The Sizewell C Project

5.1 Consultation Report Second Addendum Appendices A-E

Revision: 1.0

Applicable Regulation: Regulation 5(2)(q)

PINS Reference Number: EN010012

June 2021

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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APPENDIX A: LIST OF TARGETED CONSULTEES

For the purposes of data protection, this appendix has been made confidential.

APPENDIX B - CONSULTATION SAMPLE LETTERS

Ref: 11/68058419_1

The Office
Another Address Reference
Something Close
City Address
County
KT2 OBS

[date]

Dear Resident,

The Sizewell C Project, PINS Reference Number EN010012
Targeted consultation on rail noise impacts between 12 May and 11 June 2021 (inclusive)

On 27 May 2020, NNB Generation Company (SZC) Limited ('**SZC Co.**') made an application to the Planning Inspectorate under the Planning Act 2008 for a Development Consent Order for the Sizewell C Project ('**Application**'). The Application was accepted for examination by the Planning Inspectorate on 24 June 2020 (Application Reference: EN010012). An Examining Authority was appointed on 30 June 2020 to examine the Application. The examination commenced on 14 April 2021 and is due to be completed by 14 October 2021.

As part of the Application, an Environmental Statement (Examination Library refs. APP-159 to APP-582) was submitted to the Planning Inspectorate in May 2020, which included an assessment of rail noise arising from the transport of construction materials by train on the East Suffolk Line. An Environmental Statement Addendum (Examination Library refs. AS-179 to AS-260) was subsequently submitted in January 2021, which included an updated assessment of rail noise. These documents, together with all of the other Application documents, are available for inspection free of charge on the webpage relating to the Application on the Planning Inspectorate's website under the 'Documents' tab: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/?ipcsection=docs

The rail noise assessment in the May 2020 Environmental Statement explained, at paragraph 1.6.6 of Volume 9, Appendix 4B (Examination Library ref. APP-546), that:

"In reviewing the potential noise levels we have undertaken research to identify the number of properties which may be impacted: estimated numbers of properties affected are as shown in Table 1.9 below. These numbers will continue to be reviewed including, where relevant, permanent residential caravans and houseboats identified."

Ref: 11/68058419_1

As committed to in the May 2020 Environmental Statement, we have continued to review the likely rail noise impacts of the Sizewell C Project. In particular, we have undertaken a more detailed assessment of the impact of rail noise on park homes at Whitearch Park, Benhall. SZC Co. has prepared the enclosed document, entitled 'Sizewell C Noise Assessment and Mitigation Plan - Park Homes' and an associated summary document, to explain the results of this assessment and to identify the mitigation measures that are proposed in respect of the likely impacts that have been identified.

We are writing to you to offer you the opportunity to submit to SZC Co. any comments that you may have on the Application including the further rail noise assessment that we have undertaken and the proposed mitigation measures that we have identified. Please label any responses as "Targeted consultation on rail noise impacts/mitigation" and ensure that they are submitted to SZC Co. by **Friday 11 June 2021** via one of the following methods:

- Email comments to info@sizewellc.co.uk
- Post comments to FREEPOST SZC CONSULTATION (no stamp or further address required)
- If you are shielding and unable to use the above methods, call Freephone 0800 197 6102 (09:00 – 17:00 Monday to Friday) to arrange for your response to be collected

SZC Co. will have regard to any consultation responses received. We will also provide any responses to the Examining Authority (at Deadline 3) who are conducting the examination to inform their consideration of the Application. The Examining Authority may publish these responses at: https://infrastructure.planninginspectorate.gov.uk/projects/eastern/the-sizewell-c-project/

If you would like to know more about the development consent process, including the examination stage, a step by step guide has been produced by the Planning Inspectorate, entitled Advice Note Eight: Overview of the nationally significant infrastructure planning process for members of the public and others. This can be found at: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/

Details of how the Application will be examined and a copy of the examination timetable can be found in the Rule 8 letter published on 21 April 2021, which is available at: https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/EN010012/EN010012-003597-Rule%208%20Letter%20and%20Annexes.pdf

Yours sincerely,

Carly Vince
Chief Planning Officer
Enc. Sizewell C Noise Assessment and Mitigation Plan – Park Homes
Sizewell C Noise Assessment and Mitigation Plan – Park Homes - Summary Document

Ref: 11/68058419_1

The Office
Another Address Reference
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> *"In reviewing the potential noise levels we have undertaken research to identify the number of properties which may be impacted: estimated numbers of properties affected are as shown in Table 1.9 below. These numbers will continue to be reviewed including, where relevant, permanent residential caravans and houseboats identified."*

Ref: 11/68058419_1

As committed to in the May 2020 Environmental Statement, we have continued to review the likely rail noise impacts of the Sizewell C Project. In particular, we have undertaken a more detailed assessment of the impact of rail noise on houseboats on the River Deben in Woodbridge. SZC Co. has prepared the enclosed document, entitled 'Sizewell C Noise Assessment and Mitigation Plan - Houseboats' and an associated summary document, to explain the results of this assessment and to identify the mitigation measures that are proposed in respect of the likely impacts that have been identified.

