Appendix 1: Rainham Parkside Village Concept Masterplan

Proposal


LEISURE CORRIDOR
POTENTIAL FUTURE RIVER LINK
BLOORS WHARF
POTENTIAL FUTURE GREEN LINKS
ARRIVAL SQUARE
LOCAL CENTRE
SCHOOL
RECONNECTED PEDESTRIAN LINKS
COMMUNITY PARK
CARE HOME
RAINHAM DOCK
INCIDENTAL PLAY
NEIGHBOURHOOD PARK
BEECKINGS PLAYING FIELDS
WOODLAND WALK
LEAP
WOODLAND & ORCHARDS
ALLOTMENTS
WOODLAND
RAINHAM MARK GRAMMAR SCHOOL
PEDESTRIAN ROUTE TO THE STATION
Lower Twydall Lane
Lower Rainham Road
Pump Lane
Beechings Way
Lower Bloors Lane
Pump Lane

Appendix H

Air Quality Assessment

Rainham Parkside Village

Air Quality Appraisal

Esquire Developments Ltd

Prepared by:

SLR Consulting Limited

3rd Floor, Brew House, Jacob Street, Tower Hill, Bristol, BS2 0EQ

SLR Project No.: 416.065887.00001

Client Reference No: UK.134209

7 February 2025

Revision: 1.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	7 February 2025	LT	LB	LB

Basis of Report

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1.0 Introduction

SLR Consulting Ltd (SLR) has been commissioned by Esquire Developments Ltd (Esquire) to undertake an air quality appraisal to inform the suitability and design of a potential residential-led mixed-use development on land known as 'Rainham Parkside Village', Rainham, Medway (the 'Site'). Esquire intends to promote the Site within Medway Council's (MC – the 'Council') Emerging Local Plan during the upcoming Regulation 19 consultation.

The Site currently comprises two parcels of agricultural land located in Lower Rainham and is bounded by:

- A parcel of residential dwellings and Lower Rainham Road to the north/northeast with agricultural fields and open green space. The Medway Estuary and Marshes designated conservation site[1] is located approximately 200m to the northeast;
- Lower Bloors Lane to the east with mix of woodland, grassland and residential dwellings beyond;
- Chatham Main Line to the south with residential dwelling beyond; and
- Agricultural fields and grassland to the west with pockets of residential dwellings.

1.1 Scope of Work

A qualitative air quality appraisal of the Site has been undertaken to evaluate the suitability in relation to residential development. The following scope of works has been undertaken based on relevant guidance, as well as established best practice:

- Baseline Evaluation;
- Operational Phase Appraisal; and
- Future Assessment Recommendations.

[1] The Medway Estuary & Marshes is a designated Special Protection Area (SPA), Ramsar, and Site of Special Scientific Interest (SSSI).

2.0 Appraisal Methodology

2.1 Legislative Summary

The ambient air quality standards of relevance to this appraisal (collectively termed Air Quality Assessment Levels (AQALs)) are provided in Table A. These are primarily based upon the Air Quality Objectives Local Authorities are responsible for achieving.

The AQALs apply at locations where members of the public are regularly present and might reasonably be expected to be exposed to pollutant concentrations over the relevant averaging period (referred to as 'relevant exposure'). Table B provides an indication of those locations.

Table A: Relevant Ambient AQALs (England)

Pollutant	AQAL (µg/m^3)	Averaging Period
Nitrogen Dioxide (NO_2)	40	Annual mean
	200	1-hour mean (not to be exceeded on more than 18 occasions per annum)
Particulate Matter (PM_{10})	40	Annual mean
	50	24-hour mean (not to be exceeded on more than 35 occasions per annum)
Particulate Matter ($PM_{2.5}$)	20	Annual mean

Table B: Human Health Relevant Exposure

AQAL Averaging Period	AQALs Should Apply At	AQALs Should Not Apply At
Annual mean	Building facades of residential properties, schools, hospitals etc.	Facades of offices Hotels Gardens of residences Kerbside sites
24-hour mean	As above together with hotels and gardens of residential properties	Kerbside sites where public exposure is expected to be short term
1-hour mean	As above together with kerbside sites of regular access, car parks, bus stations etc.	Kerbside sites where public would not be expected to have regular access

2.1.1 Statutory Nuisances

The Environmental Protection Act 1990[2] sets out provisions for the regulation of statutory nuisances. Section 79 sets out this statutory nuisance as, *'any dust, steam, smell or other effluvia arising on industrial, trade or business premises and being prejudicial to health or a nuisance'*.

Proposed developments which result in the introduction of future sensitive receptors are subject to the Agent of Change principle. This places responsibility on new developments to ensure potential interactions with the existing environment and operations are assessed and mitigated to minimise restrictions being placed on existing businesses.

[2] The Environmental Protection Act 1990. Available at http://www.legislation.gov.uk/ukpga/1990/43/contents.

2.2 Operational Phase Appraisal

A qualitative appraisal of the Site has been undertaken to assess the suitability of the design with regards to air quality.

A risk-based approach, supported by professional judgment, has been applied to assess local emission sources and identify any potential design constraints associated with the Site. A review of publicly available air quality datasets has been undertaken to estimate potential baseline conditions at the Site. The findings were used to determine whether further investigation into potential design constraints is warranted.

3.0 Baseline Environment

A review of both local and national datasets has been undertaken to characterise the baseline environment. Whilst pollutant concentrations monitored during 2020 and 2021 (i.e. affected by the COVID-19 pandemic) are expected to be atypical and not representative of the local environment, they have been presented for completeness.

3.1 Air Quality Management Areas

MC, in fulfilment of statutory requirements, has conducted an on-going exercise to review and assess air quality within their administrative area. The latest publicly available report is the 2024 Annual Status Report (ASR)[3].

MC currently has four Air Quality Management Areas (AQMAs) (areas of known sensitivity) declared within its administrative area, all for exceedances of the annual mean NO_2 AQAL at locations of relevant public exposure. The nearest AQMA to the Site is the 'Rainham AQMA' located approximately 1km south of the Site.

3.2 Air Quality Monitoring

3.2.1 Automatic Monitoring

MC presently undertake automatic air quality monitoring at two locations in their administrative area – one 'roadside' location and one 'rural' location. Both are affiliated with Defra's UK Automatic Urban and Rural Network (AURN).

From review, the 'CHAT' monitor is located approximately 2.8km southwest of the Site. The details and results from the monitor are presented in Table C and Table D respectively, whilst its location is illustrated in Figure A.

Table C: Automatic Monitoring Sites: Details

Site ID	Site Type	NGR (m)		Approx. Distance to Site (m)
		X	Y	
CHAT	Roadside	577437	166993	2,800

Table D: Automatic Monitoring Sites: Results

Site ID	Year	PM_{10}		NO_2	
		Annual Mean Concentration (µg/m³)	Number of Daily Means >50µg/m³ (35 permitted)	Annual Mean Concentration (µg/m³)	Number of 1-hour Means >200µg/m³ (18 permitted)
CHAT	2019	23.0	14	23.4	0
	2020	22.0	7	18.4	0
	2021	17.0	0	19.0	0
	2022	18.0	5	17.0	0
	2023	15.4	0	17.5	0

[3] Medway Council, 2024 Air Quality Annual Status Report, June 2024.

As presented in Table D, annual mean PM_{10} and NO_2 concentrations at monitor 'CHAT' have been well-below (i.e. <75%) the respective AQALs during the period presented.

Further, 1-hour mean NO_2, and 24-hour mean PM_{10} concentrations have been compliant with the respective short-term AQALs during the period presented.

3.2.2 Passive Diffusion Tube Monitoring

Passive NO_2 diffusion tube monitoring is currently undertaken by MC across their administrative area. The details and results of the monitoring locations relevant to the Site are presented in Table E and Table F respectively, whilst their locations are illustrated in Figure A. All monitoring data presented has been ratified by MC.

Table E: Diffusion Tube Monitoring Sites: Details

Site ID	Site Type	NGR (m)		Within an AQMA?	Distance to the Site (m)
		X	Y		
DT01	Roadside	581568	165952	Yes	1,100
DT05	Roadside	577426	166506	Yes	2,950
DT09	Roadside	577434	166993	Yes	2,800
DT15	Roadside	581709	165922	Yes	1,180
DT16	Roadside	581843	165886	Yes	1,270
DT17	Roadside	577768	166922	Yes	2,490
DT25	Roadside	577908	169285	Yes	2,780
DT26	Roadside	578007	169262	Yes	2,680
DT27	Roadside	577880	169319	Yes	2,820
DT56	Kerbside	581278	167682	No	85
DT57	Kerbside	581329	167640	No	55

Table F: Diffusion Tube Monitoring Sites: Results

Site ID	Annual Mean NO_2 Concentration ($\mu g/m^3$)				
	2019	2020	2021	2022	2023
DT01	39.3	30.5	32.6	34.9	31.3
DT05	30.3	23.8	24.7	25.3	23.4
DT09	24.5	18.0	16.8	20.8	17.7
DT15	30.8	25.3	29.2	30.2	27.3
DT16	24.2	18.6	21.5	20.6	19.5
DT17	38.8	31.2	34.1	34.8	30.9
DT25	35.8	29.1	27.9	29.7	26.4
DT26	24.4	19.0	20.5	19.9	17.5
DT27	34.1	26.6	31.4	27.3	26.9
DT56*	-	-	-	-	15.4
DT57*	-	-	-	-	-
Note: * New diffusion tube for 2023. DT57 has insufficient data capture to perform annualisation.					

As shown in Table F, all the considered monitoring sites recorded annual mean NO_2 concentrations below the AQAL (40µg/m^3) during the period presented.

The majority of monitors presented are located at roadside locations within AQMAs, where elevated pollutant concentrations are anticipated. By comparison, the Site is set away from major A-roads in a background setting and therefore lower concentrations at the Site would be anticipated. Monitors DT56 and DT57 were installed during 2023 and are more representative of the Site given their proximity. The 2023 annual mean NO_2 concentration at DT56 is well-below (i.e. <75%) the AQAL.

The empirical relationship given in Defra's LAQM.TG22[4] states that exceedances of the 1-hour mean AQAL for NO_2 is unlikely to occur where annual mean concentrations are <60µg/m^3. This indicates that an exceedance of the 1-hour mean AQAL was unlikely to have occurred at the above diffusion tube monitors for the period assessed.

3.3 Defra Mapped Background Concentrations

Defra maintains a nationwide model of existing and future background air quality concentrations at a 1km grid square resolution. The data sets include annual average concentration estimates for NO_2, PM_{10} and $PM_{2.5}$ using a reference year of 2021 (the year in which comparisons between modelled and monitored concentrations are made).

The Defra mapped annual mean background concentrations for a base year of 2023 are presented in Table G for the grid squares which cover the Site.

Table G: 2023 Defra Mapped Background Pollutant Concentrations

Grid Square (X, Y) (m)	Annual Mean Concentration (µg/m^3)		
	NO_2	PM_{10}	$PM_{2.5}$
580500, 167500	11.6	10.9	6.8
581500, 167500	10.9	10.3	6.5
580500, 166500	12.3	11.2	7.1
581500, 166500	11.6	10.9	6.9
AQAL	***40***	***40***	***20***

All of the mapped background concentrations presented are well-below (i.e. <75%) the respective annual mean AQALs.

3.4 Summary

Baseline conditions at the Site are anticipated to be well-below the respective AQALs and are therefore considered suitable for the proposed residential use.

[4] Local Air Quality Management Technical Guidance (TG22), Published by Defra in partnership with the Scottish Government, Welsh Government and Department of Agriculture, Environment and Rural Affairs Northern Ireland. August 2022.

4.0 Operational Phase Appraisal

A review of satellite imagery and publicly available information was undertaken to identify the extent of localised emissions sources in close proximity to the Site. The details of identified local emission sources (potential constraints) relative to the Site are presented in Table H, whilst their locations are presented in Figure A.

Table H: Potential Constraints

Source ID	Source Description	Emissions Type	Approximate Distance from the Site (m)	Key Constraint?
ES1	Chatham Main Line	Rail	<10	No – In accordance with Defra's LAQM.TG22, the railway line is not specified as being heavily trafficked with diesel passenger trains and therefore does not warrant further consideration.
ES2	A2 London Road - Single carriageway A-road	Road	770	No – The Site is sufficiently setback from the A road. Further, monitored NO_2 concentrations within the Rainham AQMA located on the A2 London Road are below the annual mean AQAL.
ES3	A289 Yokosuka Way – Dual carriageway A-road	Road	830	No – The Site is sufficiently setback from the A road.
ES4	Motney Hill Water Treatment Works – Southern Water Services	Industrial & Odour	1,550	No – Given the distance and orientation relative to the prevailing wind in the UK (i.e. the Site is 1.5km upwind of ES4), emissions from ES4 are not likely to represent a key design constraint. Furthermore, there is existing residential development between the Site and ES4.
ES5	Medway Maritime Hospital	Industrial	2,900	No – Given the separation distance any emissions from ES5 are not likely to represent a key design constraint. Furthermore, there is existing residential development between the Site and ES5.

Figure A: Baseline Review

5.0 Recommended Future Assessment

Any future planning application for the Site would be supported by an air quality assessment. In accordance with the MC's Air Quality Planning Guidance[5], any development at the Site would be classified as a 'major development'. A detailed air quality assessment, inclusive of dispersion modelling and an Emissions Mitigation Assessment would therefore be required.

The Emissions Mitigation Assessment includes calculating the operational emission impact of any development at the Site over a 5-year period (termed 'Damage Cost Calculation'). The monetary amount determined informs the extent of required mitigation.

The assessment would need to consider local sensitivities, including AQMAs and nearby designated ecological sites (as required) (see Figure B). It is likely to include a detailed road traffic emissions assessment.

[5] Medway Council, Air Quality Planning Guidance, March 2016, revised November 2021.

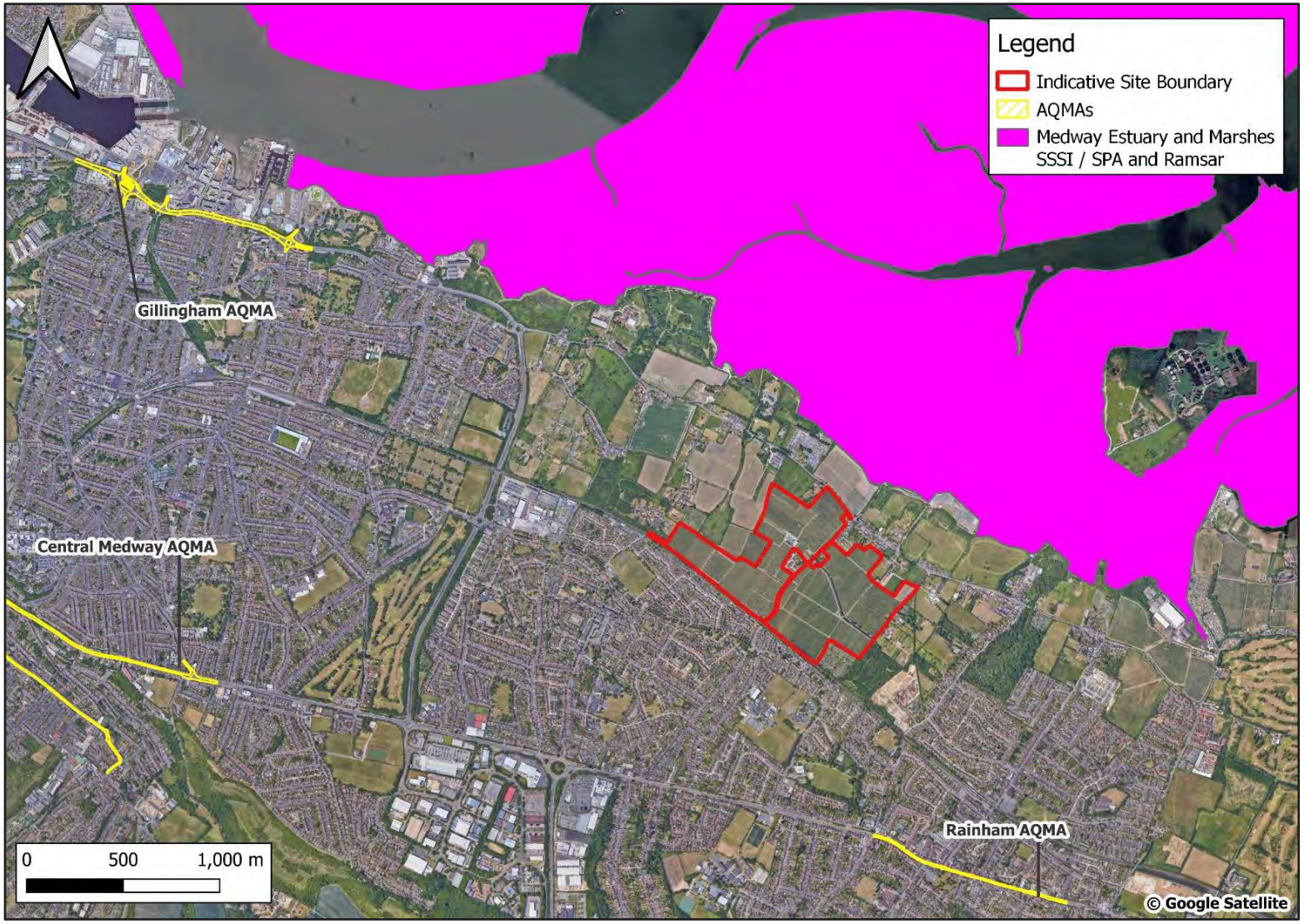
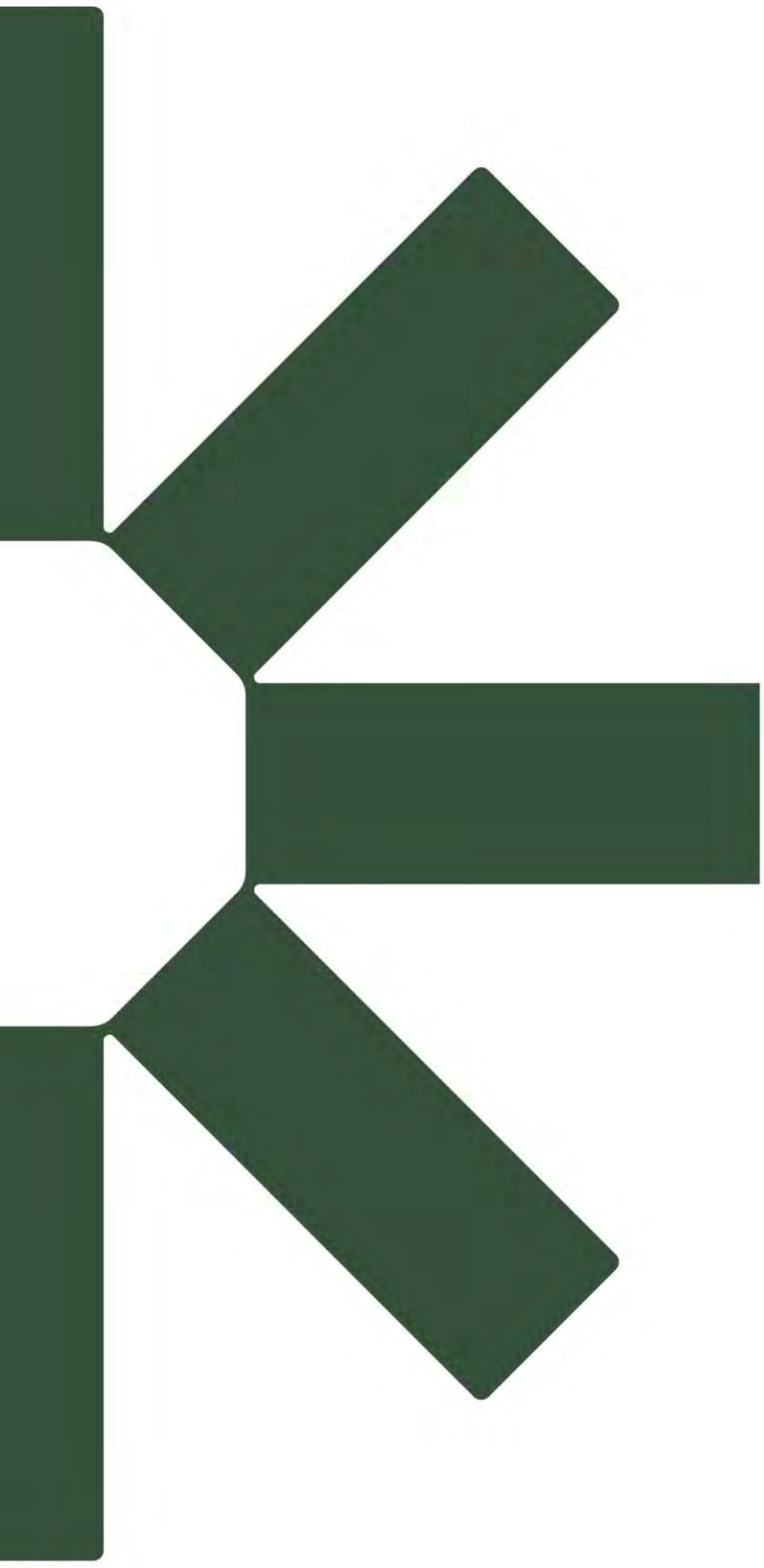


