façades adjacent to the road network will require an alternative means of ventilation which can be provided in several ways from acoustic trickle vents (which need to have a minimum sound reduction equal to or greater than the glazing) to other passive and mechanical ventilation systems. Internal noise levels within the proposed indicative employment spaces (Plot A) are expected to meet internal noise criteria assuming a windows-closed scenario, featuring standard double glazing with a sound reduction of $R_w + C_t$ 33 dB. Façades adjacent to the road network will require an alternative means of ventilation which can be provided in several ways from acoustic trickle vents (which need to have a minimum sound reduction equal to or greater than the glazing) to other passive and mechanical ventilation systems.	Glazing and ventilation strategy secured by planning condition

9.8 ASSESSMENT POST-MITIGATION

9.8.1 Proposed Development Scenario

				RESIDUAL EFFECT						
PHASE	RECEPTOR	RESIDUAL IMPACT	SIGNIFICANCE	ADV/BEN	ST/MT/LT	D/IND	P/T	R/IRR		
Construction	R01-R10 P01	Noise associated with demolition and construction works on sensitive receptors surrounding the proposed development site during the construction phase (including the cumulative effects of the proposed development alongside the proposed residential development on the adjacent site bounded by Walton Lane, Bullens Road, and Diana Street (Planning Ref. 18F/1316)).	Minor	ADV	ST	IND	T	R		
Operation — Traffic (Short-term)	TRO1-TRO2, TRO4, TRO6, TRO8-TR11, TR14-TR16	Noise associated with increased vehicle movements	Minor	ADV	ST	D	Р	IRR		
Operation — Traffic (Short-term)	TRO5, TRO7, TR12-TR13	Noise associated with increased vehicle movements	Moderate	ADV	ST	D	Р	IRR		
Operation — Traffic (Short-term)	TR03	Noise associated with increased vehicle movements	Negligible	ADV	ST	D	Р	IRR		
Operation — Traffic (Long-term)	TRO1-TRO2, TRO4-TR16	Noise associated with increased vehicle movements	Minor	ADV	LT	D	Р	IRR		
Operation — Traffic (Long-term)	TR03	Noise associated with increased vehicle movements	Negligible	ADV	ST	D	Р	IRR		
Operation — Building Services Plant	R01-R03, R05- R10 P01	Noise associated with proposed roof-mounted building services plant across the development	Minor	ADV	LT	D	Р	IRR		
Operation — Building Services Plant	R04	Noise associated with proposed roof-mounted building services plant across the development	Negligible	ADV	LT	D	Р	IRR		
Operation — Proposed Sensitive Receptors at the Application Site	PR1-PR34	Noise associated with the surrounding road network	Minor	ADV	LT	D	Р	IRR		
Key: ADV/BEN = Adverse/Beneficial; S	ST/MT/LT = Short-te	erm/Medium-term/Long-term; D/IND = Direct/Indirect; P/T = Permanent/Temporary; R/IRR = Reversible/Irreversible								



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MAGNITUDE POST- MITIGATION	ADVERSE/BENEFICIAL	FURTHER INFORMATION
Minor	Adverse	Section 7.0 of Appendix 9.1

Proposed Development vs Future Baseline 9.8.2

It is considered that the future baseline at identified receptors will be broadly similar to the existing baseline given the proximity of the receptors to the local road network and major thoroughfares, which will remain unchanged. An assessment has been undertaken to quantify the change in road traffic noise during the 2028 opening year and the 2032 future assessment year at identified sensitive receptors identified in Table 9.4. It is considered that the future baseline is unlikely to change significantly as a result of the proposed development.

NOISE AND VIBRATION: INTER-DEVELOPMENT CUMULATIVE SCHEME EFFECTS 9.9

The cumulative effects of the proposed development alongside the proposed residential development on the adjacent site bounded by Walton Lane, Bullens Road, and Diana Street (Planning Ref. 18F/1316) have already been considered in sections 9.6-9.8 of this ES chapter, in terms of cumulative construction phase effects and cumulative operational transport noise effects. As described in section 9.2.8 of this chapter, all other cumulative schemes are considered to be located too far away from the site to result in cumulative noise effects and, as such, have not been considered further.

9.10 **BIBLIOGRAPHY**

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