We are writing to you to offer you the opportunity to submit to SZC Co. any comments that you may have on the Application including the further rail noise assessment that we have undertaken and the proposed mitigation measures that we have identified. Please label any responses as "**Targeted consultation on rail noise impacts/mitigation**" and ensure that they are submitted to SZC Co. by **Friday 11 June 2021** via one of the following methods:

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Yours sincerely,

Carly Vince
Chief Planning Officer
Enc. Sizewell C Noise Assessment and Mitigation Plan – Houseboats
Sizewell C Noise Assessment and Mitigation Plan – Houseboats – Summary Document

APPENDIX C: NOISE ASSESSMENT AND MITIGATION PLAN AND SUMMARY DOCUMENT HOUSEBOATS

The Sizewell C Project

Noise Assessment and Mitigation Plan - Houseboats

Revision:	1.0
Applicable Regulation:	Regulation 5(2)(q)
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May 2021

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Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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CONTENTS

PLATES

1 INTRODUCTION

1.1 Overview

1.1.1 NNB Generation Company (SZC) Limited ('SZC Co.') has made an application to the Planning Inspectorate under the Planning Act 2008 for a Development Consent Order (DCO) for the Sizewell C Project. The application is currently the subject of an examination by the Planning Inspectorate (application reference EN010012).

1.1.2 As part of the application, an Environmental Statement was submitted to the Planning Inspectorate in May 2020, which included an assessment of rail noise arising from the transport of construction materials by train on the East Suffolk line. An Environmental Statement Addendum was subsequently submitted in January 2021, which included an updated assessment of rail noise.

1.1.3 This document provides a more detailed assessment of potential noise effects from the use of the rail infrastructure on houseboats along the River Deben in Woodbridge and Melton. This more detailed assessment has been undertaken as envisaged in **paragraph 1.6.6** of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546].

1.1.4 Sections 1, 2 and 3 set out relevant background information, to provide context for the noise assessment which is set out in section 4.

1.2 Proposed Development

1.2.1 To facilitate the construction of SZC, a combination of transportation modes is proposed to deliver construction materials to the site. The proposed transportation modes are road, rail and sea-based.

1.2.2 This supplemental assessment focuses on the potential for airborne noise effects from rail movements, as the locations considered will be most-affected by that particular mode of transportation.

1.2.3 The 'Freight Management Strategy' (Doc Ref 8.18) [AS-280] for the project provides for up to four trains per day at the peak of construction, equating to eight train movements per day. Of these eight train movements per day, it is envisaged that seven movements will occur at night, as there is insufficient rail capacity during the daytime. The possibility of a fifth train each day has been investigated with Network Rail but is not thought to be possible within the rail timetable and is no longer being considered.

1.2.4 At the peak of construction, the train movements are likely to occur on six nights per week.

1.2.5 Trains would travel from the south along the East Suffolk line, and join the Saxmundham to Leiston branch line, which would be refurbished. In the early years of the construction works, the trains would travel to a temporary unloading facility built on land east of Eastlands Industrial Estate.

1.2.6 A new rail extension, called the 'green rail route', will be constructed to a new unloading terminal on the northern side of the main SZC site, departing from the Saxmundham to Leiston branch line just west of Leiston. The green rail route is expected to be complete and in use within two years of the start of the project.

1.2.7 In the early years before the green rail route is complete, there will be a maximum of two trains per day, equating to four train movements, three of which we expect will be at night. Once the green rail route is complete, up to four trains per day will be run.

1.3 Previous Noise and Vibration Assessments

1.3.1 SZC Co. has submitted a suite of environmental assessments, considering the full range of potential effects that might arise from the SZC project.

1.3.2 The assessment of operational railway noise and vibration was originally set out in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545], including its associated **Appendix 4B** (Doc Ref 6.10) [APP-546]. The derivations of the assessment methods and criteria were set out in **Volume 1, Appendix 6G** of the **ES** (Doc Ref 6.1) [APP-171].

1.3.3 Additional noise surveys and assessment work carried out over the summer and autumn of 2020 resulted in a modification to the way in which railway noise, and in particular vibration, were assessed. The updated assessment was presented in **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188] and its associated appendices in **Volume 3, Appendices 9.3.A to 9.3.E** in the **ES Addendum** (Doc Ref 6.14) [AS-257 and AS-258].

1.3.4 Three of the key findings from the previous assessments have informed the approach adopted in this supplemental assessment:

- the effect of the additional trains on the East Suffolk line during the daytime was found to be negligible;
- at night, the increase in noise level over the whole of the night-time period along the East Suffolk line and the maximum levels due to the

peak of noise from individual passing trains would both result in a significant adverse effect for some receptors; and

- for all receptors, the most significant effects were determined by the maximum noise levels, assessed using the L_{AFmax} parameter, not the overall noise levels across the whole of the night-time period.

1.3.5 In light of these findings, this supplemental assessment focuses on the night-time period, and considers the maximum noise levels only. These two factors were found to be the combination that resulted in all adverse airborne railway noise effects in the previous assessments.

1.3.6 The previous noise and vibration assessments considered the potential effects of both the construction and operational use of rail infrastructure on nearby sensitive receptors. The receptors that were considered covered a range of sensitivities and geographically covered the route of the rail line from Westerfield junction to each of the freight terminals adjacent to the site.

1.3.7 The previous noise assessments considered effects using noise contour plots, which were calculated using information about the amount of noise that passing trains are likely to generate. The calculations used the calculation methods set out in the 'Calculation of Railway Noise' (CRN) [Ref 1], supplemented with data gathered through multiple train noise measurements, to identify representative maximum noise levels. CRN only considers average noise levels over daytime or night-time periods, so noise surveys were necessary to provide suitable data for the assessment of maximum noise levels.

1.3.8 The properties affected by noise from rail movements were aggregated according to the noise level to which they were predicted to be exposed, and a conclusion reached as to the overall effect of the project's use of rail freight.