Figure B: Sensitivity of Local Surroundings

6.0 Summary

Following review of publicly available datasets and local sources of emissions, the Site is found to be suitable for the potential residential-led mixed-use scheme and air quality does not present a constraint to development.

Notwithstanding, an assessment of air quality should be undertaken during the planning application process. This would explore interactions with existing and proposed receptors. The methodology should be agreed with statutory consultees at an appropriate time to ensure it meets regulatory expectations.



Making Sustainability Happen

Appendix I

Noise Assessment

Land Promotion Noise Impact Assessment

Rainham Parkside Village, Gillingham

Esquire Developments Ltd.
Longfield, Kent

Prepared by:

SLR Consulting Limited

3rd Floor, Brew House, Jacob Street, Tower Hill,
Bristol, BS2 0EQ

SLR Project No.: 416.065887.00001

Client Reference No: 134209

8 April 2025

Revision: 03

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	12/02/2025	Vince Taylor MIOA	Steve Skingle MIOA	Steve Skingle MIOA
02	25/02/2025	Vince Taylor MIOA	Steve Skingle MIOA	Steve Skingle MIOA
03	08/04/2025	Vince Taylor MIOA	Steve Skingle MIOA	Steve Skingle MIOA

Basis of Report

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Appendices

1.0 Introduction

Esquire Developments Ltd. has appointed SLR Consulting Limited to undertake a noise feasibility study to inform the proposed development masterplan for residential use at Rainham Parkside Village.

It is understood that the previous application at the site was refused by Medway Council and the subsequent Appeal dismissed by the Inspector.

The previous scheme comprised 1,250 homes with a primary school, local centre and community facilities.

Esquire Developments Ltd. acquired the Site in summer 2024. The emerging Medway Local Plan Reg 18 went out for consultation across the summer, and therefore Esquire Developments are compiling evidence in support of the site for future development.

The proposed scheme comprises 750 homes, including 30% affordable housing, of which a proportion shall be temporary accommodation. Provision of land for an all through school (primary, secondary, and SEND provision). Healthcare Hub, Children's Nursery, Local Centre (including convenience retail). Provision of later living accommodation. Community Hub, Improved sustainable public transport, significant green infrastructure and improved access to the Riverside Country Park.

Whilst reasonable effort has been made to ensure that this report is easy to understand, it is technical in nature. To assist the reader, a glossary of terminology has been included in **Appendix A**.

A statement of the competence of the engineers associated with this assessment constituting an SQA (Suitability Qualified Acoustician) is enclosed in **Section 14.0.**

2.0 Site Description

The Site is located in Lower Rainham, at land off Pump Lane, and between the Lower Rainham Road (B2004) and the Rainham to Gillingham train line.

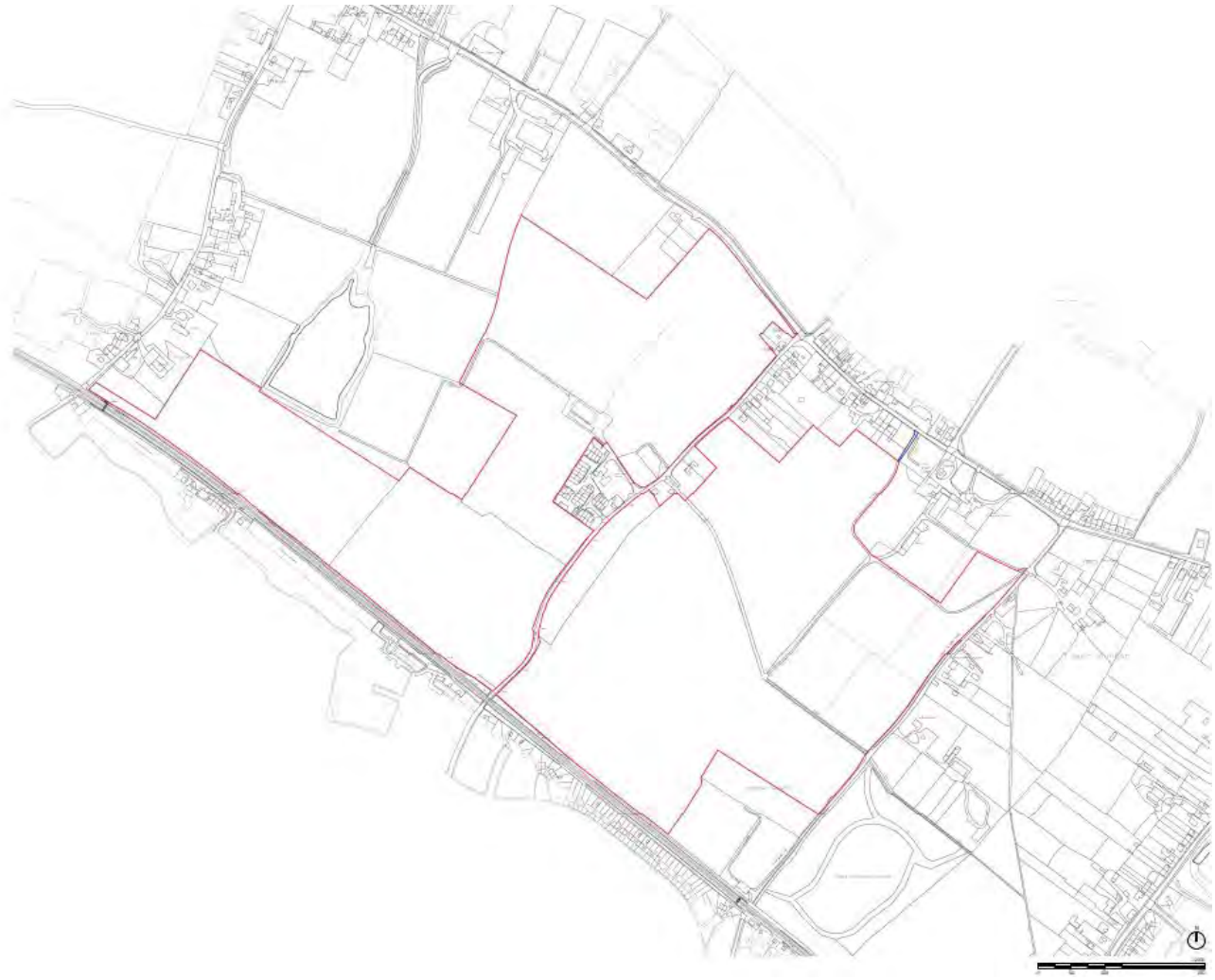
This report has been prepared to assess the existing noise climate at the Proposed Development Site to determine the suitability of the Site regarding the proposed uses.

Suitability of the Site will be determined through the use of Local and National Policy and Guidance relevant to the development proposals.

2.1 Proposed Development

Figure A below details the Proposed Development Site location and surrounding area context.

Figure A: Site Plan and Context



3.0 Planning and Noise Guidance

3.1 Noise Policy Statement for England (NPSE)

Inter alia, the NPSE *"seeks to clarify the underlying principles and aims in existing policy documents, legislation and guidance that relate to noise".* The aims and this statement apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise. These noise types are qualified from the NPSE as follows:

- "Environmental noise" includes noise from transportation sources.
- "Neighbour noise" includes noise from inside and outside people's homes; and
- "Neighbourhood noise" which includes noise arising from within the community such as industrial and entertainment premises, trade and business premises, construction sites and noise in the street.

The Statement sets out the long-term vision of the Government's noise policy, which is to *"promote good health and a good quality of life through the effective management of noise within the context of policy on sustainable development."*

It is recognised that the statement expresses the long-term desired policy outcome, whereby using the words of "promote" and "good" recognises that it is not possible to have a single objective noise-based measure that is either mandatory or applicable to all sources of noise in all situations.

The concept of the "effective management of noise" applies to all types of noise and that the solution could be more than simply minimising the noise.

The NPSE provides definitions of health and quality of life as follows:

> *"2.12 The World Health Organisation defines health as a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity, and recognises the enjoyment of the highest attainable standard of health as one of the fundamental rights of every human being.*
>
> *2.13 It can be argued that quality of life contributes to our standard of health. However, in the NPSE it has been decided to make a distinction between "quality of life" which is a subjective measure that refers to people's emotional, social and physical wellbeing and "health" which refers to physical and mental wellbeing.*
>
> *2.14 It is recognised that noise exposure can cause annoyance and sleep disturbance both of which impact on quality of life. It is also agreed by many experts that annoyance and sleep disturbance can give rise to adverse health effects. The distinction that has been made between 'quality of life' effects and 'health' effects recognises that there is emerging evidence that long term exposure to some types of transport noise can additionally cause an increased risk of direct health effects. The Government intends to keep research on the health effects of long-term exposure to noise under review in accordance with the principles of the NPSE."*

The policy promotes the effective management and control of noise, within the context of Government policy on sustainable development and includes three aims to:

- 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 improvements of health and quality of life.

This Statement adopts established concepts from toxicology that are currently being applied to noise impacts. This concept details effect levels, at which an exposure may be classified into a specific category. The classification categories as detailed within the NPSE are as follows:

- No Observed Effect Level (NOEL) - the level below which no effect can be detected. Below this level no detectable effect on health and quality of life due to noise can be established;
- Lowest Observable Adverse Effect Level (LOAEL) - the level above which adverse effects on health and quality of life can be detected; and
- Significant Observed Adverse Effect Level (SOAEL) - the level above which significant adverse effects on health and quality of life occur.

The second aim of the NPSE to *"mitigate and minimise adverse impacts on health and quality of life"* refers to the situation where noise impact lies somewhere between the LOAEL and SOAEL. This requires that all reasonable steps are taken to mitigate adverse effects on health and quality of life while accounting for the guiding principles of sustainable development. The NPSE states *"this does not mean that such adverse effects cannot occur".*

In defining the upper limit of SOAEL the NPSE states that *"it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all source of noise in all situations. Consequently, the SOAEL is likely to be different for difference noise sources, for different receptor and at different times…"*. Consequently, values of SOAEL will differ between sources and situations.

3.2 National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) was introduced by The Department for Communities and Local Government in March 2012, with the latest revision dated December 2024 (as amended February 2025).

The NPPF defines the Government's planning policies for England and sets out the framework, within which local authorities must prepare their local and neighbourhood plans, reflecting the needs and priorities of their communities. The Government's stated purpose in producing the NPPF was to streamline policy, so the planning process is less restrictive, to give a more easily understood framework for delivering sustainable development.

Under the heading of Section 15 conserving and enhancing the natural environment, the NPPF states the requirement to prevent unacceptable environmental impacts including noise:

> *"187. 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…"*

Paragraph 198 of the NPPF further provides commentary on noise as follows:

> *"198. 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*[72]
>
> *b) identify and protect tranquil areas which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason…"*
>
> *Foot Note 72 - See Explanatory Note to the Noise Policy Statement for England (Department for Environment, Food & Rural Affairs, 2010).*

The NPPF acknowledges that there is a host of existing sources of national and international guidance which can be used, in conjunction with the Framework, to inform the production of Local Plans and decision making.

3.2.1 Agent of Change Principle

The Agent of Change principle has been defined in recent revisions of the NPPF to explain that new development should not result in unreasonable restrictions being placed on existing and established businesses. The onus for mitigation for any new development has been required to lie with the developer, rather than the business.

Paragraph 200 of the NPPF has been noted to state:

> *"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."*

This principle has been deemed necessary to follow for the proposed residential development near to existing commercial sources. The guidance has provided that residential development should be suitably mitigated against commercial uses, to support the coexistence of noise-sensitive and noise-generating uses.

3.3 Planning Practice Guidance – Noise (PPGN)

PPGN provides guidance on how planning can manage potential noise impacts in new development, with interpretation and implementation of planning policy contained in the NPPF and NPSE. This was introduced in 2014 with the most recent version issued in July 2019.

The PPGN noise exposure hierarchy table introduces a new threshold of the NOAEL no observed adverse effect level, being between the NOEL and LOAEL and where the noise has no adverse effect where exposure to it does not cause any change in behaviour, attitude or other physiological response.

The PPGN clearly established whether noise is likely to be a concern, following policy statements and requirements of the NPSE and NPPF with additional categorisation and guidance as follows:

> *"At the lowest extreme, when noise is not perceived to be present, there is by definition no effect. As the noise exposure increases, it will cross the 'no observed effect' level. However, the noise has no adverse effect so long as the exposure does not cause any change in behaviour, attitude or other physiological responses of those affected by it. The noise may slightly affect the acoustic character of an area but not to the extent there is a change in quality of life. If the noise exposure is at this level no specific measures are required to manage the acoustic environment.*
>
> *As the exposure increases further, it crosses the 'lowest observed adverse effect' level boundary above which the noise starts to cause small changes in behaviour and attitude, for example, having to turn up the volume on the television or needing to speak more loudly to be heard. The noise therefore starts to have an adverse effect and consideration needs to be given to mitigating and minimising those effects (taking account of the economic and social benefits being derived from the activity causing the noise).*
>
> *Increasing noise exposure will at some point cause the 'significant observed adverse effect' level boundary to be crossed. Above this level the noise causes a material change in behaviour such as keeping windows closed for most of the time or avoiding certain activities during*

periods when the noise is present. If the exposure is predicted to be above this level the planning process should be used to avoid this effect occurring, for example through the choice of sites at the plan-making stage, or by use of appropriate mitigation such as by altering the design and layout. While such decisions must be made taking account of the economic and social benefit of the activity causing or affected by the noise, it is undesirable for such exposure to be caused.

At the highest extreme, noise exposure would cause extensive and sustained adverse changes in behaviour and / or health without an ability to mitigate the effect of the noise. The impacts on health and quality of life are such that regardless of the benefits of the activity causing the noise, this situation should be avoided."

It is qualified further to the above statements that the word "level" does not necessarily refer to a single value of noise exposure and that several factors may need to be considered to determine what noise would amount to an adverse or significant adverse effect. Specifically stating:

"Although the word 'level' is used here, this does not mean that the effects can only be defined in terms of a single value of noise exposure. In some circumstances adverse effects are defined in terms of a combination of more than one factor such as noise exposure, the number of occurrences of the noise in a given time period, the duration of the noise and the time of day the noise occurs."