1.3.9 The potential for the railway noise assessment to develop and further consider certain types of residential accommodation was noted in **paragraph 1.6.6** of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546], which stated:

'In reviewing the potential noise levels we have undertaken research to identify the number of properties which may be impacted: estimated numbers of properties affected are as shown in Table 1.9 below. These numbers will continue to be reviewed including, where relevant, permanent residential caravans and houseboats identified.'

1.3.10 **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] summarised the number of properties anticipated to fall into bands of noise levels that equated to magnitudes of impact. **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] is replicated here as **Table 1.1**.

Table 1.1: Estimated numbers of properties exposed to different noise levels from proposed night time use of the East Suffolk line between Saxmundham and Westerfield junction

Noise level, L_{AFmax}, dB (free-field)	Estimated number of dwellings	
	No mitigation	Mitigation (no stops in Saxmundham)
60-70(1)	390-410	320-350
70-77	150-160	100-110
Over 77	40-50	5-10

Note: (1) **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] erroneously labelled this row as "60-79"; "60-70" is correct.

1.3.11 Updates to this table are included in this supplemental assessment, where necessary.

1.3.12 This supplemental assessment considers the potential noise effects from the use of the rail infrastructure for houseboats along the River Deben in Woodbridge and Melton, as anticipated in **paragraph 1.6.6** of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546].

1.3.13 This supplemental assessment has been undertaken following formal and informal representations made to SZC Co. by Woodbridge Town Council and East Suffolk Council.

1.3.14 Only airborne noise from operational trains is considered in this supplemental assessment as the houseboats are either too far from the railway line to be significantly affected by groundborne noise or vibration, or are disconnected from the land in such a way that the transmission of groundborne noise or vibration will be greatly reduced.

1.3.15 No substantive construction works are proposed close to the houseboats, so construction noise or vibration is not considered either. It is possible that there will be rail replacement along sections of the East Suffolk line, some of which falls under Network Rail's regular maintenance programme, and some that are brought forward by SZC Co. All such works would be undertaken by Network Rail and are considered to be routine maintenance rather than substantive construction works.

1.3.16 SZC Co. has committed to two key mitigation schemes that are relevant to this supplemental assessment of railway noise and vibration:

- The 'Noise Mitigation Scheme' (**Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210]).
- The 'Rail Noise Mitigation Strategy', set out in draft in **Volume 3, Appendix 9.3.E** of the **ES Addendum** (Doc Ref 6.14) [AS-258].

1.3.17 The 'Noise Mitigation Scheme' will provide the means to improve the sound insulation of those properties that meet certain qualifying criteria. For railway noise, the criteria are:

A. an offer for noise insulation based on averaging rail noise over the day and night time periods, which is consistent with the national Rail Noise Regulations.

(i)(a) the Future (Rail) Noise Levels exceed façade noise levels of 69dB $L_{Aeq,16hrs}$ during the hours of 07:00 to 23:00 or 58dB $L_{Aeq,8hrs}$ during the hours of 23:00 to 07:00;

(b) the Future (Rail) Noise Levels are at least 1dB higher than the Existing (Rail) Noise Levels as a result of the use of the new or amended railway line associated with the Development; and

(c) the contribution from the new or amended railway line associated with the Development to the Future (Rail) Noise Levels at the façade is at least 1dB; or

B. an offer for noise insulation based on the max noise level created at night:

(ii) maximum sound level L_{AFmax} 73dB between 23:00 and 07:00 hours.

1.3.18 The same criteria are applied to noise resulting from SZC construction trains irrespective of whether they use existing rail lines or new / altered rail lines.

1.3.19 It should be noted that the 73dB façade L_{AFmax} threshold has been amended from the 80dB façade L_{AFmax} value originally set out in **Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210] as a result of discussions with the local planning authorities. The mitigation package has been strengthened in this respect.

1.3.20 The measures set out in the draft 'Rail Noise Mitigation Strategy' (**Volume 3, Appendix 9.3.E** of the **ES Addendum** (Doc Ref 6.14) [AS-258]) include:

- Installation of a crossover north of Saxmundham station and upgrades to the signalling system to permit trains to join or leave the Saxmundham to Leiston branch line without stopping, known as the 'change arrangements at Saxmundham'.
- The Saxmundham to Leiston branch line will be upgraded with a refurbished trackbed, concrete or steel sleepers, and welded rails to provide a consistent rail cross-section consistent gauge, and smooth running surface.
- The proposed rail extension route will be constructed using the same approach as the upgraded Saxmundham to Leiston branch line.
- Under ballast mats will be installed where the Saxmundham to Leiston branch line or proposed rail extension route pass within 15 metres of a residential receptor, and will be installed for a minimum of 10 metres either side of the property. An alternative design may be substituted, if its effectiveness is equal and approved.
- Night-time speed limits of 10 mph will apply at three locations along the East Suffolk line: Woodbridge/Melton, Campsea Ashe, and Saxmundham.
- Speed on the Saxmundham to Leiston branch line will be limited to 10mph during the early years.
- Pending the results of further assessment of the upgraded and mitigated Saxmundham to Leiston branch line during the early years operation, the speed limit on Saxmundham to Leiston branch line may be increased to 20mph. This further assessment work is described later in this section.
- The speed limit on the proposed rail extension route will match that applied to the Saxmundham to Leiston branch line. This enables constant train speeds to be maintained, thereby avoiding accelerating locomotive noise close to the north-western corner of Leiston.
- Class 66 locomotives will be used in preference to Class 68 locomotives, where there is equivalent choice.

- Night-time construction trains will not travel into or out of Leiston, instead being held on the Saxmundham to Leiston branch line to the west of the Saxmundham Road level crossing, at defined locations.

- Construction trains stabled overnight on the branch line will not be permitted to keep their engines idling.

1.3.21 The majority of these measures relate to the Saxmundham end of the railway line, however, the speed limit in Woodbridge and the selection of quieter locomotives are relevant beyond this area and to this supplemental assessment.

2 ASSESSMENT CRITERIA

2.1.1 As set out in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545], the EIA methodology considers whether impacts from the proposed development would have an effect on any resources or receptors. The assessment broadly considers the magnitude of impacts and the value/sensitivity of resources/receptors that could be affected to classify effects.

2.1.2 The effect of noise and vibration on a receptor or community is dependent on the magnitude of the impact, the sensitivity of the receptor, and may also depend on other factors, such as the existing acoustic environment.

2.1.3 A detailed description of the assessment methodology used to assess the potential effects on noise and vibration arising from the proposed development is provided in **Volume 1, Appendix 6G** of the **ES** (Doc Ref 6.1) [APP-171].

2.1.4 The assessment criteria for airborne railway noise that are relevant to this supplemental assessment are summarised in this section.

2.2 Receptor Sensitivity

2.2.1 The criteria used to determine the sensitivity of potentially affected receptors are set out in **Table 2.1**.

Table 2.1: Assessment of the value or sensitivity of receptors for noise and vibration

Sensitivity	Description
High	Receptors that are highly sensitive to noise or vibration such as theatres, auditoria, recording studios, concert halls and highly vibration sensitive structures or uses such as certain laboratories medical facilities or industrial processes.
Medium	Noise and vibration sensitive receptors such as permanent residential buildings, hospitals and other buildings in health/community use, buildings in educational use, hotels and hostels.
Low	Receptors with limited sensitivity to noise and vibration such as offices, libraries buildings in religious use, and other workplaces with a degree of sensitivity due to the need to concentrate.
Very Low	Receptors of very low sensitivity to noise and vibration such as industrial or commercial buildings and transient or mobile receptors.

2.2.2 These same criteria have been used for the assessment set out in this supplemental assessment. Residential accommodation is considered to be medium sensitivity, including for houseboats.

2.3 Impact Magnitude

2.3.1 The magnitude of impact as a result of airborne railway noise was assessed by applying different criteria, according to the existing level of rail service along a particular rail line.

2.3.2 For the East Suffolk line, with its regular, predominantly passenger-based service, it was the change in noise level from the existing situation that was used to quantify the magnitude of impact.

2.3.3 For new lines, or lines that are to be brought back into regular service, as would be the case for the Saxmundham to Leiston branch line and green rail route, absolute criteria were derived from noise policy and guidance, to correlate with a particular magnitude of impact.

2.3.4 For night-time rail movements, the maximum noise levels associated with the peak of noise from passing trains were assessed against absolute criteria, again, derived from noise policy and guidance, to correlate with a particular magnitude of impact.

2.3.5 As was noted in Section 1 of this supplemental assessment, the change in noise level along the East Suffolk line during the daytime was found to be negligible, as a result of a single freight train being run in addition to the regular passenger service.

2.3.6 During the night-time, changes in the average night-time noise levels were found to be significant in some locations, as a result of the additional night-time freight movements being added to the current night-time rail movements, which are limited.

2.3.7 It was found that the maximum sound levels from individual passing trains were the most significant indicator when determining the magnitude of impact. Wherever a significant adverse effect was found to have occurred as a result of the change in the overall night-time noise level, maximum noise levels from passing trains also gave rise to a significant adverse effect, which was generally more acute.

2.3.8 On the basis of these previous outcomes, this supplemental assessment therefore only considers the maximum noise levels from passing trains, and only those criteria relevant to maximum noise levels are set out here.

2.3.9 The maximum noise level criteria, which relate to the L_{AFmax} noise index, are set out in **Table 2.2.** The L_{AFmax} values in **Table 2.2** are extracted from **Table 4.7** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545].

Table 2.2: Maximum noise level thresholds to determine the magnitude of impact from rail movements (all values are free field).

Sensitivity of receptor	Period	Magnitude of impact				Parameter
		Very low	Low	Medium	High	
Medium	Night	<60	60	70	77	L_{AFmax}, dB

2.4 Application of Maximum Noise Level Thresholds to Houseboats

2.4.1 Maximum noise levels are the most commonly-used measure of sound when considering sleep disturbance, and it is in that context that they informed the assessment of railway noise and the magnitude of impact criteria in **Table 2.2**.

2.4.2 Guidance on sleep disturbance generally relates to sound levels within properties, where people are most likely to be sleeping. The thresholds in **Table 2.2** are external measures of noise, i.e. they are to be measured or calculated at a point outside of a property within which people may be sleeping.

2.4.3 This is the normal approach in noise assessments, since the noise can be measured outside the property without requiring access into a property, which might potentially disturb the occupants.

2.4.4 However, since the thresholds are defined outside the property, but the effect occurs within the property at known noise levels, the difference between the sound levels inside and outside the property is critical. A full explanation of the derivation of the values set out in **Table 2.2** can be found in **Sections 3.2 and 3.3** in **Volume 3, Appendix 9.3.D** of the **ES Addendum** (Doc Ref 6.14) [AS-257].

2.4.5 In the context of this supplemental assessment, it is useful to understand how those values were derived, in broad terms, so that the appropriateness of the criteria for houseboats can be determined.