PPGN also provides additional guidance in what is required from the agent of change following circumstances described by Paragraph 187 of the NPPF. It states that the agent of change must "define clearly the mitigation being proposed to address any potential significant adverse effects that are identified".

The guidance also provides there are four broad types of mitigation including:

- *"engineering: reducing the noise generated at source and/or containing the noise generated;*
- *layout: where possible, optimising the distance between the source and noise-sensitive receptors and/or incorporating good design to minimise noise transmission through the use of screening by natural or purpose built barriers, or other buildings;*
- *using planning conditions/obligations to restrict activities allowed on the site at certain times and/or specifying permissible noise levels differentiating as appropriate between different times of day, such as evenings and late at night, and;*
- *mitigating the impact on areas likely to be affected by noise including through noise insulation when the impact is on a building."*

Use of toxicology thresholds of NOEL, LOAEL and SOAEL for the assessment of noise impacts is reinforced within PPGN, which includes a noise exposure hierarchy table to define human perception at these effect levels, as titled *"when noise could be a concern"* and shown below in Table A.

Table A: Planning Practice Guidance Noise Exposure Hierarchy Table

Response	Example of Outcomes	Increasing Effect Level	Action
NOEL – No observed effect level			
Not present	No effect	NOEL	No specific measures required
No observed adverse effect level			
Present and not intrusive	Noise can be heard but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not	No Observed Adverse Effect	No specific measures required

Response	Example of Outcomes	Increasing Effect Level	Action
	such that there is a perceived change in the quality of life.		
LOAEL – Lowest Observed Adverse Effect Level			
Present and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, 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 sleep disturbance. Affects acoustic character of the area and creates a perceived change in quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
SOAEL – Significant Observed Adverse Effect Level			
Present and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Present and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

3.4 ProPG Planning and Noise (2017)

ProPG: Planning & Noise – Professional Practice Guidance on Planning & Noise, New Residential Development was developed by a working group consisting of representatives from the Association of Noise Consultants (ANC), Institute of Acoustics (IOA), Chartered Institute of Environmental Health (CIEH) and practitioners from a planning and local authority background.

This guidance was made effective in May 2017 to provide a recommended approach to the management of noise within the planning system in England. It has drawn upon legislation, guidance and standards available at the time of publication to reflect the Noise Policy Statement for England (NPSE), the National Planning Policy Framework (NPPF) and Planning Practice Guidance (PPG-Noise) and other authoritative sources of guidance.

ProPG has been noted to advocate two sequential stages covering an 'initial noise risk assessment' at Stage 1 then a 'full assessment' at Stage 2 considering four key elements.

- Element 1 – Good acoustic design process.
- Element 2 – Internal noise level guidelines.
- Element 3 – External amenity area noise assessment.
- Element 4 – Assessment of other relevant issues.

ProPG has provided a summary of internal noise level guidelines as part of Stage 2 assessment requirements. These guidelines values have been derived from British Standard BS 8233:2014 *Guidance on Sound Insulation and Noise Reduction for Buildings* (BS 8233) and *The World Health Organisation Guidelines for Community Noise* (1999).

Table B: ProPG Internal Ambient Noise Levels, dB

Activity	Location	07:00 to 23:00 dB $L_{Aeq,16h}$	23:00 to 07:00 dB $L_{Aeq,8h}$
Resting	Living room	35	-
Dining	Dining room/area	40	-
Sleeping (daytime resting)	Bedroom	35	30 45 dB $L_{Amax(F)*}$
*Not normally exceeded more than 10 times per night.			

3.4.1 Application for Commercial Sources

The scope of ProPG considers new residential development that will be predominantly exposed to airborne noise from transportation sources. In cases where the Site is exposed to noise of an industrial and/or commercial nature, this shall be considered at Stage 1 of the ProPG approach.

ProPG guidance has advocated the methodology of BS 4142[1] in establishing the impact of industrial and/or commercial sound. If rated as lower than adverse subject to context following BS 4142, its contribution may be included in the degree of risk established for the Site. If considered to be dominant, such as being rated at least adverse subject to context following BS 4142, then the ProPG risk assessment should not be applied to the industrial or commercial noise component. In low-risk cases a subjective judgement of dominance has been advocated as sufficient, based on the audibility of the industrial and/or commercial sound.

[1] British Standard BS 4142:2014 +A1:2019 Methods for Rating and Assessing Industrial and Commercial Sound.

The assessment method of ProPG has been applied to the residential development to understand the risks and design requirements to mitigate the proposal from environmental noise sources. Where commercial impacts have been viewed satisfied by the design of the scheme and remain less than adverse including context, then the ProPG Stage 1 risk assessment allows that any commercial impacts may be included within its assessment.

> *"In the special case where industrial and/or commercial noise is present on the Site but is "not dominant" (i.e. where the impact would be rated as lower than adverse (subject to context) if a BS4142:2014 assessment was to be carried out), its contribution may be included in the noise level used to establish the degree of risk in Stage 1 and may also be included in the consideration of Stage 2 Element 2 Internal Noise Level Guidelines (and if included, this should be clearly stated)."*

3.4.2 Application for Overheating Ventilation

ProPG Stage 2 Element 1 considers internal noise levels guidelines where those criteria of Table B would occur under building ventilation conditions. There is a further need to address if the overheating ventilation strategy impacts on indoor acoustic conditions or if a more-informed strategy is required in the mitigation of overheating.

The AVO Guide[2] was published for application by practitioners when following Stage 2 Element 1 of good acoustic design within ProPG. This extended guidance document has aimed to assist designers to adopt an integrated approach to the acoustic design within the context of the ventilation and thermal comfort requirements.

Overheating has since been regulated by Requirement O1 of the Building Regulations[3] whereby upper noise guidance limits have been advocated at night in an overheating ventilation condition, generally 10 dB higher than those within Table B. Appropriate considerations to achieve these levels has been further advised by industry guidance[4].

3.5 BS 6472-1:2008

The British Standard 6472-1:2008 Guide to evaluation of human exposure to vibration in buildings – Part 1 vibration sources other than blasting (BS 6472-1), offers guidance on vibration criteria within buildings. Vibrations may cause reactions ranging from 'just perceptible', through 'concern' to 'alarm' and 'discomfort'. The subjective response varies widely and is a function of situation, information, time of day and duration.

BS 6472-1 provides guidance using the metric of Vibration Dose Values (VDVs), correlating human exposure to where complaints are probable. VDVs may be used to assess the severity of impulsive and intermittent vibration, such as experienced from blasting at quarries or from rail traffic, and steady vibration such as from a busy road or fixed plant. The adoption of the VDV parameter is based on social studies undertaken in the 1980s and early 1990s into human response to vibration. BS 6472 requires that the VDV is determined for 16-hour daytime (07:00 – 23:00) and 8-hour night-time (23:00 – 07:00) periods.

VDV is measured in each of the three whole-body orthogonal axes and the maximum from the three axes is used. Where the vibration conditions are constant or regularly repeated throughout the day and assessment is based on measured data, only one representative period need be measured, and the 16-

[2] ANC/IOA Acoustic Ventilation and Overheating Residential Design Guide, Version 1.1. Association of Noise Consultants & Institute of Acoustics, January 2020.

[3] The Building Regulations 2010 Requirement O1: Overheating mitigation, 2021 Edition. As applicable to a building notice or full planning application submitted after 15th June 2022.

[4] ANC/IOA Approved Document O Noise Guide, Version 1.1. Association of Noise Consultants & Institute of Acoustics, November 2024.

hour daytime (or 8-hour night-time) overall VDV level may be calculated from the shortened measurement using appropriate formulae.

For the assessment of building vibration with respect to human response, the predicted or measured VDV are compared to thresholds within Section 6 of BS 6472-1. When the appropriately weighted vibration measurements or predictions have been used to derive the VDV for day or night at the relevant places of interest, their significance in terms of human response for people in those places can be derived; against the probability that the VDV might result in adverse comment by those who experience it.

Table C: Various Probabilities of Adverse Comment within Residential Buildings

Place and Time	Low Probability of Adverse Comment, VDV $ms^{-1.75}$	Adverse Comment Possible, VDV $ms^{-1.75}$	Adverse Comment Probable, VDV $ms^{-1.75}$
Residential Buildings 16 h day	0.2 – 0.4 [a]	0.4 – 0.8	0.8 – 1.6 [b]
Residential Buildings 8 h night	0.1 – 0.2 [a]	0.2 – 0.4	0.4 – 0.8 [b]
[a] Adverse comment is not expected below this range. [b] Adverse comment is very likely above this range.			

For measurements in accordance with BS 6472-1, considering internal excitation, the measurement position should be made at or near to where most adverse comment would be generated. This measurement position is generally comparable to an equivalent entry point into the proposed receiver space, where the distance from the proposed source and the proposed foundation structure is similar.

It can therefore interpreted as per the guidance that a “low probability of adverse comment” can be considered the LOAEL, and conversely the SOAEL is interpreted as an “adverse comment probable”.

3.6 Local Planning Policy

3.6.1 Emerging Medway Council Local Plan Reg 18

The emerging Medway Council Local Plan Reg 18 went out for consultation in summer 2024 and it is expected to be published in Q2 2025.

3.6.2 Appeal Decision

On 3 November 2021, the appeal (reference APP/A2280/W/20/3259868) for the development of the site (application reference MC/19/1566) was dismissed. In the Appeal Decision notice, the following comments were made in relation to noise.

In Section 10.9, it states regarding the consideration of construction that ‘*A Construction Environment Management Plan is necessary in order to minimise the impacts of construction on local residents, local businesses and those travelling through the area, and to protect the environment*’.

The noise level for future occupiers of the site is considered in Section 10.13, where it states that ‘*It is necessary to secure an acceptable environment for future occupiers/users of the development hereby permitted in terms of noise and vibration from transportation sources*’.

Further details relating to construction noise, and noise and vibration during the operational phase are given in the Pre-Commencement / Reserved Matters Stage conditions, which are as follows:

Construction

10) '*The CEMP shall include, but is not limited to, the following matters: iv) measures, including noise control devices, to mitigate the impact of noise at nearby residential premises*.'

Noise/Vibration

19) *With regard to any residential accommodation in any phase, including the extra care and care home accommodation, the Reversed Matters details submitted pursuant to condition 1 for that phase shall include a scheme of acoustic protection. The scheme shall accord with BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings…*'

20) *Prior to commencement of the development on the nursery/primary school hereby permitted, a scheme of acoustic protection for occupiers of the building in relation to noise from transport sources shall be submitted to and approved in writing by the local planning authority. The scheme shall be designed in accordance with Building Bulletin 93 Acoustic Design of Schools: Performance Standards. All works, which form part of the approved scheme, shall be completed before any part of the development within that phase is occupied and shall thereafter be maintained in accordance with the approved details*.

21) *The details submitted pursuant to each Reserved Matters application for any phase shall include a scheme to protect development within that phase from vibration arising from the adjacent railway line. All works, which form part of the approved scheme, shall be completed before any part of the development within that phase is occupied and shall thereafter be maintained in accordance with the approved details*.

4.0 Environmental Sound Survey

To establish the prevailing sound climate at the Site, a baseline survey was undertaken over a weekday and weekend period between 30th January 2025 and 6th February 2025.

The period of surveying incorporated weather conditions that were conducive for sound surveying works.

Temperatures ranged from -3 to 8 °C, average wind speeds remained below 5 m/s and there was an absence of any significant rain.

4.1 Equipment and Measurements

Sound pressure level and vibration measurements were carried out using the following equipment listed in Table D, conforming to Class 1 acoustic accuracy for sound level meters and matched calibrators.

The sound level meters were calibrated before the measurements using the handheld acoustic calibrator and the calibration was checked upon completion of the survey. No significant drift was observed with calibration offsets of ≤ 0.4 dB. The calibration chain of equipment has been maintained to traceable national standards, no greater than one year for sound calibrators and two years for sound level meters and seismograph.

Table D: Sound and Vibration Monitoring Equipment

Location	Description	Manufacturer	Type	Serial Number	Laboratory Calibration Date	Certificate Number
NMP1	Sound Level Meter	RION	NL-52	976174	02/032023	TCRT23/1199
	Pre-Amplifier	RION	NH-25	76291		TCRT23/1199
	½” Microphone	RION	UC-59	12067		TCRT23/1199
	Calibrator	RION	NC-74	34478298	02/01/2024	TCRT24/1002
NMP2	Sound Level Meter	Cirrus	CR:171B	G400055	23/10/2024	224983
	Pre-Amplifier	Cirrus	MV:200F	12896F		224983
	½” Microphone	Cirrus	MK:224	216095D		224983
	Calibrator	Cirrus	CR:515	99952	23/09/2024	226232
	Outdoor kit	Cirrus	MK172	2553	23/10/2024	224984
NMP3	Sound Level Meter	Cirrus	CR:171B	G300561	09/05/2024	213962
	Pre-Amplifier	Cirrus	MV:200F	11887F		213962
	½” Microphone	Cirrus	MK:224	217658A		213964
	Calibrator	Cirrus	CR:515	87922	2024-09-23	222845
	Outdoor kit	Cirrus	MK172	2312	2024-05-09	213963
NMP4	Sound Level Meter	Cirrus	CR:171B	G304870	2024-04-23	213251
	Pre-Amplifier	Cirrus	MV:200F	13628F		213251
	½” Microphone	Cirrus	MK:224	217206A		213251
	Calibrator	Cirrus	CR:515	81268	2025-01-08	229806
	Outdoor kit	Cirrus	MK:170	213251	2024-04-24	213252
VMP1	Vibration Seismograph	Vibrock	V9000	2190	24/04/2024	4242190

Sound level measurements at Locations NMP 1-3 were viewed to be a directly representative of proposed key site boundaries. Measurements were recorded in free field conditions, as measured in-situ 1.5 m above local ground level.

The monitoring protocol consisted of substantially unattended readings over the survey period, with nominal 1-hour attendances at the start and end of the monitoring periods, covering nominally 3-7 days.

The following sound level indices have been reported at 15-minute intervals in decibels (dB):

- $L_{Aeq,T}$ – The A-weighted equivalent continuous noise level over the measurement period.
- $L_{A90,T}$ – The A-weighted noise level exceeded for 90% of the mea/surement period.
- $L_{A10,T}$ – The A-weighted noise level exceeded for 10% of the measurement period.
- $L_{Amax(F)}$ – The maximum A-weighted noise level during the measurement period.

Full survey results describing unattended monitoring periods have been provided for the above-listed metrics within **Appendix B**.

Figure B: Monitoring Locations and Site Context

4.2 Sound Climate

The sound climate is controlled toward the site boundaries by road and rail traffic to the northeast and southwest boundaries respectively as would be expected in the context.

Towards the site interior the sound climate is less significantly controlled by anthropomorphic sound sources with a greater tendency to ecological biophonic sound sources.

4.3 Baseline Noise Survey

The single figure free field noise indices recorded have been presented in graphical format within **Appendix B**. The dataset is large, and therefore relevant summary results of the survey have been summarised in Tables E to Table J for the key survey periods.

Table E: Noise Survey Summary-Daytime NMP1

Daytime (07:00 – 23:00) T = 16-hours	**Log Average dB $L_{Aeq,T}$**	**10th Highest dB $L_{Amax(F)}$**	**Median dB $L_{A90,T}$**	**Median dB $L_{A10,T}$**
Thursday 30th January; 14:30 - 22:45	55	83	41	48
Friday 31st January; 07:00 - 22:45	55	85	42	50
Saturday 1st February; 07:00 - 22:45	54	81	38	48
Sunday 2nd February; 07:00 - 12:00	46	70	40	47

Table F: Noise Survey Summary-Night-time NMP1

Night-time (23:00 – 07:00) T = 8-hours	**Log Average dB $L_{Aeq,T}$**	**10th Highest dB $L_{Amax(F)}$***	**Median dB $L_{A90,T}$**	**Median dB $L_{A10,T}$**
Thursday 30th January / Friday 31st January; 23:00 – 06:45	50	77-80	34	39
Friday 31st January / Saturday 1st February; 23:00 – 06:45	48		24	33
Saturday 1st February / Sunday 2nd February; 23:00 – 06:45	47		30	37

Table G: Noise Survey Summary-Daytime NMP2

Daytime (07:00 – 23:00) T = 16-hours	Log Average dB $L_{Aeq,T}$	10th Highest $L_{Amax(F)}$	Median dB $L_{A90,T}$	Median dB $L_{A10,T}$
Thursday 30th January; 13:27 - 22:45	62	84	48	67
Friday 31st January; 07:00 - 22:45	63	86	46	68
Saturday 1st February; 07:00 - 22:45	63	90	44	68
Sunday 2nd February; 07:00 - 22:45	62	89	43	67
Monday 3rd February; 07:00 - 22:45	63	84	44	67
Tuesday 4th February; 07:00 - 22:45	63	91	46	67
Wednesday 5th February; 07:00 - 22:45	63	84	48	68
Thursday 6th February; 07:00 - 10:45	65	83	47	69
Thursday 30th January; 13:27 - 22:45	62	84	48	67

Table H: Noise Survey Summary-Night-time NMP2

Night-time (23:00 – 07:00) T = 8-hours	Log Average dB $L_{Aeq,T}$	10th Highest dB $L_{Amax(F)}$	Median dB $L_{A90,T}$	Median dB $L_{A10,T}$
Thursday 30th January / Friday 31st January; 23:00 - 06:45	57	78-86	35	48
Friday 31st January / Saturday 1st February; 23:00 - 06:45	55		27	51
Saturday 1st February / Sunday 2nd February; 23:00 - 06:45	55		33	53
Sunday 2nd February / Monday 3rd February; 23:00 - 06:45	58		33	52
Monday 3rd February / Tuesday 4th February; 23:00 - 06:45	57		34	51
Tuesday 4th February / Wednesday 5th February; 23:00 - 06:45	58		35	52
Wednesday 5th February / Thursday 6th February; 23:00 - 06:45	59		30	54
Thursday 30th January / Friday 31st January; 23:00 - 06:45	57		35	48
Friday 31st January / Saturday 1st February; 23:00 - 06:45	55		27	51

Table I: Noise Survey Summary-Daytime NMP3

Daytime (07:00 – 23:00) T = 16-hours	Log Average dB $L_{Aeq,T}$	10th Highest $L_{Amax(F)}$	Median dB $L_{A90,T}$	Median dB $L_{A10,T}$
Thursday 30th January; 13:15 - 22:45	48	80	43	49
Friday 31st January; 07:00 - 22:45	48	78	44	50
Saturday 1st February; 07:00 - 22:45	47	73	40	49

Table J: Noise Survey Summary-Night-time NMP3

Night-time (23:00 – 07:00) T = 8-hours	Log Average dB $L_{Aeq,T}$	10th Highest dB $L_{Amax(F)}$	Median dB $L_{A90,T}$	Median dB $L_{A10,T}$
Thursday 30th January / Friday 31st January; 23:00 - 06:45	42	63-76	34	41
Friday 31st January / Saturday 1st February; 23:00 - 06:45	39		27	41
Saturday 1st February / Sunday 2nd February; 23:00 - 06:45	42		33	44

Night-time maximum noise event levels have been established from the period 23:00 – 07:00, with maxima reviewed in terms of 2-minute dB $L_{Amax(F)}$ values, with the 10th highest reported per a published, statistical approach[5] .