2.4.6 The World Health Organisation's (WHO) 'Guidelines for Community Noise' [Ref 2] indicates that people sleeping may be disturbed when the internal noise levels exceed 45dB L_{AFmax} 10 to 15 times per night. SZC Co. has adopted a precautionary approach to the assessment of night-time railway noise and, rather than apply the '10 to 15 times' part of the WHO guidance, SZC Co. has instead worked on the basis that the potential sleep disturbance could occur as a result of a single occurrence of noise above 45dB L_{AFmax} inside the property.

2.4.7 It is known that a partially open window in a typical house will reduce external noise levels by approximately 15dB; this reduction is based on the proportion of the external façade that is made up by the partially open window relative to the amount of brickwork.

2.4.8 The 'low' magnitude of impact is considered to occur where the external noise level exceeds 60dB L_{AFmax}, which is derived from the 45dB L_{AFmax} internal WHO threshold, allowing for the 15dB reduction through a partially open window, i.e. 45dB + 15dB = 60dB.

2.4.9 At the other end of the scale, research by Rice and Morgan [Ref 3] and Basner et al [Ref 4, Ref 5] suggests that there is likely to be a significant adverse effect on health and quality of life where the external maximum noise level exceeds 80 or 85dB L_{AFmax}, depending on the number of events. These external values relate to an internal level in the region of 65dB and, again, assume a partially open window.

2.4.10 SZC Co. has adopted the more stringent interpretation of the research on a precautionary basis. The 80dB L_{AFmax} value is a façade value, measured 1m in front of the building façade, which is generally 3dB higher than the value that would occur at the same location if the building were not present. The difference is caused by sound reflecting off the building façade, effectively doubling sound pressure level at a point 1m in front of the building; a doubling of the sound pressure causes a 3dB increase in level, as noise is measured on a logarithmic scale.

2.4.11 The 'high' magnitude of impact in **Table 2.2** is a free-field value, which is a value measured away from any reflecting surfaces other than the ground, and is therefore 3dB lower than the façade level, i.e. 77dB instead of 80dB.

2.4.12 The 'medium' magnitude of impact in **Table 2.2** is the only value that is not based on the assumption that a window is partially open. It is derived from the same 45dB L_{AFmax} internal noise level that the WHO suggests marks the onset of sleep disturbance, but the correction applied to obtain an external noise level is based on a closed double-glazed window, which will typically reduce external noise levels by 25dB.

2.4.13 The important point in the context of this supplemental assessment is that if the sound reduction provided by the external fabric of houseboats is less than 25dB, for example as a result of the use of lighter materials than are typically used in housebuilding, then an impact equivalent to the medium magnitude of impact could occur at a lower external noise level than the 70dB stated in **Table 2.2**.

2.4.14 The implications for the assessment of the sound reduction provided by the external fabric of houseboats being less than 25dB are considered later in this supplemental assessment.

2.5 Classification of Effects

2.5.1 Following the classification of the magnitude of the impact and the value/sensitivity of the receptor/feature, the effect has been classified as shown in **Table 2.3** (originally **Table 4.11** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]).

Table 2.3: Classification of effects.

		Value/Sensitivity of Receptor			
		Very Low	Low	Medium	High
Magnitude	Very low	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Minor	Minor	Moderate
	Medium	Minor	Minor	Moderate	Major
	High	Minor	Moderate	Major	Major

2.5.2 Definitions of each of the different levels of effect, which can be adverse, beneficial or neutral are shown in **Table 2.4** (originally **Table 4.12** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]).

Table 2.4: Effect definitions

Effect	Description
Major	The noise causes a material change in behaviour attitude or other physiological response. Adverse change may result in the potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished or improved due to change in acoustic character of the area.
Moderate	Effects that may result in moderate changes in behaviour, attitude or other physiological response. Adverse effects may result in some reported sleep disturbance. Changes to the acoustic character of the area such that there is a perceived change in the quality of life.
Minor	Effects that may result in small changes in behaviour attitude or other physiological response. Adverse effects may result in some minor reported sleep disturbance. Small changes to the acoustic character of the area such that there is a low perceived change in the quality of life.
Negligible	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.

2.5.3 Following the classification of an effect as detailed in **Tables 2.3** and **2.4**, a clear statement has been made as to whether the effect is 'significant' or 'not significant' in terms of the EIA Regulations [Ref 6]. As a general rule, major and moderate effects are considered to be significant and minor and negligible effects are considered to be not significant.

2.6 Use of LOAEL and SOAEL values in the assessment

2.6.1 In line with the 'National Policy Statement for Energy' (NPS EN-1) [Ref 7] and the 'Noise Policy Statement for England' (NPSE) [Ref 8], levels for the lowest observed adverse effect on health and quality of life (LOAEL) and the significant observed adverse effects on health and quality of life (SOAEL) have been established for the assessment of railway noise. **Table 2.5** sets out broad descriptions of these categories, and the actions required for each.

2.6.2 **Table 2.5** was originally **Table 4.13** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545].

Table 2.5: Generic effect descriptions and recommended actions

Effect	Description	Action
Below LOAEL	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No specific measures required.
Between LOAEL and SOAEL	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Mitigate and reduce to a minimum.
Above SOAEL	The noise causes a material change in behaviour, attitude or other physiological response, 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.	Avoid

2.6.3 The LOAEL and SOAEL values for railway noise that are relevant to this supplemental assessment are set out in **Table 2.6** (extracted from **Table 4.16** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]).

Table 2.6: LOAEL and SOAEL values for railway noise (all free-field values)

Time Period	LOAEL	SOAEL
Night (23:00-07:00)	60dB L_{AFmax}	77dB L_{AFmax}

2.6.4 The derivation of these values is detailed in **Volume 1 Appendix 6G** and **Annex 6G.1** of the **ES** (Doc Ref 6.1)) [APP-171], with further detail set out in **Volume 3, Appendix 9.3.D** of the **ES Addendum** (Doc Ref 6.14) [AS-257]. The LOAEL and SOAEL values match the 'low' and 'high' magnitudes of impact, respectively.

3 MODIFICATIONS TO THE NOISE MODELLING

3.1.1 As noted in Section 1 of this supplemental assessment, the assessment of railway noise and vibration was set out in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545], including its associated **Appendix 4B** (Doc Ref 6.10) [APP-546], with the derivation of the assessment methods and criteria set out in **Volume 1, Appendix 6G** of the **ES** (Doc Ref 6.1) [APP-171].

3.1.2 Additional noise surveys and assessment work carried out over the summer and autumn of 2020 modified the way in which railway noise, and in particular vibration, were assessed. The updated assessment was presented in **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188] and its associated appendices in **Volume 3, Appendices 9.3.A to 9.3.E** in the **ES Addendum** (Doc Ref 6.14) [AS-257 and AS-258].

3.1.3 This supplemental assessment further considers the potential effects on houseboats along the River Deben in Woodbridge and Melton where residential accommodation exists in the form anticipated in paragraph 1.6.6 of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546].

3.1.4 This section identifies the modifications or refinements made to the noise modelling process for this supplemental assessment.

3.2 Source Data

3.2.1 The source data used in this supplemental assessment are the same as were used previously in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]. As was noted in **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188], the additional noise survey and assessment work carried out over the summer and autumn of 2020 suggested that the L_{AFmax} levels used in the original noise modelling were higher than were likely to occur in practice.

3.2.2 Notwithstanding this, the original, higher values were retained to present a robust assessment, and these values have been used again here.

3.2.3 The height of the source assumed in the L_{AFmax} calculations has been modified as a result of the additional survey and assessment work undertaken over the summer and autumn of 2020.

3.2.4 The original noise calculations presented in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545] were based on the effective height of the source being either at rail level for locomotives not on full power, or at a height of 4m above rail level for locomotives on full power. These source

heights are specified in the 'Calculation of Railway Noise' (CRN) [Ref 1]. For clarity, locomotives will tend to operate on full power when accelerating.

3.2.5 The additional survey and assessment undertaken over the summer and autumn of 2020 suggested that the effective source height for a locomotive not operating on full power was between 2 and 3m above rail level, not at rail level; the source of peaks of noise appearing to come from the side of the locomotive, not from close to the wheels, as suggested in CRN.

3.2.6 On the basis of this additional information, the source height used in this supplemental assessment was either 4m above rail level for locomotives operating on full power, or 3m above rail level for locomotives not operating on full power.

3.3 Other Modelling Updates

3.3.1 Since this supplemental assessment focuses on a discrete area adjacent to the railway line, higher resolution topographical and building height data have been incorporated into the noise modelling software, and the noise contour plots have been calculated at a higher resolution.

3.3.2 Based on a visual inspection of the area, significant reflecting and screening structures have been included in the noise modelling software, such as, for example, the flood defence wall that runs along part of the boundary between the marina at Woodbridge and the railway line.

3.3.3 The potential sound reduction provided by the external fabric of the houseboats has been estimated using professional judgment and publicly available information; no sound insulation tests have been undertaken to determine the actual sound reduction performance of the external fabric of individual houseboats.

3.3.4 To account for the lower height of the receptors considered in this supplemental assessment, all of the modelling uses a receptor height of 1.5m above ground level, as opposed to the 4.5m above ground level in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545] and **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188].