[5] Paxton, B. Conlan, N et al. Assessing L_{max} for residential developments: the AVO guide approach. Proceedings of the Institute of Acoustics. Volume 41, Part 1, 2019.

4.4 Baseline Vibration Survey Results

The dataset is large, and therefore relevant VDV summary results of the survey have been summarised Table K below for the key survey periods.

Measurements were undertaken onto existing hard packed ground adjacent to the existing railway, and weighted to ensure firm contact.

This is considered broadly reflective of potential vibration within the ground floor of future proposed development dwellings for the purposes of preliminary assessment.

Table K: Vibration Survey Summary-Daytime VMP1

Time Period	VDV X Axis $ms^{-1.75}$	VDV Y Axis $ms^{-1.75}$	VDV Z Axis $ms^{-1.75}$	VDV Maximum (Any Axis) $ms^{-1.75}$
Daytime (07:00 – 23:00) T = 16-hours				
30th Jan 2025	0.004	0.006	0.025	0.025
31st Jan 2025	0.004	0.006	0.031	0.031
1st Feb 2025	0.005	0.007	0.028	0.028
2nd Feb 2025	0.005	0.007	0.008	0.008
Night-time (23:00 – 07:00) T = 8-hours				
30th Jan 2025- 31st Jan 2025	0.005	0.007	0.023	0.023
31st Jan 2025-1st Feb 2025	0.004	0.006	0.023	0.023
1st Feb 2025-2nd Feb 2025	0.006	0.008	0.024	0.024

The findings of this data are discussed in assessment of Section 12.0.

5.0 Agent of Change

5.1 Qualitative Review

The site lies in a predominantly suburban/rural area, commercial and industrial activity in the surround is decidedly limited.

5.2 The “Agent of Change” principle

The 'agent of change principle' encapsulates the position that a person or business (ie the agent) introducing a new land use is responsible for managing the impact of that change.

The practical issue that has arisen on occasion is that in circumstances where residents move into an area where noise is emanating from a long-standing commercial operation, this may have resulted in the Local Planning Authority (LPA) imposing additional licensing restrictions on the established licensed and/or permitted business.

NPPF provides guidance on the implementation of an 'agent of change' principle’ to place the responsibility for noise management measures on the incoming 'agent of change' in this instance the developer for which this application is being made.

SLR noted during site review the following commercial enterprises in the surround.

- Bath Panel Store - Bathroom Supply Shop, Unit 1, Manor Farm, Lower Rainham Rd, Gillingham ME7 2XH

The majority of noise associated with this business will be related to customer parking, which is unlikely to be significantly different to road traffic noise towards the north east of the site. This can be readily controlled by suitable building fabric design measures. Upon review of noise measurements undertaken at NMP3 it is evident the noise climate remains controlled by Lower Rainham Road, towards the north west of the site.

- Waterside Cars Ltd -Cherry Orchard Farm, Lower Bloors Ln, Rainham, Gillingham ME8 7TR

Waterside Cars appears to be a dealership for premium vehicles rather than a commercial workshop of any significant intensity in respect to noise generation the business is located south east of the proposed devleopment site in relative proximity to Lower Rainham Road. Based on observation and visual inspection during the noise survey visit, the noise climate is expected to remain controlled in this location by Lower Rainham Road.

It is additionally considered unlikely that either business is at risk commercially though complaint of nuisance. It is anticipated the proposed acoustic mitigation measures to control road and rail traffic noise levels at new dwellings and screening afforded to external amenity spaces (discussed later in this report) will also likely be sufficient such that the agent of change (proposed dwellings) would in all likelihood not constitute a risk to the commercial operations of the adjacent businesses upon any occupation via complaint.

6.0 ProPG Assessment

The assessment method of ProPG has been applied to the development to understand the risks and design requirements to mitigate the proposal from environmental transportation noise sources.

6.1 Stage 1 – Initial Risk Assessment

The environmental survey provided in Section 4.0 of this report has been utilised to inform a baseline noise modelling exercise for the site.

6.2 Noise Model

The sound predictions for the assessment have been undertaken using a proprietary software-based noise model, CadnaA®, which implements the full range of UK calculation methods. The calculation algorithms set out in ISO 9613-2:2024, Calculation of Road Traffic Noise 1988 (CTRN) and Calculation of Rail Noise 1995 (CRN) have been used and the model assumes:

- A ground absorption factor of 0.5 (mixed ground conditions).
- Relative humidity of 70%.
- Air temperature of 10°C.
- Contour Data to include OS terrain data.
- A reflection factor of 2.

The effects of the existing noise climate impacting the proposed new scheme have been considered for this assessment.

With reference to the criteria set out in this document and the noise modelling inputs and impacts summarised, building evaluation maps have been produced for the daytime and night-time periods.

The scale has been set to be directly comparable with the negligible, low, medium and high risk of adverse effects categories set out within ProPG and has been used to provide a hierarchy of noise mitigation measures required to protect residences from road traffic noise.

The ProPG noise maps have been presented for the daytime and night-time, in Figure C and Figure D respectively. It should also be noted that ProPG does not define specific threshold boundaries for negligible, low, medium, and high noise risk. However, SLR have defined 10 dB delineations with reference to the scale provided in ProPG[6].

It should be noted that the noise maps have been modelled at 1.5 m height above ground during the daytime to represent the height of a ground floor living room window or garden, and 1.5 m above the ground during the night-time to represent the height of a ground floor apartment window should apartments be propsoed.

[6] Page 09 ProPG Stage 1 Figure 1 Initial Site Noise Risk Assessment

Table L: ProPG Noise Risk Hierarchy

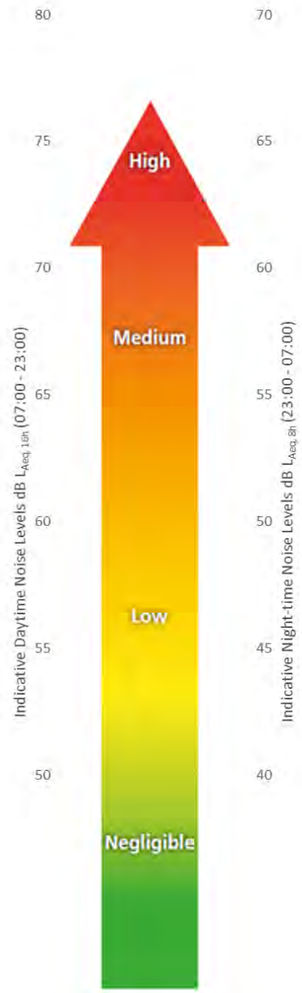
ProPG Noise Risk Assessment	Potential Effect Without Noise Mitigation	Pre-Planning Application Advice
	 Increasing risk of adverse effect	High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed acoustic design statement (ADS). Applicants are strongly advised to seek expert advice. As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development. At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development.
	No adverse effect	These noise levels indicate that the development site is likely to be acceptable from a noise perspective, and the application need not normally be delayed on noise grounds.
Indicative noise levels should be assessed without inclusion of the acoustic effect of any scheme specific noise mitigation measures. Indicative noise levels are the combined free-field noise level from all sources of transport noise and may also include industrial/commercial noise where this is present but is “not dominant”. An indication that there may be more than 10 noise events at night (23:00 – 07:00) with $L_{Amax(F)}$ > 60 dB means the site should not be regarded as negligible risk.		

Figure C: Prediction of Road and Rail Noise Levels – Day $L_{Aeq,16h}$

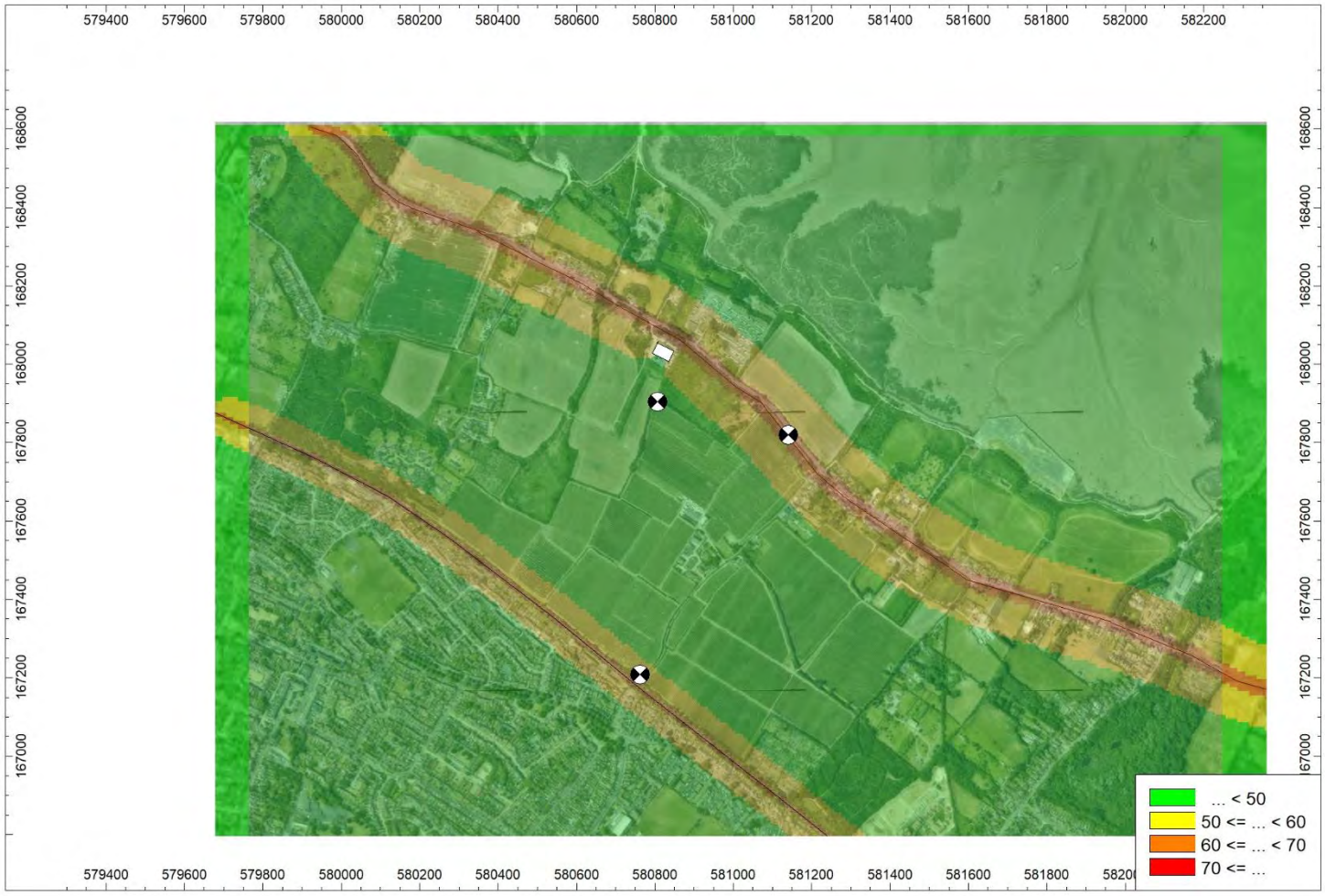
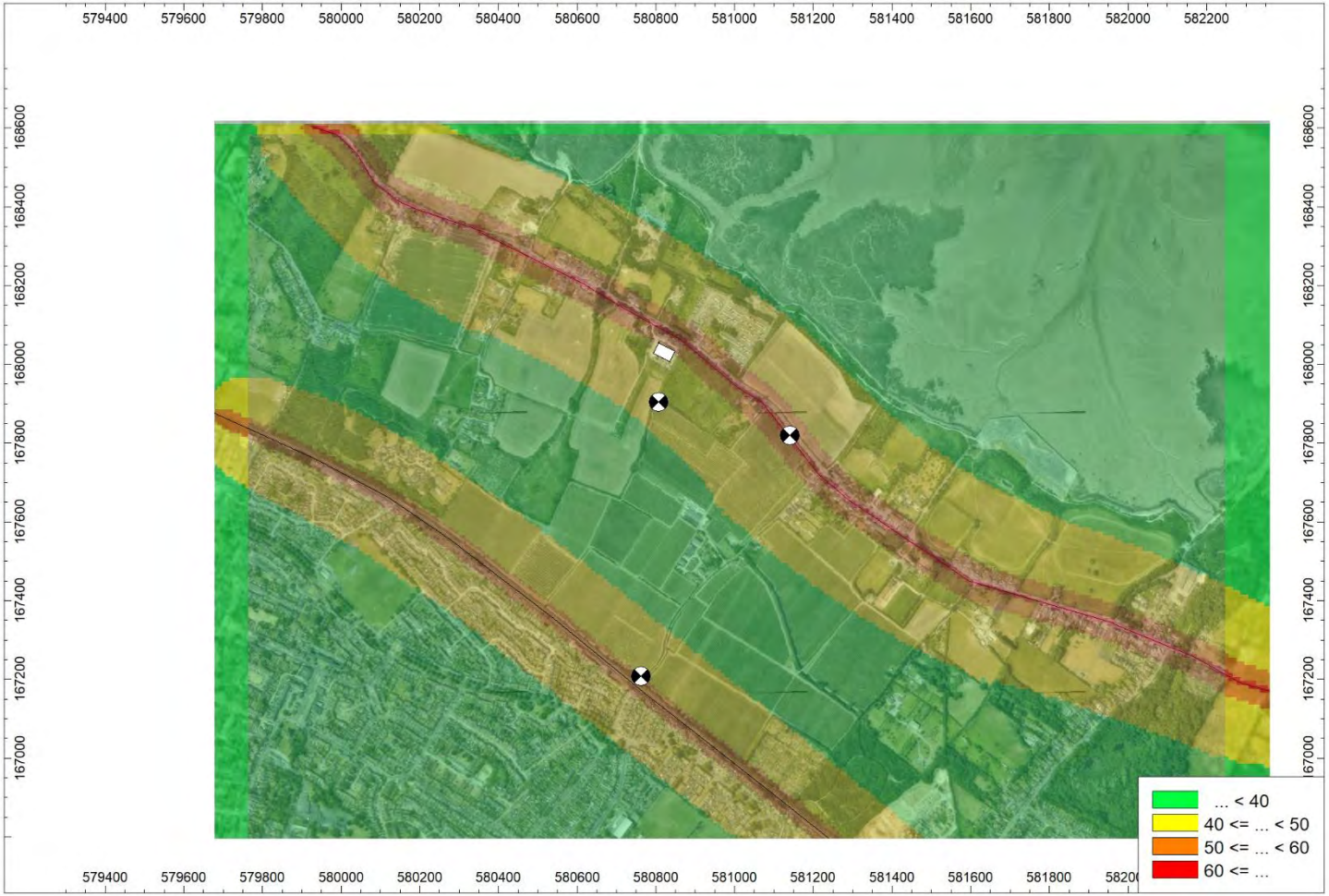


Figure D: Prediction of Road and Rail Traffic Noise Levels – Night $L_{Aeq,8h}$



The initial site noise risk assessment has been categorised as below.

The most prevalent environment noise source across the site was noted from transportation sources, particularly road and rail traffic.

The initial Site noise risk assessment has been categorised in the worst-case.

Within 25 meters of the railway, and circa 50m from Lower Rainham Road In an unmitigated configuration for daytime these areas of the site fall into moderate noise risk, where ProPG States:

> *"As noise levels increase, the site is likely to be less suitable from a noise perspective and any subsequent application may be refused unless a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised, and which clearly demonstrate that a significant adverse noise impact will be avoided in the finished development."*

Maximum noise levels because of rail movements along the southeastern boundary of site, were noted at up to 86 dB $L_{Amax(F)}$ with a frequency of occurrence of at least 10 times a night.

On this basis facades proposed in the immediate vicinity could be considered high risk without a good acoustic design process where for High Noise Levels ProPG states:

> *"High noise levels indicate that there is an increased risk that development may be refused on noise grounds. This risk may be reduced by following a good acoustic design process that is demonstrated in a detailed ADS. Applicants are strongly advised to seek expert advice."*

It should however be considered that the greater majority of site falls into low noise risk, with the maximum noise levels reported potentially negating categorisation as negligible.