4 NOISE ASSESSMENT

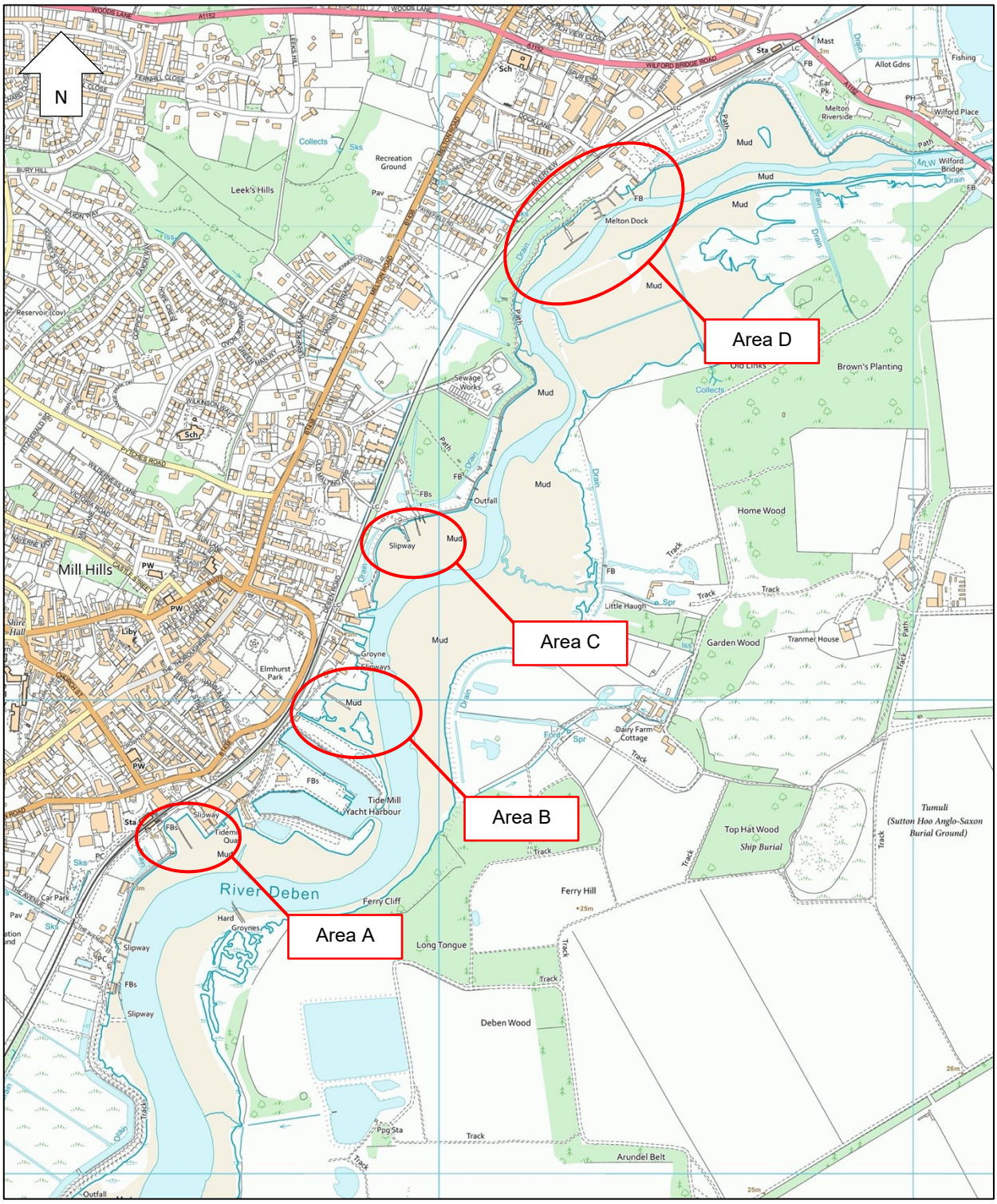
4.1 Background Information

4.1.1 Four areas have been identified along the River Deben in Woodbridge and Melton where there may be houseboats that could potentially be affected by train noise. The four areas are referred to in this supplemental assessment as Areas A, B, C and D, and are shown in Plate 4.1.

Plate 4.1: Locations of houseboats on the River Deben

4.1.2 The wider geographical context of these areas is shown in Plate 4.2.

Plate 4.2: Geographical context for mooring locations



4.1.3 Although there are known to be other locations where houseboats are moored, they are further from the railway line than the four location identified here, and therefore likely to be exposed to lower noise levels.

4.1.4 Of the four identified areas, Area A has both the most houseboats, and the houseboats that are closest to the rail track. A visual survey of this area was conducted in March 2021 to establish the range and number of boats present at that time.

4.1.5 The visual survey suggested that there were approximately 42 no. boats in Area A, of which 14 no. had wooden hulls, 24 no. steel hulls, and four were made from glass reinforced plastic (GRP).

4.1.6 It is recognised that the precise numbers of GRP boats could vary, but it is understood that there is not a large turnover in boats, and in any event, the assessed noise levels and mitigation measures would apply to any additional GRP boats.

4.1.7 The construction and design of the boats appears to reflect the ages of the boats. There were very few boats that appeared to be under 10 years old, with most appearing to be between 30 and 100 years old, and some potentially older. The boats ranged from modern GRP narrow boats to steel and wooden Thames and Dutch sailing/motor barges.

4.1.8 The condition of the boats also appeared to vary; some appeared to be luxurious and in good condition, while others appear to be in varying states of disrepair.

4.1.9 The sound reduction performance that could be expected from the external fabric of the boats is likely to vary depending on the type of boat, its construction, i.e. whether made from wood, steel or GRP, the amount of glazing, which ranged from small, fixed portholes to large, openable skylights, and its condition.

4.1.10 The more modern GRP boats had large, openable windows, while others, some of which are understood to be designed for longer passages over open water, had fixed portholes. The accommodation within the Thames and Dutch barges is generally deep within the hull with no windows and ventilation only via cowl type vents.

4.1.11 An estimate can be provided of the range of likely sound reduction performances from the external fabric of the houseboats observed during the visual survey in March 2021. For the modern narrow boats with large, openable windows, the sound reduction may be as low as 15dB; the steel and older wooden boats, both of which have substantial hulls and

superstructures and small, often fixed, portholes, are likely to have a sound reduction of at least 25dB.

4.2 Assessment Criteria

4.2.1 The majority of houseboats that appeared to be occupied when observed in March 2021 were of steel and wood construction, and a sound reduction performance of at least 25dB R_w for these is considered likely.

4.2.2 This is the same sound reduction performance as would be expected from a typical double-glazed window when closed, as was used in the original noise assessment to derive the external 70dB L_{AFmax} sound level that denoted a medium impact from the internal 45dB L_{AFmax} threshold.

4.2.3 On the basis that the external fabric of the majority of observed boats are considered likely to have a sound reduction of at least 25dB, the same magnitude of impact categories as set out in **Table 2.2** can be used for them.

4.2.4 The LOAEL and SOAEL values were based on a lower sound reduction through an open window of 15dB, and it is considered that these values will remain broadly valid for houseboats as the sound reduction provided by their external fabric is likely to be at least 15dB.

4.2.5 Based on the same criteria as were used in the DCO application, as summarised in Section 2 of this supplemental assessment, the assessment presented here therefore accounts for the potential noise effects for the majority of the houseboats visually surveyed in March 2021.