Where these areas of the site fall into low noise risk, ProPG States:

> *"At low noise levels, the site is likely to be acceptable from a noise perspective provided that a good acoustic design process is followed and is demonstrated in an ADS which confirms how the adverse impacts of noise will be mitigated and minimised in the finished development."*

It is thus clear that noise levels range largely dependent on distance to key transportation sources.

Masterplan design development could readily be undertaken taking consideration of creating standoffs to key transportation noise sources, and avoid devleopment in areas considered moderate noise risk.

Generally, noise levels across the wider site are not a limitation on potential residential use, **provided** a supportive ADS (Acoustic Design Statement) is provided, and maximum noise levels incident to the southwest are mitigated for dwelling occupants.

A scheme of considerate acoustic design is required in the context.

It has been considered that the remainder of this document constitutes an ADS statement which has been produced by an SQA (suitably qualified acoustician) suitable for promotion of the proposed development site.

6.3 Stage 2 –Preliminary Recommendations

Transport noise modelling assumptions have been validated by measurement; the masterplan development process should include the below considerations to optimise the site masterplanning exercises in any assessment undertaken in accordance with ProPG Stage 2 within a formal ADS when submitted to support a planning application.

6.3.1 Good Acoustic Design Process

ProPG has stated it is imperative for acoustic design to be considered at an early stage of the development control process, in order to avoid unreasonable acoustic conditions and prevent those which are unacceptable.

The main requirements for Good Acoustic Design have been explained relative to transport sources incident on the site. However, some indicative measures may also be particularly relevant and useful to control of industrial and commercial noise source ingress into the site if later found to be a significant contribution to the existing noise climate.

6.3.1.1 Barriers, Bunds, Terrace Barrier Blocks

Multi storey “barrier” apartment blocks or terrace town housing may afford opportunities to screen dwellings within the interior of the site, with sensitive rooms also orientated toward the site interior protecting occupants when resting or sleeping via screening.

6.3.1.2 Standoff distances

These are viewed to be opportunities for creating substantial standoff of distance value for acoustic mitigation purposes in those areas identified as having a noise climate more influenced by road or rail traffic noise sources.

SUDs, other drainage features, and communal amenity space (which is less sensitive acoustically) could be afforded to those areas deemed less acoustically suitable for dwellings towards key noise sources in the vicinity i.e. toward the south west and north east of the site boundaries with transportation noise sources.

SLR note proposals retain a green area along the railway line to the southwest, this provides an embedded buffer to the residential development parcels in this zone, this is indicated in the excerpt below from the Rainham Parkside Village Development Framework Document (DFD):

Figure E: Buffer Zone – Woodland Walk and Neighbourhood Green

In addition, an area of allotments is afforded to the south west also as indicated in the below excerpt.

Figure F: Buffer Zone – Allotments

As such, the number of residential parcels that could be affected by noise generated by the railway has been reduced in comparison to the previous layouts. It can be seen that embedded mitigation is at the forefront of present design proposals.

6.3.1.3 Topography

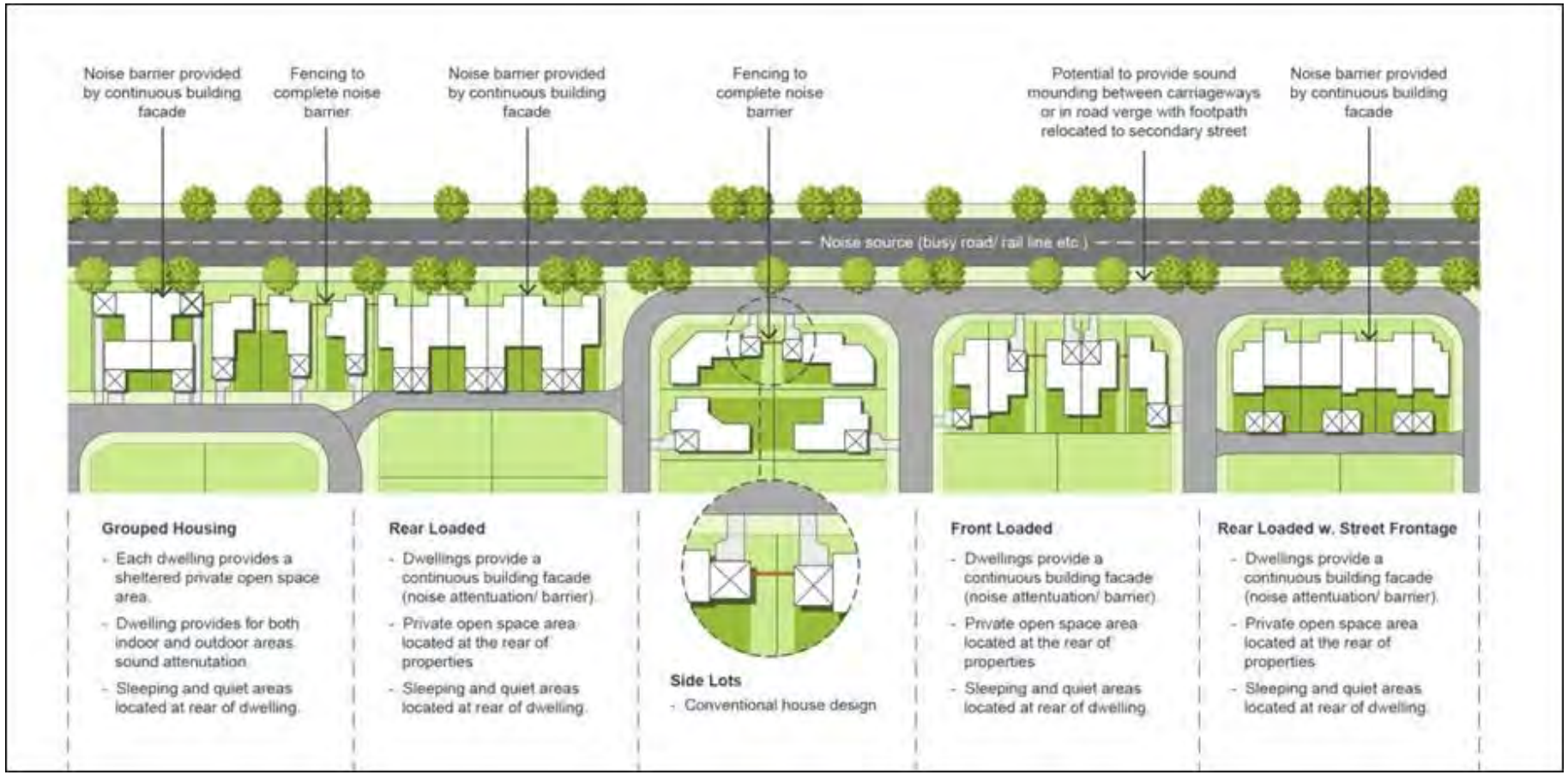
There are not any specific topographical benefits presently.

6.3.1.4 Plot Orientation

Orientation has been viewed primarily useful to afford best optimisation to sensitive rooms within apartments or houses which are generally on external elevations.

Examples of acoustically optimised master planning concepts, and dwelling optimisation are provided below. The massing layout is based on guidance from Camden Development Control but provides useful site layout insights in other contexts.

Figure G: Site Massing Optimisation



6.3.1.5 Internal layout

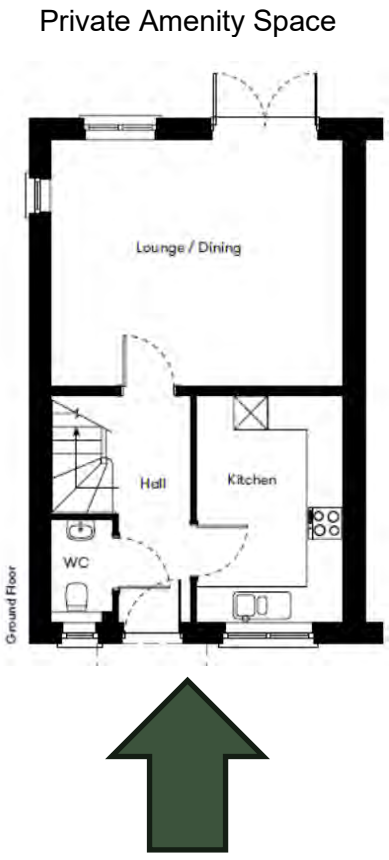
It has been acknowledged that 'good acoustic design' generally requires facing less-sensitive rooms (i.e., kitchens and bathrooms) towards the dominant incident noise sources. However, this is not always achievable.

Nonetheless in key apartments or dwelling houses adjacent or close to transport links, it is preferred that bedrooms are not positioned to be orientated on the highest noise exposed façade, and window areas along this façade should be reduced relative to other less noise exposed orientations.

Amenity spaces should also be orientated away from transportation noise sources

Consideration should next be given to acoustic design of building fabric, glazing and ventilation associated with apartments, as well as assessment of noise levels in any private amenity spaces associated with the development.

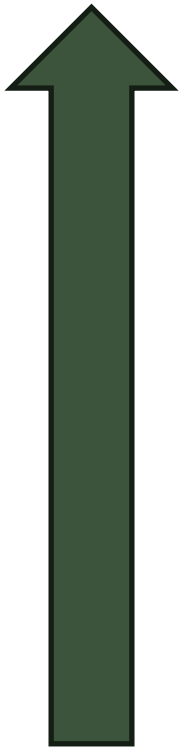
Figure H: Dwelling Internal Layout Optimization



6.3.1.6 Hierarchy of Mitigation

The table below outlines a summary hierarchy of the order of implementation for acoustic mitigation measures in the context of residential master planning.

Table M: Summary of mitigation – Implementation Hierarchy

Order of Preference	Mitigating Measure	Summary Measure
Highest  Lowest	Investigate feasibility of reducing existing noise levels and relocating existing noise sources.	Reduce at source
	Maximise spatial separation between noise source(s) and receiver(s).	Attenuate through the propagation path
	Use existing structures and land topography to screen the proposed development from existing and significant source(s) of noise.	
	Incorporate new structures (such as noise barriers) into the scheme to cause a physical interruption between the significant noise source(s) and receiver(s). This also includes the placement of less-noise sensitive buildings closer to the noise source(s) where possible in the scheme.	
	Use the proposed layout of the scheme to reduce noise propagation across the site.	Mitigate at the receiver
	Use the orientation of noise-sensitive buildings to reduce the noise exposure of noise-sensitive rooms (e.g. bedrooms and living rooms) by facing them away from the significant source(s) of noise.	
	Use the acoustic design of the building to mitigate noise to acceptable levels inside, through façade design and insulation.	

7.0 Building Evaluation

ProPG has provided a summary of internal noise level guidelines as part of Stage 2 assessment that have been replicated in Table B of this assessment. The method adopted to achieve suitable internal noise level guidelines has been based upon information contained within the recent ANC publication, The AVO Guide. This has provided an approach as to how the competing aspects of thermal and acoustic comfort can be managed and has been written to reflect the requirements of ProPG and overarching planning requirements.

Given the initial and worst-case site risk assessment, it has been considered commensurate to judge suitable façade components in terms of glazing and ventilation components, where calculations have been carried out in single figure decibel values.

This preliminary assessment assumes traditional cavity masonry façade constructions typically achieving or exceeding a sound insulation performance of 55dB R_w.

Such constructions would be particularly pertinent to dwellings located toward the south east of the development site, in other areas lightweight construction may also be suitable.

The range of whole dwelling ventilation strategies for development has been taken from The Building Regulations 2010 Approved Document F Volume 1: Dwellings Requirement F1: Means of Ventilation (2021 edition) (ADF). An outline appraisal for suitability has been provided using Table B2 of the AVO Guide.

Table N: Outline Appraisal of Different Ventilation Strategies – All dwellings and elevations

Ventilation strategy according to ADF	Typical windows and vent	Higher acoustic performance windows and vent
Intermittent extract fans	X	✓
Passive stack ventilation	X	✓
Continuous mechanical extract (CMEV)	X	✓
Continuous mechanical supply and extract with heat recovery (MVHR)	X	✓

It should be considered as part of good acoustic design that minimising the quantity of penetrations through a building façade should be favoured in higher noise level areas. An intermittent mechanical extract ventilation strategy has been outwardly assumed for the development in context to limited site-wide, external noise risk.

For any mechanical ventilation system, and for any MVHR system (if preferred), the ventilation routes should face away from the incident noise source as far as possible. This provision would reduce noise travelling into the habitable room via the ductwork. Where this is not possible the intake and exhaust ducts should incorporate appropriate attenuation to control intrusive noise to meet the criteria in Table B.

The following specifications in Table Ohave been based on calculations to the detailed method in section G2.1 of BS 8233 (equivalent to the method in BS EN 12354-3). With reference to night time noise modelling presented in Figure D which represents the period of worst case noise exposure.

The general development location requirements for each glazing and ventilation acoustic requirement have been presented in Figure C and Figure D for day (living rooms), and night (bedrooms) respectively.

An adaptation term has been provided for all specifications following the method ISO 717-1:2020. This has included a comparison between the normalised, A-weighted sound spectrum for day and night against the adaptation curves for C_{tr}. The relevant spectrum adaptation term C_{tr} has been confirmed by visual comparison as relevant to the measured spectra, or as otherwise listed suitable to measured sources from Table A1 of ISO 717-1.

Table O: Minimum Specifications for Windows and Ventilators

Model Devised Noise Exposure Level Category *	Daytime External Noise Level, dB $L_{Aeq,\ 16\ hour}$ (07:00-23:00)	Night-Time External Noise Level, dB $L_{Aeq\ 8\ hour}$ (23:00 - 07:00 hours)	10th Highest Maximum Noise Levels at Night dB L_{AFmax}	Glazing Performance Requirement dB $R_w + C_{tr}$	Suitable Background Ventilation Modes and Performance Requirements Preliminary Overheating Control Design Guidance	
					Suitable Modes and Description	Ventilator $D_{ne,w}+C_{tr}$ (If applicable)
Moderate	≥60 and ≤69	≥50 and ≤59	≥65 and ≤ 85	31 – 36	Good (BS8233:2014) internal acoustic conditions will be achieved with windows closed, and provision of acoustic trickle vents, WHV or MVHR for background ventilation. (Systems 1-4) Opening of windows should however be avoided a to cool an overheating room and ensure the acoustic requirement of Approved Document O will also be met. At the lower end of this range, passively attenuated solutions such as acoustic louvres and passively attenuated air input pathways may be acoustically feasible as a method to control overheating. However, opening of windows should be avoided for noise levels in this range during the night. Alternative overheating control strategies should be devised that are not dependant on opening windows, such as adiabatic cooling, boosted mechanical purge extraction or MVHR.	39 – 45 Specialist through window or wall trickle ventilator
Low	≥50 and ≤60	≥40 and ≤50	≥55 and ≤65	25 Standard Thermal Double Glazing	Reasonable (BS8233:2014 +5dB) internal acoustic conditions will be achieved with windows partially open for background ventilation assuming 15dB insertion loss for a partially open window. Good (BS8233:2014) internal acoustic conditions will be achieved with windows closed, and provision of acoustic trickle vents, WHV or MVHR for background ventilation. When windows are open to ventilate rooms or to cool an overheating room the acoustic requirement of Approved Document O will also be met assuming 10dB insertion loss for a more fully open window.	27 Standard through window trickle ventilators.
Negligible	< 50	< 40	≤55	Standard Thermal Double Glazing Nominal 20 dB	Good internal acoustic conditions will be achieved with windows closed or open. When windows are open to background ventilation or to cool an overheating room, acoustic conditions will be in line with BS8233:2014.	Nominal 17dB trickle vent.

* This specification has relied upon no greater than 1 No. ventilators per habitable room.

Design calculations should be repeated once the site massing is better understood, as it is likely beneficial screening will be afforded by the developed masterplan, particularly toward the site interior. for dwellings are understood, the above calculations should be revisited in respect of the specific design intent for dwellings, nonetheless the above specifications demonstrate that

8.0 External Amenity Noise Level Assessment

8.1 Amenity Overview

According to BS8233 and ProPG, private amenity spaces i.e. gardens, should have an area within them such that daytime noise levels are below the lower guideline value of ≤ 50 dB $L_{Aeq,16h}$ to provide a suitably protected, quiet and tranquil outdoor space, and not exceed an upper limit of 55dB $L_{Aeq,16h}$.

However, it is not necessarily essential for an entire garden to achieve this, nor is it often practical in environments with relatively high prevailing noise levels to do so.

As such, it is normally considered reasonable to provide mitigation measures to protect external amenity where external noise levels would otherwise exceed 50-55 dB $L_{Aeq,16h}$ on the basis that part of the garden will achieve these levels.

Presently masterplan information is not sufficient to undertake detailed modelling exercises, this should be undertaken once indicative site massing is understood.

Consideration for mitigation via building massing, and garden fence screening can then be accommodated into the master planning exercise.

Typically, close boarded fencing of minimum 10kg/m^2 can have useful acoustic effects for screening of private amenity areas.

9.0 School Proposal

Presently design information in relation to the school proposal is limited. For new schools, the ANC IOA design guide publication, in support of BB93, provides guidelines for acceptable external noise levels based on baseline conditions. This characterizes at the lowest extreme, "*no specific measures are likely to be necessary to protect buildings or external areas from external noise"*. For new schools, an upper limit should be considered at the boundary of external areas used for formal and informal outdoor teaching and recreation.

Higher levels of noise may be possible for the placement of school buildings but will require mitigation to building envelope sound insulation or screening.

The LOAEL and SOAEL for transportation noise affecting the new school site will typically be set as follows, where the daytime period 07:00 – 19:00 reasonably encapsulates the school day typically defined between 08:00 – 17:00 from referenced guidelines.

Table P: Criteria to define transportation noise exposure LOAEL and SOAEL values for new school site.

Impact Magnitude	Effect Level Day 07:00 – 19:00 dB $L_{Aeq,T}$
LOAEL	45
SOAEL	60

At such time as a formal application is made, a detailed acoustic assessment should be undertaken to inform the specific design proposals.

On view of the baseline noise modelling undertaken the noise levels about the school site are anticipated to sit between the LOAEL and SOAEL, and as such a design statement is likely required to support a detailed planning application for the school site.

In generally terms where external noise levels exceed circa 53dBA during the school day, (which may be the case in some areas of the school site as presently proposed), natural ventilation via opening windows will likely not be suitable.

Common alternative methods of ventilation for constrained teaching spaces could include hybrid mechanical or NVHR (natural ventilation and heat recovery) or other acoustically attenuated natural ventilation such as via wind catchers.

In summary, educational development is considered entirely feasible within the site subject to a specific detailed design statement.

10.0 Mechanical Plant and Services Atmospheric Design Noise Limits

10.1 Overview-Plant and Services Provision

The proposed development apartments may incorporate building services plant which can potentially vent to external locations or have externally located plant items.

These can produce audible noise and may require noise control measures (and potentially vibration control dependent on location).

Therefore, to protect existing sensitive receptors in the vicinity the below noise design limits should be adhered to for residential plant and services servicing houses and apartment, (such as air source heat pumps (ASHP), Mechanical Ventilation and Heat Recovery (MVHR) or Mechanical Extract Ventilation (MEV).

Based upon review of the survey data captured, survey location NMP3 is indicated as having typically lower median dB L_{A90} background sound levels these are summarised in the table below.

Table Q: Typical Background Sound Levels

Period	Modal dB $L_{A90,T}$
Daytime 07:00-23:00	40
Night-time 23:00-07:00	27

It is therefore proposed to control daytime building plant and services emissions as per the table below across the site to protect residential amenity at the nearest existing dwelling outside the propsoed development site.

10.2 Plant and Services Design Limits-Existing Apartments and Dwellings

Table R: Derived BS4142 Plant and Services Design Noise Limits

Period	Proposed External $_{Ar,\ r}$ dB BS4142 Design Criterion
Daytime 07:00-23:00	40
Night-time 23:00-07:00	27

Therefore, based on the guidance provided, if plant and services were designed to the above design rating level limit would constitute a “Low Impact” when assessed in accordance with BS4142 on the basis that:

> *“The lower the rating level is relative to the measured background sound level, the less likely it is that the specific sound source will have an adverse impact or a significant adverse impact. Where the rating level does not exceed the background level, this is an indication that the specific sound source will have a low impact, depending on the context“*

It is also reasonable to establish limits for plant and services associated with the development to the new dwellings proposed.

On this basis consideration is given to the internal ambient noise level limits from BS8233:2014 of 35 dB and 30 dB $L_{Aeq,T}$ day and night respectively. Generally, receptors will be internal to existing apartments particularly at night.

Assuming the worst case of an open window for background ventilation at existing apartments provides an insertion loss of 13dB, provided new noise sources are at least 5 dB below these levels internally impacts can be expected to be low in magnitude as experienced at sensitive receptors and in amenity areas external to dwellings.

On this basis the below limits have been suggested.

10.3 Plant and Services Design Limits-New Apartments

It is therefore proposed to control daytime building plant and services emissions as per the table below across the site to protect residential amenity at the nearest new apartment to plant locations.

Table S: Derived New Plant and Services Noise Limits

Period	Proposed External $_{Ar,\ r}$ dB BS4142 Design Criterion	Resultant Internal Noise Level in Proposed Apartment dB $_{Aeq,}$	Exceedance of BS8233:2014 Internal Ambient Noise Level Criterion dB	Impact Assessment
Daytime 07:00-23:00	43	30	-5	Low Impact
Night-time 23:00-07:00	38	25	-5	Low Impact

Therefore, based on the guidance provided, if plant and services were designed to the above design rating level limit would constitute a “Low Impact” when assessed in accordance with BS4142 and considering BS8233:2014. The external design rating level limits above are ‘free-field’ levels at any height above ground.

It applies to the overall cumulative operation of building services plant associated with the scheme without any specific tone or character. It must be considered that the above represents a cumulative rating level limit and therefore individual items of plant should be designed to provide sufficient margin below this for the cumulative level from all simultaneously operational plant to not exceed the above.

If the plant noise will contain specific tones or intermittent character, then further penalties should be applied as per the guidance in BS4142 during assessment.

11.0 Site Related Road Traffic Noise Assessment

At such time as transport modelling data associated with future proposals emerges, detailed assessment of traffic noise impact on the adjacent network associated with the proposed development will be warranted.

It is considered that any potential noise impacts related to road traffic Increases because of the development would be negligible and < 1 dB to remain of imperceptible difference where traffic on the adjacent road network could not increase by 25% because of the development.

This is however subject to further assessment at the appropriate time.

12.0 Baseline Vibration Risk Assessment

12.1 Groundborne Vibration

The measured vibration levels have been assessed against the guidance contained in BS6472 to determine the likely response of future occupants of the proposed dwellings. The vibration levels were measured at a position considered representative of the nearest proposed property to the line.

The guidance in BS6472 applies at the point of entry into a human receptor and not necessarily at the measurement position. It is therefore necessary to estimate the effect that the proposed dwellings will have on the magnitude of vibration at the point of entry to the human receptors as well as the effect of the additional distance between the proposed properties and the railway line than was the case during the measurement.

The measurement location was likely closer to the railway than the proposed development.

A function of distance attenuation would occur between free-field vibration levels shown in Table K in comparison to the building and room entry point for assessment. Due to distance attenuation, VDVs for assessment could be lower than measured in the free-field case.

For the assessment of vibration within buildings, there is another change that occurs with the properties of vibrations when they pass from the open ground into a building. The presence of the building foundations and response characteristics of the building provide a transfer function, typically as a function of frequency. In general terms, vibration levels reduce from the free-field situation into foundations of a building due to the change in medium from the soil type to the structure typically in the order of – 5 to – 10 dB considering a large masonry building on pile foundations. In general, a heavier building causes a greater coupling loss where the transmission factor is also dependant on the soil type.

Vibration levels further change with concrete floor heights in the order of – 1 to – 2 dB per floor and 6 dB within a room centre. The two factors apply as attenuation (e.g. both ground surface to foundation, floor-to-floor) and amplification (e.g. floor resonances) from the free-field measurement to inside a building, where the assessment of human response relates.

Any guideline values used to predict trends with vibration attenuation and amplification may not always be observed in practice. In the simplest of approximations, there could be no net effect for a transfer function when considering a typically sized, single-family dwelling.

However, a heavy and tall building would afford a greater coupling loss into the building, and furthermore per floor. Such generalisation does not negate the need for numerical modelling and particularly so where vibration could cause a concern.

The maximum VDV in any axis as summarised above is reproduced below and analysed further in Table O with reference to typical adverse comment thresholds for vibration as enclosed in Table C.

Table T: Probability of Adverse Comment Based on Free-Field Measurement

Location	Time	VDV $ms^{-1.75}$			Impact as defined by BS 6472-1
		X	Y	Z	
VMP1	16 h Day	0.005	0.007	0.031	Low probability of adverse comment

Location	Time	VDV $ms^{-1.75}$			Impact as defined by BS 6472-1
		X	Y	Z	
	8 h night	0.006	0.008	0.024	Low probability of adverse comment

The findings of this investigation have determined that vibration levels correlate to rail traffic activity where " low probability of adverse comment is expected" during day and at night, when considering any reasonable change in vibration that would occur from the placement of new building.

Consequently, there are no specific mitigation measures required to control incident vibration on the proposed development building.

13.0 Conclusion

This noise and vibration impact assessment has been prepared to inform land promotion for any proposed residential development at Rainham Parkside Village.

A preliminary qualitative review of potential Agent of Change commercial and industrial noise risk assessment has been undertaken, which would therefore indicate the proposed development is not expected to lead to complaints from future occupants in the context, and that no specific mitigation (beyond that warranted under GAD for dwellings) is required.

Stage 1 assessment in accordance with ProPG has provided that the site is influenced by road and rail traffic noise.

The initial site noise risk assessment has been categorised in the worst case as ‘moderate risk’ at the site boundary on the future occupants of the new noise sensitive development, with much of the interior of the site falling into “low” noise risk.

Stage 2 assessment in accordance with ProPG has reviewed a good acoustic design process, internal ambient noise levels, external amenity areas and other matters.

Commensurate design specifications have been established considering current industry guidance. It has been realised that suitable internal and external amenity standards can be readily achieved by the scheme.

On the basis that design guidance within this report has been adopted in any master planning exercises, it follows that any significant adverse noise impacts will be avoided in the finished development as to accord with overarching national and local planning requirements for new residential development.

A recommendation is made to the decision maker to consider much of the proposed development site to be suitable for residential devleopment, subject to suitable developed design which will be necessary to ensure that significant adverse effects will be avoided for the proposed dwellings by use of a commensurate scheme of control as outlined indicatively within this report.

14.0 Closure

The assessment has required a suitable level of technical ability and has been undertaken by a Suitably Qualified Person (SQP). An individual with all the following credentials has been considered a SQP for this assessment:

- Has a minimum of three years' verifiable experience (within the last five years) of providing noise impact assessments in planning. Such experience has clearly demonstrated a practical understanding of factors affecting acoustics in relation to the proposed development use and in the built environment in general, including acting in an advisory capacity to provide recommendations and design advice in planning, and;
- Holds a recognised acoustic qualification and membership of an appropriate professional body. The primary professional body for acoustics in the UK is the Institute of Acoustics.

This assessment has been led and managed by a SQP as defined above.

Where some elements of the assessment (e.g. measurements) have been carried out by an acoustician who does not meet the requirements above, this has been undertaken with the direct guidance and supervision of a SQP who has reviewed, agreed and overseen the measurement methodology and any results obtained.

The SQP confirms that the relevant measurements and calculations:

- Represent good industry practice in accordance with available guidance.
- Are appropriate given the development being assessed and scope of works proposed.
- Avoid invalid, biased and exaggerated claims.

The checker and author of this document confirm that they both comply with the definition of a SQP defined in this Section.

Regards,

SLR Consulting Limited

Vince Taylor, BSc. (Hons) MSc MIOA
Technical Director – Acoustics & Vibration

Steve Skingle, BSc. (Hons) PgDip MIOA MAES
Technical Director – Acoustics & Vibration

Appendix A Glossary of Terminology

Land Promotion Noise Impact Assessment

Rainham Parkside Village, Gillingham

SLR Project No.: 416.065887.00001

8 April 2025

The human ear can detect a very wide range of pressure fluctuations, which are perceived as sound. In order to express these fluctuations in a manageable way, a logarithmic scale called the decibel, or dB scale is used. The decibel scale typically ranges from 0dB (the threshold of hearing) to over 120dB. An indication of the range of sound levels commonly found in the environment is given in the following table.

Table A-1: Sound Levels Commonly Found in the Environment

Sound Level	Location
0 dB(A)	Threshold of hearing
20 to 30 dB(A)	Quiet bedroom at night
30 to 40 dB(A)	Living room during the day
40 to 50 dB(A)	Typical office
50 to 60 dB(A)	Inside a car
60 to 70 dB(A)	Typical high street
70 to 90 dB(A)	Inside factory
100 to 110 dB(A)	Burglar alarm at 1m away
110 to 130 dB(A)	Jet aircraft on take off
140 dB(A)	Threshold of Pain

Acoustic Terminology

dB (decibel) — The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (of 20 μPa).

dB(A) — A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.

$L_{Aeq, T}$ — $L_{Aeq, T}$ is defined as the notional steady sound level which, over a stated period T, would contain the same amount of acoustical energy as the A-weighted fluctuating sound measured over that period.

$L_{A10, T}$ & L_{A90} — If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L10 is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L90 is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L10 index to describe traffic noise.

$L_{Amax(F)}$ — $L_{Amax(F)}$ is the maximum A-weighted sound pressure level recorded over the period stated. L_{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall L_{eq} noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.

Appendix B Survey Graphical Summary Results

Land Promotion Noise Impact Assessment

Rainham Parkside Village, Gillingham

SLR Project No.: 416.065887.00001

8 April 2025

Figure C - 1: Time History Graph – Location NMP1, dB

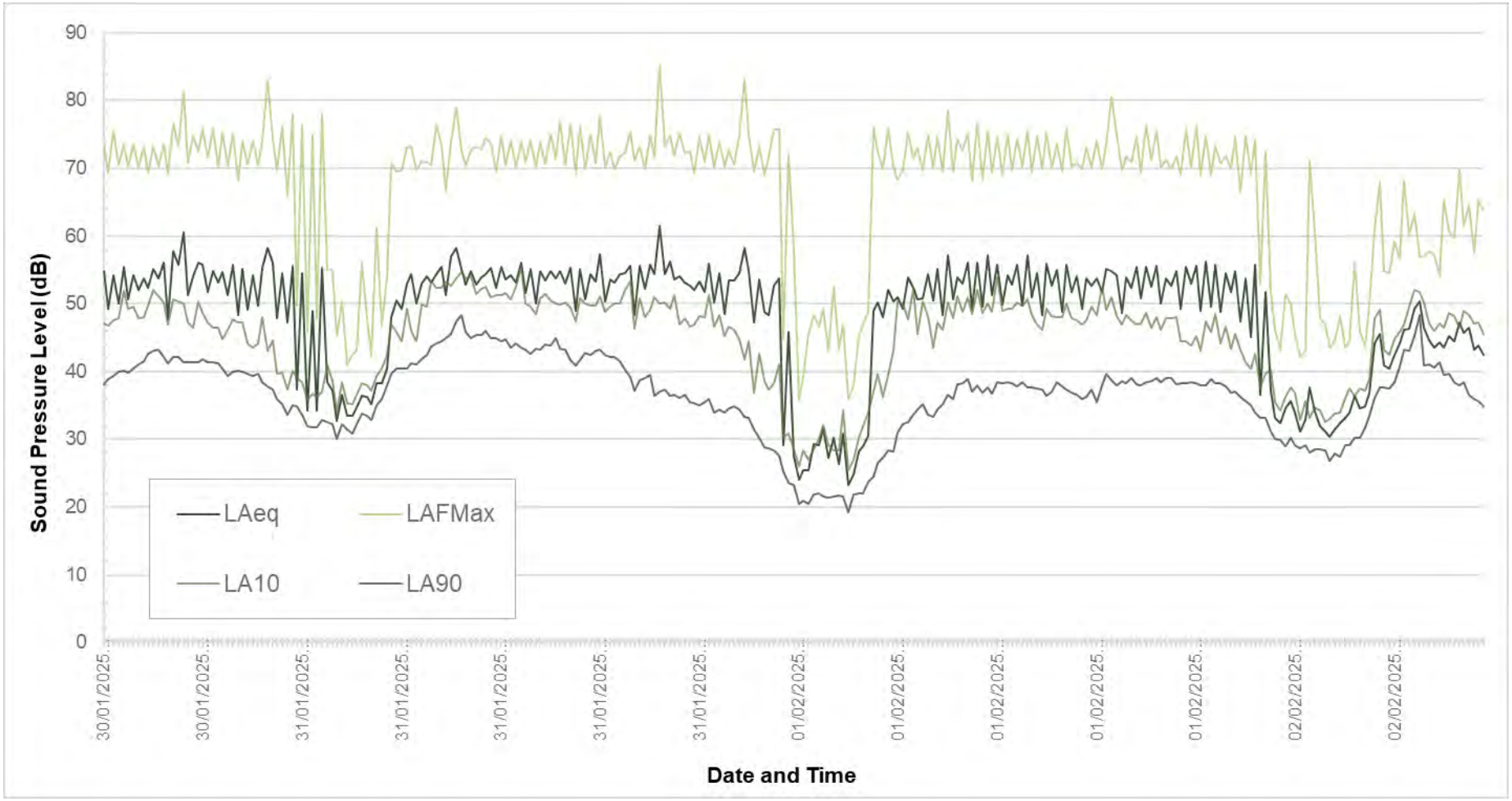


Figure C - 2: Time History Graph – Location NMP2, dB

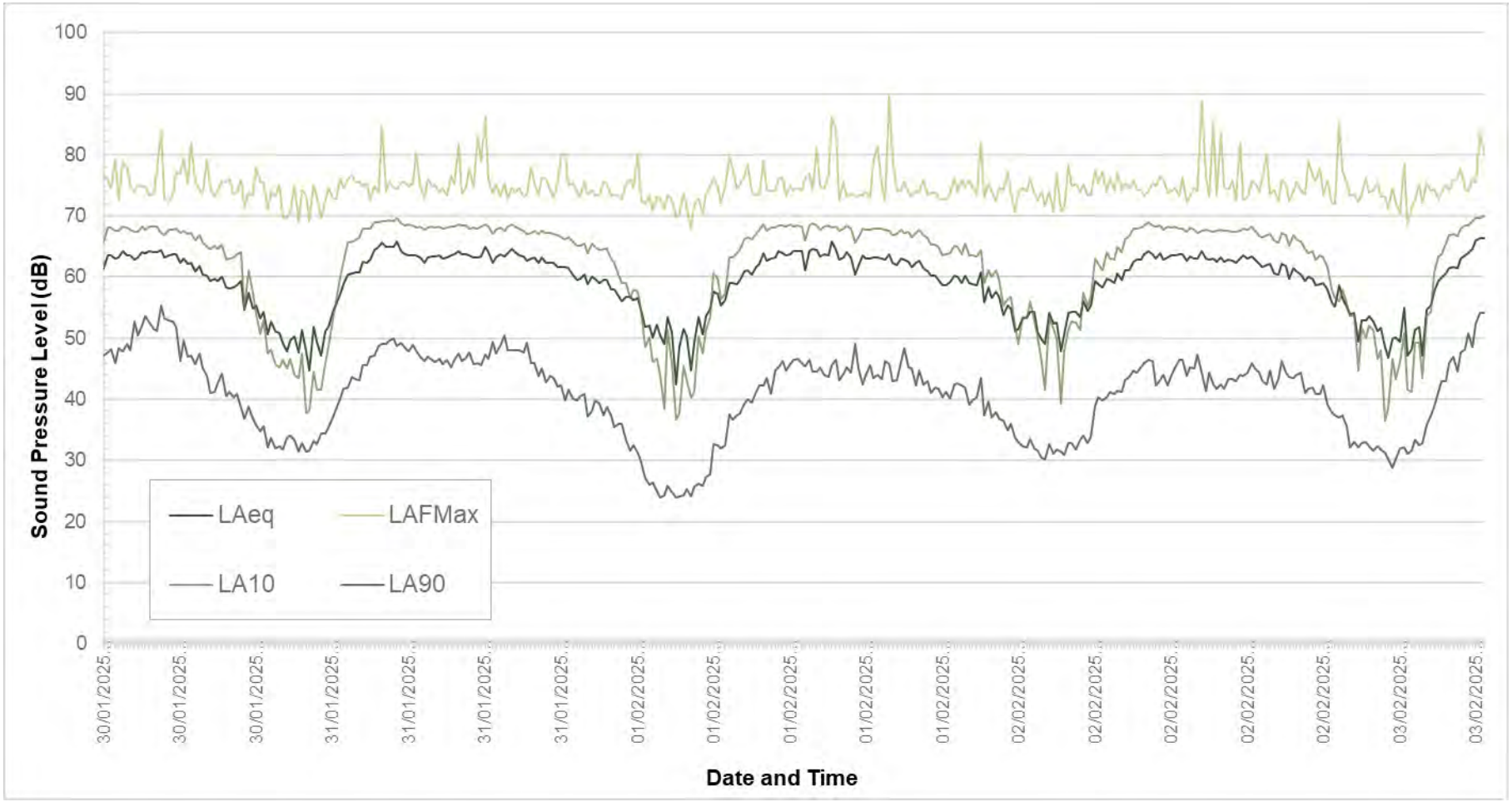
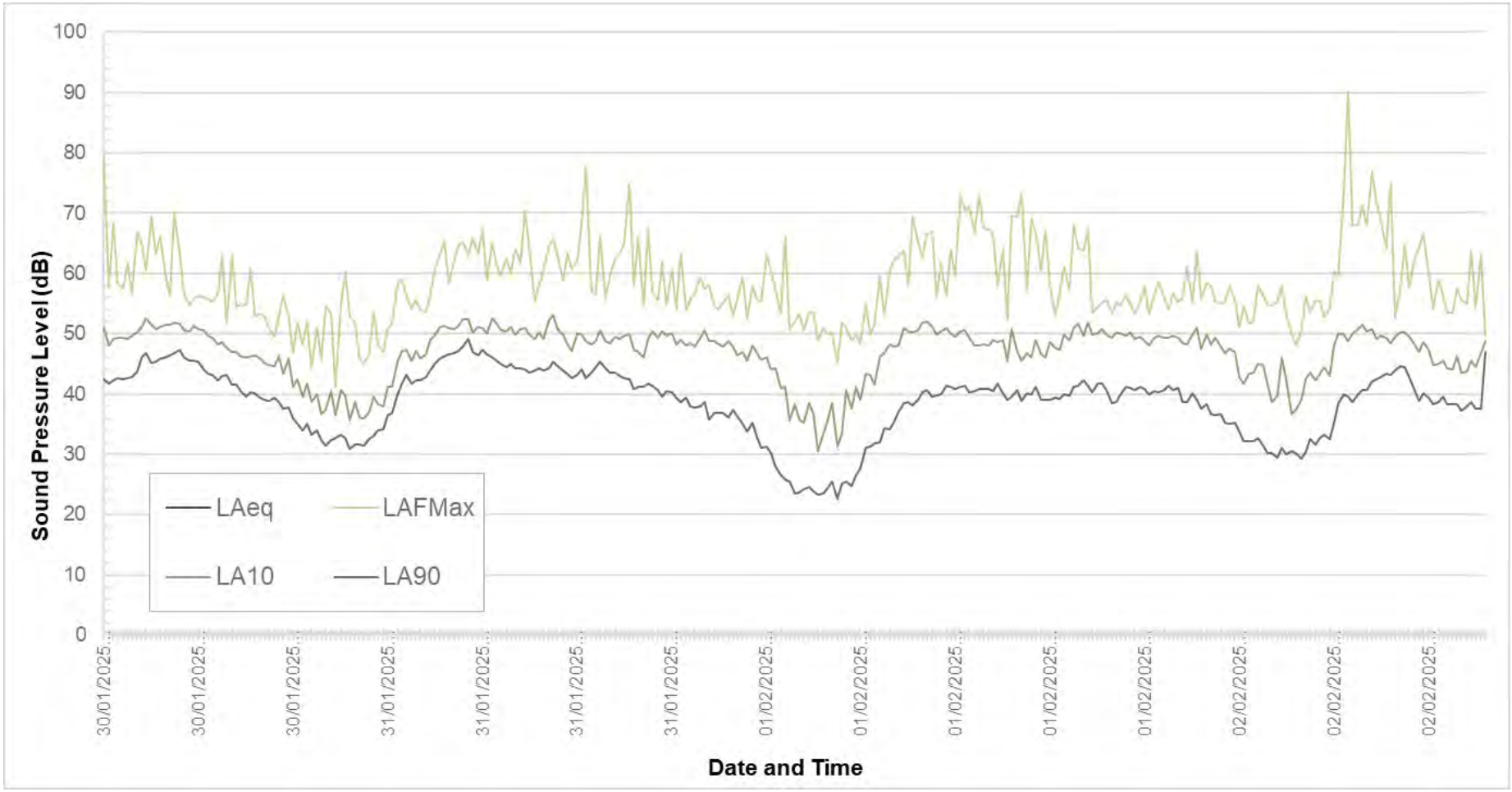


Figure C - 3: Time History Graph – Location NMP3, dB



Appendix C Overheating Control Additional Guidance

Land Promotion Noise Impact Assessment

Rainham Parkside Village, Gillingham

SLR Project No.: 416.065887.00001

8 April 2025

Acceptable Strategies for Reducing Overheating Risk

Limiting solar gains

Solar gains in summer should be limited by any of the following means.

Fixed shading devices, comprising any of the following

i. i. Shutters.

ii. External blinds.

iii. Overhangs.

iv. Awnings.

Glazing design, involving any of the following solutions.

i. Size.

ii. Orientation.

iii. g-value.

iv. Depth of the window reveal.

Building design

– for example, the placement of balconies.

Shading provided by adjacent permanent buildings, structures or landscaping.

Although internal blinds and curtains provide some reduction in solar gains, they should not be taken into account when considering whether requirement O1 of ADO has been met.

Foliage, such as tree cover, can provide some reduction in solar gains.

However, it should not be taken into account when considering whether requirement O1 of ADO has been met.

NOTE: Examples of solar shading and their effectiveness are provided in the Building Research Establishment's BR 364 Solar Shading of Buildings

Removing Excess Heat

Excess heat should be removed from the residential building by any of the following means in order of hierarchy (likely controlled by noise risk)

a. Opening windows (the effectiveness of this method is improved by cross-ventilation).

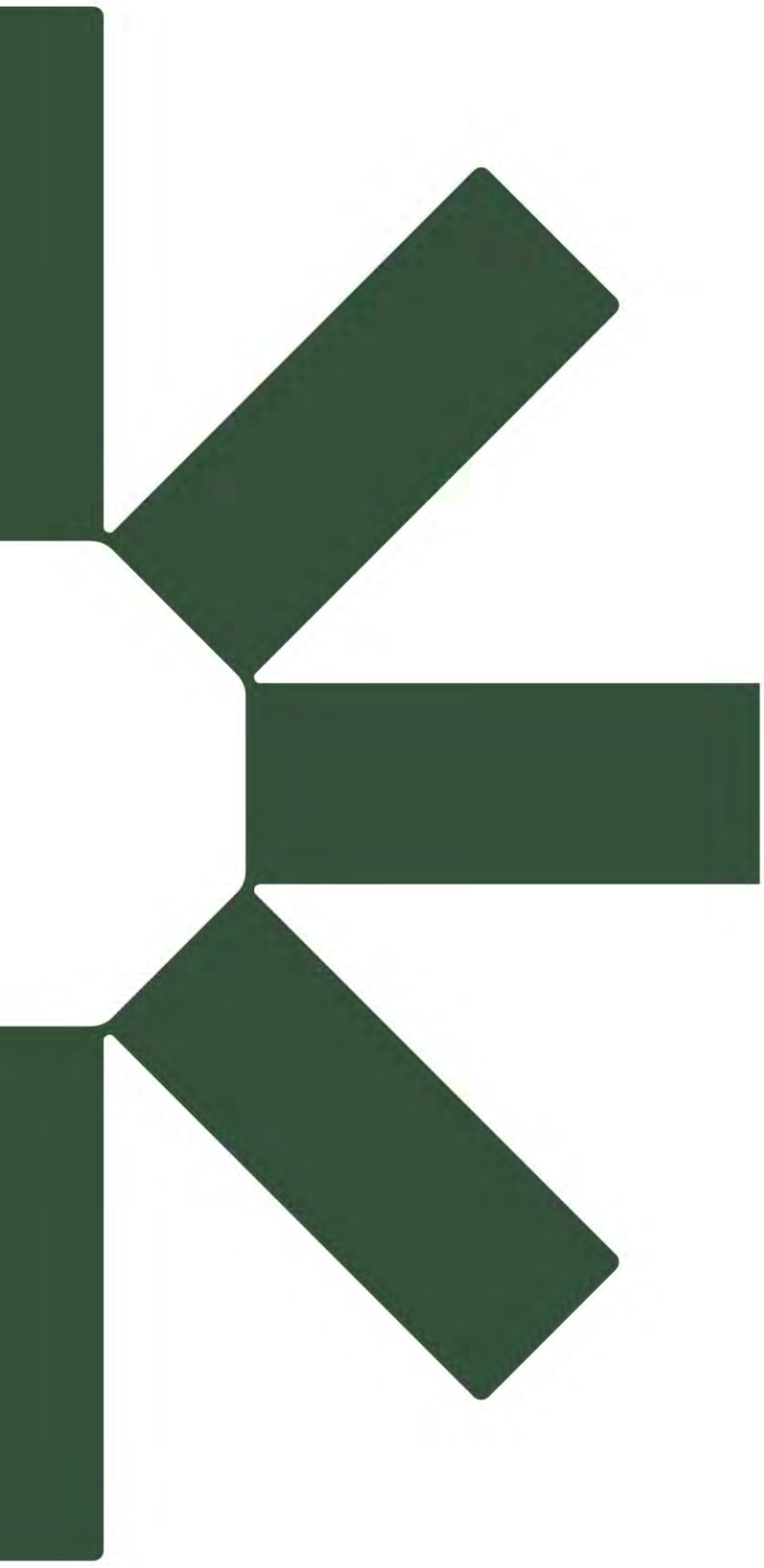
b. Ventilation louvres in external walls.

c. A mechanical ventilation system.

d. A mechanical cooling system

The building should be constructed to meet requirement O1 of ADO using passive means as far as reasonably practicable.

It should be demonstrated to the building control body that all practicable passive means of limiting unwanted solar gains and removing excess heat have been used first before adopting mechanical cooling.



Making Sustainability Happen

Appendix J
Consultation Boards

Rainham Parkside Village

WELCOME

Introduction

Welcome to our exhibition for the illustrative proposals for a new neighbourhood, Rainham Parkside Village, located in Lower Rainham, as part of the site allocation process related to Medway Council's draft Local Plan. This exhibition is an opportunity for us to present and explain our vision, which currently consists of the features outlined below:

SME Consortium led by Esquire to provide:

- Up to 750 residential homes (Up to 240 affordable homes)
- Series of new public green spaces
- Primary and secondary school
- Commercial uses

New Local Centre

- Community hub
- Nursery
- Care home
- Healthcare hub
- Retail
- Temporary accommodation

We have a number of representatives from Esquire Developments and our consultant team to discuss any issues or concerns you may have and to address your individual questions.

We are keen to hear your feedback to help shape our proposals as we move forward. Comments can be submitted to us today via a paper form or sent to us by post or email:

RPV@esquiredevelopments.com
by 14th August 2025

The material on display today is also available to download on our website:

www.consult-esquire.com

where comments can also be submitted online.

Site Outline

Site Photos


1 View of Pump Lane


2 Hedgerow opposite orchards


3 Access to allotments


4 Access to bridleway


5 Development on Pump Lane


6 Lane between orchards

ESQUIRE DEVELOPMENTS · BPTW · match landscape architects · Pell Frischmann · HCUK GROUP

ABOUT ESQUIRE

Esquire Developments is a multi-award winning SME Housebuilder based in Longfield, Kent. Founded in 2011, we have established ourselves through the delivery of high-quality bespoke residential developments across Kent and build approximately 150 homes a year. In 2020, we were awarded Gold by 'WhatHouse?' as best small SME Housebuilder in the country.

We adopt a tailored approach, adapting designs and layouts to reflect local characteristics, respecting each community's unique needs. This is achieved through our local knowledge and experience, understanding of place, and crucially, engaging with local communities. This positively focuses our approach to planning and design, with a greater experience of the needs and workings of the parish.

Each of our developments is bespoke, and we do not have fixed house types. This allows us to be totally flexible when it comes to tailoring the right mix and design of each home. Revealed in the high quality of architecture and materials, this ethos extends to the refinement of open spaces, establishing welcoming and inclusive environments.

As an SME Housebuilder reliant on our reputation, we deliver high-quality homes that bring choice and variation to the housing market, catering for a diverse range of prospective buyers.

We are environmentally conscious and have committed to playing a positive role in addressing the Climate Emergency (see later boards). We also pride ourselves on delivering homes exceeding the minimum sizes and finishes that the general housing market occasionally supplies.

Example Projects by Esquire Developments

Evening Standard New Homes Awards 2022 WINNER

What House? Awards 2019 BRONZE WINNER

What House? Awards 2020 GOLD WINNER

Highly Commended First Time Buyer Readers' Awards 2023

ESQUIRE DEVELOPMENTS

DPTW

match landscape architects

Pell Frischmann

HCUK GROUP

CLIMATE ACTION

A key part of creating a well-designed and attractive development is taking care to ensure sustainable delivery, function, lifespan and community cohesion. This is one of the central aims of the scheme, with heavy focus on the use of sustainably sourced and, where possible, local materials.

We also recognise that sustainability is achieved through long-term social incorporation. The development makes use of the existing community assets in the local area, ensuring their continued use. Connections to local amenities and transport links contribute further to its sustainability.

We take a proactive approach to addressing the climate emergency and recognise that we have an impact on the environment. We wish to minimise this as best we can by committing to deliver 'electric only' developments. By installing ground source or air source heat pumps and taking a 'fabric first approach', we are achieving approximately a 40% carbon reduction in our homes over and above current building regulations.

The fabric first approach means that the improved efficiency of our dwellings is inherent within the build, meaning that not only is it more efficient, but it also safeguarding against removal, resulting in the efficiency of the building being maintained for its lifetime. We build our homes with greater cavity wall thickness, allowing for increased thermal protection, higher specification glazed windows and greater base floor depths.

All our homes come with rapid-charge electric vehicle chargers, and we continue to explore emerging technologies as we move towards net zero and ensure that we are playing our part in trying to minimise the impacts of our developments on the environment and helping to accelerate the shift to greener living, reducing the amount of fossil fuels used by home and vehicle.

Fabric first approach to sustainability

Extensive landscaping to benefit biodiversity

All houses to have an EV charging point

Air Source/ Ground Source Heat Pumps installed in all homes

Example Esquire Home

High specification glazed windows

Electric only dwellings

Increased cavity wall thickness

Natural material utilising local supply chains

PROJECT BACKGROUND

SME CONSORTIUM

The site is designed to be delivered by a conglomerate of SME Housebuilders in order to ensure a scheme that delivers high-quality development, offers variation in design and allowing a number of different build parcels to be built out simultaneously.

The SME Consortium approach fits wholly within the Council's objective of delivering high-quality homes at pace, whilst also supporting SME Housebuilders – which in turn supports other associated employment provision within the local area.

SME Housebuilders bring many benefits. We deliver quickly and to a high quality, bringing variation in design and materiality. This delivers diversity in the market and offers home purchasers a choice of location and style. We also support local employment and our supply chains are SME businesses themselves.

Crucially, the development is seeking to deliver 'lost infrastructure' that has not been delivered as a result of the ad hoc residential developments - amounting to around 1,200 dwellings in the last 10 years. Whilst this is no one site's fault, the lack of investment, coordinated through the local plan, means that there is a need to retrofit this lost infrastructure and the only way this can be achieved is by bringing forward development of a mixed-use - such as this. A 'do-nothing' approach will only exacerbate the existing situation.

DIFFERENCE TO PREVIOUS APPEAL

We recognise that a previous appeal was dismissed in 2021 for the site. This was for a much larger scheme (1,250 dwellings) and was brought forward ahead of the Local Plan.
The plan below refers to the previous scheme. Many aspects of the design did not positively respond to the unique, rural qualities of the site:

- The internal 'loop' road contrasts the linear nature of the farms and development patterns of the area
- Pump Lane's function as a north-south road is removed along its northern length
- The site density is too dense for the context
- The field patterns and hedges removed, losing local rural character
- The village green is separate from Village Centre uses

The appeal was ultimately dismissed due to impacts on the landscape, insufficient evidence relating to highways impacts, and agricultural land value.

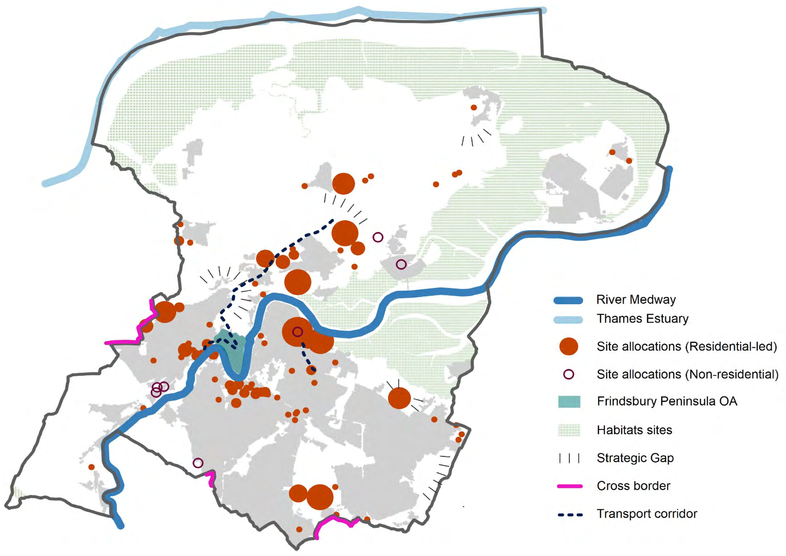
"Proposed residential development masterplan" from the refused planning application - May 2019, PRC. Source: Planning Portal

Street elevations from the refused planning application - May 2019, PRC. Source: Planning Portal

EMERGING LOCAL PLAN

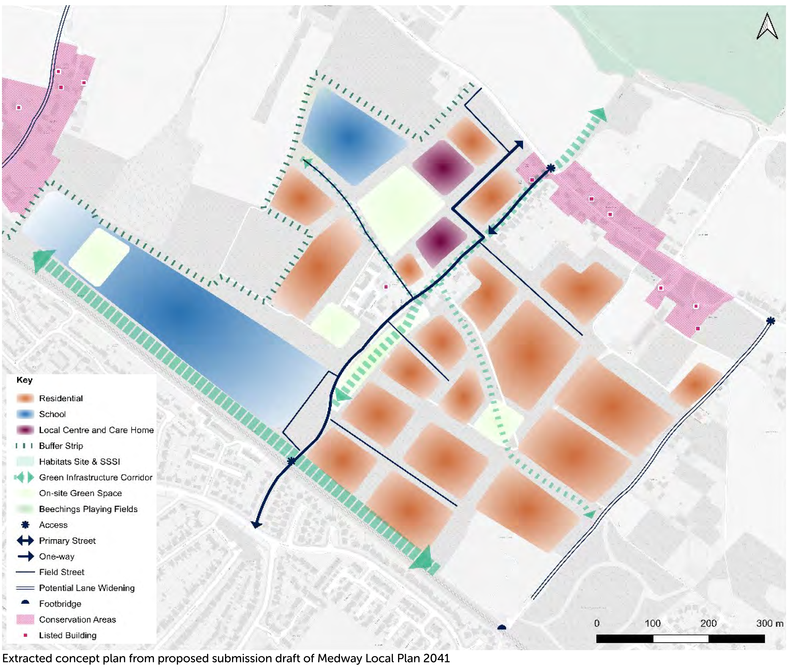
EMERGING LOCAL PLAN

Medway Council is preparing a new Local Plan to guide development to 2041, with adoption expected in Autumn 2026. Due to the absence of an up-to-date Plan since 2003, Medway has faced sustained ad-hoc growth without the infrastructure needed to support it, particularly in areas like Rainham. Medway Council is now required to deliver around 26,500 new homes, and while significant growth is planned for the Hoo Peninsula, other areas must also contribute.



Extracted spatial growth strategy diagram from proposed submission draft of Medway Local Plan 2041

In the proposed submission draft of the Medway Local Plan 2041, the site is allocated under Policy SA10: Lower Rainham. The policy aims to deliver the development of Rainham Parkside Village (RN9) by 2033, creating a green backdrop to the adjacent marshes at Riverside Country Park and enhancing connections for both people and nature, objectives which this proposal actively supports.



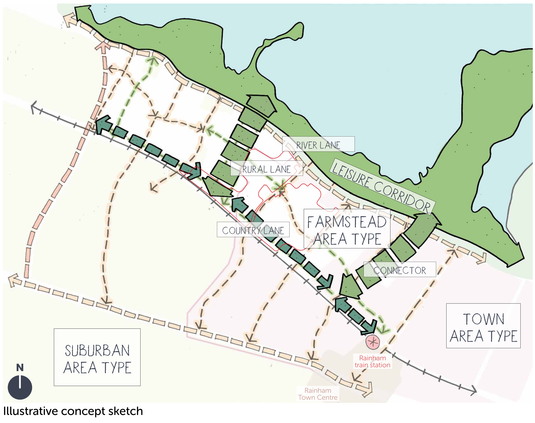
Extracted concept plan from proposed submission draft of Medway Local Plan 2041

SITE ANALYSIS

The proposal is a more appropriate and suitable scheme for the area, with limited visual impact (compared to the much larger previous appeal scheme). It lies within flood zone 1, with surface water risks manageable through design. While some high-quality agricultural land would be lost, this is not only outweighed by the development's benefits, but should also be viewed in the wider housing requirements of Medway, where a large amount of greenfield land is required to be developed to meet housing needs. Heritage and ecology impacts can be mitigated, with a 10% Biodiversity Net Gain planned. Updated highways modelling shows reduced impacts and supports a sustainable, transport-led layout. Overall, the site is viable, policy-compliant, and well-placed to deliver a sustainable new community.

Context Analysis

Proposed Concept



Illustrative concept sketch

Rainham Parkside Village is designed to reflect the transition from urban to rural, with a layout inspired by historic farmsteads. It will include a village centre with community uses, a strong active travel network, and green corridors that connect to surrounding landscapes. The development integrates different area types, while enhancing access to the wider leisure corridor and National Trail.

Local Landscape (Leisure Corridor)

Horrid Hill panoramic views

Riverside County Park

Rainham Parkside Village

ILLUSTRATIVE PROPOSAL

The proposal will deliver a series of ‘farm plots’ where a mosaic of contemporary farmsteads celebrates the rural character and is delivered by SME builders. Up to 750 homes are planned, including 30% affordable housing, alongside a local centre, care home, nursery, and public open spaces. The design is landscape-led, promotes active travel, and includes low-carbon measures to support a sustainable, well-connected community.

Illustrative Masterplan

Up to 750 residential homes (Up to 240 affordable homes)

New public green spaces

Primary and secondary school

Commercial uses

New Local Centre

Community hub

Nursery

Care home

Healthcare hub

Retail

Temporary accommodation

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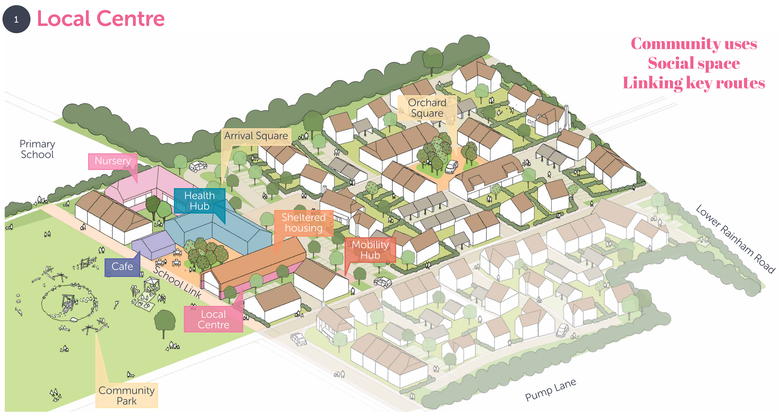
LANDSCAPE

The neighbourhood will deliver key community uses, including a new primary and secondary school, a children's nursery, healthcare, temporary accommodation, shops and a care home, clustered around a central square. Designed as contemporary farm sheds, these buildings will provide open spaces for play and socialising, supporting a vibrant and sustainable community.

1 Local Centre




The Farmstead, Linmere, Houghton Regis


Dollman Farm, Houlton, Rugby


Cafe Hogmoor, Bordon

The site will feature a series of farmstead plots that reflect the local rural character through traditional materials and vernacular design. Higher-density plots (35-39 dwellings/ha) with clustered terraces and semi-detached homes will be located nearer the local centre, fostering strong community connections via small lanes and pedestrian links. Lower-density plots (around 20 dwellings/ha) at the site's edges will offer more open space and greenery, with detached and smaller terraces designed to respect adjacent areas and connect to active travel routes.

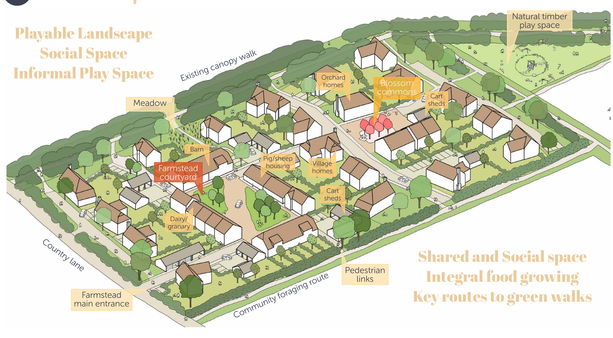
2 Circa 35-39dph Plot


Dollman Farm


Millers Field


Cheshire Countryside

3 Circa 20dph Plot




Hill Farm


Existing housing on Pump Lane


Cheshire Countryside

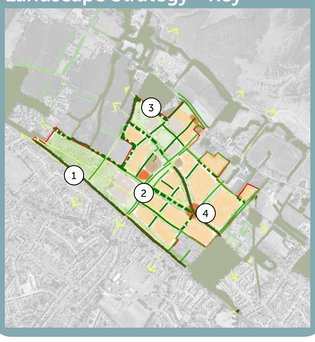
Rainham Parkside Village

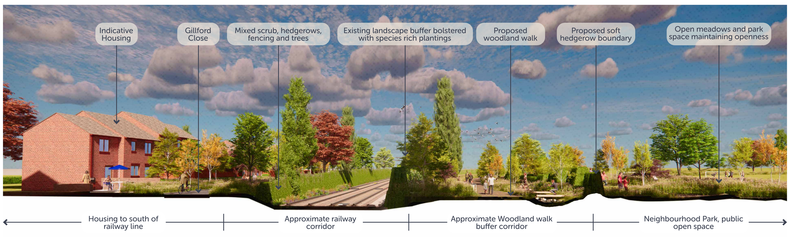
LANDSCAPE

The proposals respect the site's setting within the Gillingham Riverside Area of Local Landscape Importance by enhancing green infrastructure, conserving views, and improving ecological connectivity. New pedestrian and cycle routes will link rail crossings to the Riverside Country Park through attractive green spaces. Development parcels are designed to maintain rural scale and reflect the local landscape and heritage features.

1 Woodland Walk Landscape Character Area

Landscape Strategy - Key





2 Pump Lane Park Landscape Character Area

A new public park along Pump Lane will provide safe pedestrian and cycle links, enhanced greenery, sustainable drainage, and recreational spaces to promote active, social, and biodiverse community living.

3 Countryside Links and Lanes Landscape Character Area

Rainham Parkside Village will feature rural streets and green paths connecting key landmarks with natural planting and wildlife-friendly spaces.

4 Orchard Gardens Landscape Character Area

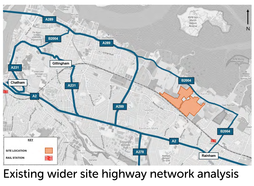
Orchard Gardens is a central green space designed to foster community engagement and reflect the rural character, featuring play areas, allotments, an orchard, and meadows that support biodiversity.

Rainham Parkside Village

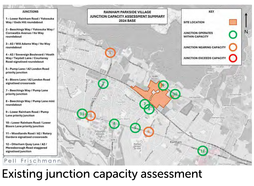
TRANSPORT

The proposal integrates existing north-south lanes as vital active travel routes, connecting new homes to key destinations and the wider green infrastructure network. It envisions strategically placed mobility hubs, ensuring all properties are within 400 metres of accessible transport options, with a primary hub near the local centre and the schools to promote sustainable, convenient travel.

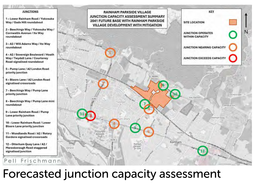
Off Site Highway Network and Junction Capacity Assessment



Existing wider site highway network analysis

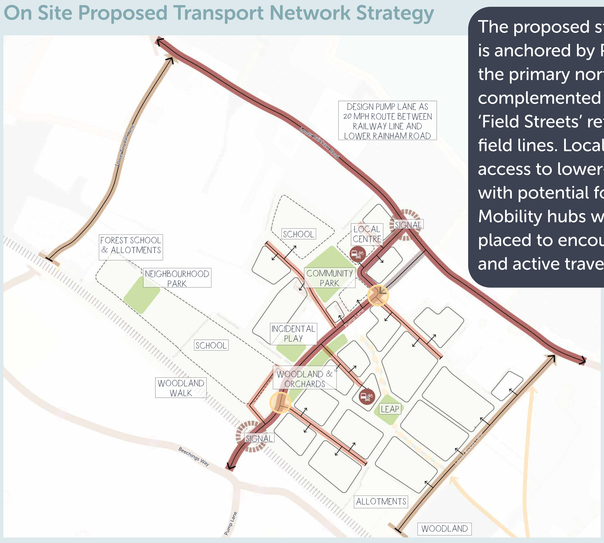


Existing junction capacity assessment



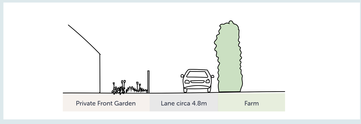
Forecasted junction capacity assessment

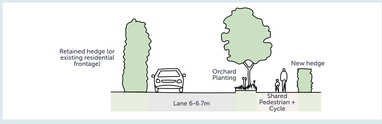
On Site Proposed Transport Network Strategy



The proposed street network is anchored by Pump Lane as the primary north-south route, complemented by perpendicular 'Field Streets' reflecting historic field lines. Local lanes provide access to lower-density areas, with potential for future widening. Mobility hubs will be strategically placed to encourage sustainable and active travel for residents.

Key Movement Strategies






Pump Lane existing conditions


Pump Lane Park intervention

The new neighbourhood will feature a safe, connected network of walking and wheeling routes, promoting health and a strong link to nature. Green corridors and retained public rights of way connect key destinations like the schools, local centre, and open spaces. Multiple route connections within each plot encourage active travel locally and to nearby amenities, parks, and transport links.

Active travel link section

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COMMUNITY PROVISION

PRIMARY & SECONDARY SCHOOL

The 2-form-entry primary school and 6-form-entry secondary school will comprise a series of farmstead-style school buildings set within a connected green landscape, integrating with its rural context and community. Safe pedestrian routes, shared spaces, and productive landscapes support outdoor learning, while strategic layout and buffers enhance safety, flexibility, and future connectivity.

Illustrative school layout

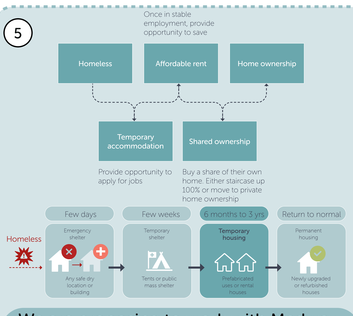
Outdoor play

Playing fields

Route from drop-off to the school

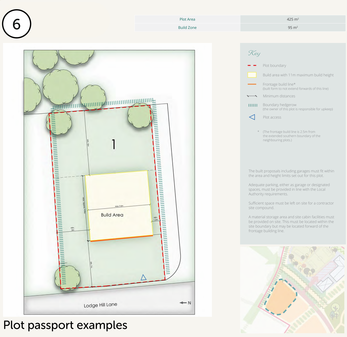
Forest school

TEMPORARY ACCOMMODATION



We are proposing to work with Medway Council to provide for up to 15 dwellings for use as high-quality temporary living accommodation and genuinely seek to support the council and those most vulnerable in the local community.

SELF BUILD



Plot passport examples

This site offers the opportunity to deliver a wide range of self-build and custom-build plots to meet the local demand and offer a genuine choice of properties.

Rainham Parkside Village

THE WAY FORWARD

Next Steps

Thank you very much for taking the time to view this exhibition.

We really appreciate your engagement and comments.

By reviewing local residents' comments, we hope to understand how we can best improve our proposals to ensure that we deliver the best quality and most appropriate addition to the local area.

We would be grateful to receive all of your feedback to help review and shape our proposals as we move forward.

Comments can be submitted to us today via a paper form, or sent to us by post or email at:

RPV@esquiredevelopments.com
by 14th August 2025.

The material on display today is also available to download from our website:

www.consult-esquire.com

Comments can also be submitted online. The window for submitting feedback runs for two weeks, after which we will review the responses and address comments wherever we can.

A planning application will be submitted following the adoption of the Local Plan.

The Local Plan was published on 26th June 2025, and a six-week consultation has commenced before it is submitted to the government for adoption.

Thank you for taking the time to attend today's event.

Example Projects by Esquire Developments