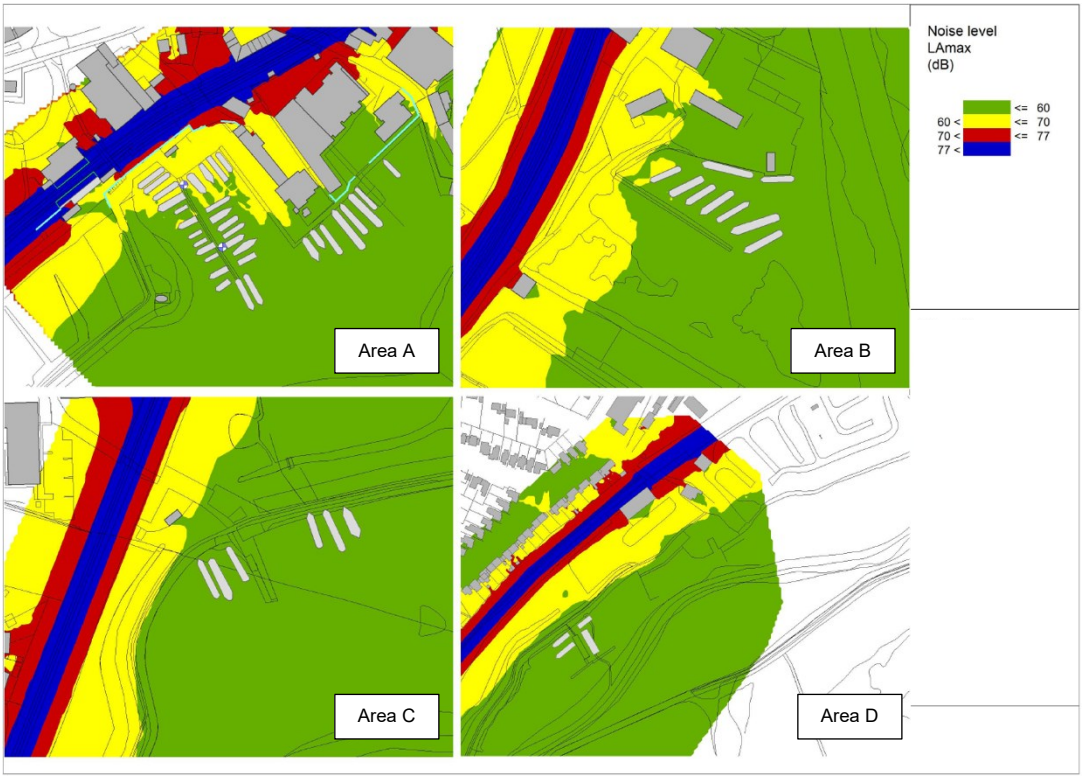
4.2.6 Where houseboats have a sound reduction performance lower than 25dB, which may be the case for GRP-based boats with large, openable windows, a medium magnitude impact, which is considered significant in terms of the EIA Regulations, may occur at an external level of between 60dB and 70dB L_{AFmax}; the exact threshold at which the significant effect will occur will depend on the precise sound reduction performance of the individual boat.

4.3 Predicted Noise Levels

4.3.1 Train noise levels (L_{AFmax}) have been predicted using SoundPLAN 3D noise modelling software, based on the approach described in Section 3 of this supplemental assessment.

4.3.2 The predicted noise contours are shown in Plate 4.3.

Plate 4.3: Noise contours for houseboats on the River Deben



4.3.3 From Plate 4.3, it can be seen that the majority of houseboats are expected to be exposed to night-time L_{AFmax} levels below 60dB, i.e. within the green shaded areas. Of those that are predicted to experience noise levels above 60dB (yellow shaded areas), none are predicted to be exposed to noise levels above 70dB (red and blue shaded areas).

4.3.4 The magnitude of impact for the majority of houseboats is therefore expected to be either low or very low. For medium sensitivity receptors, these impacts would result in minor adverse, or negligible effects, neither of which are significant in terms of the EIA Regulations.

4.3.5 Where houseboats have a lower sound reduction performance than 25dB, medium adverse impacts could occur in the 60-70dB range (the yellow shaded area). As noted previously GRP-based boats are likely to have a lower sound reduction performance as a result of their typically greater areas of glass in their external fabric.

4.3.6 For medium sensitivity receptors, this would result in a moderate adverse effect, which is significant in terms of the EIA Regulations.

4.3.7 For the purposes of this supplemental assessment, it is concluded that significant adverse effects could occur in the 60-70dB L_{AFmax} range (the yellow shaded area), and mitigation is considered accordingly.

4.3.8 In all instances, and irrespective of the potential variation in the sound reduction performances of the external fabric of the houseboats, the outcomes fall below the LOAEL, or between the LOAEL and SOAEL. In no case is the SOAEL exceeded.

4.3.9 In planning policy terms, the requirement is therefore to mitigate and reduce noise to a minimum. This does not mean such effects cannot occur: the NPSE accepts (paragraph 2.24) that adverse effects that fall between LOAEL and SOAEL can occur and the policy tests can still be complied with.

4.4 Mitigation

4.4.1 As noted in Section 1 of this supplemental assessment, the draft 'Rail Noise Mitigation Strategy' (**Volume 3, Appendix 9.3.E** of the **ES Addendum** (Doc Ref 6.14) [AS-258] sets out the operational and physical mitigation that has been embedded into the operational use of the East Suffolk line.

4.4.2 None of the houseboats are predicted to be subject to noise levels of more than 70dB L_{AFmax}, and therefore they would not be eligible for sound insulation under the 'Noise Mitigation Scheme' (**Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210]), even as amended.

4.4.3 Should there be boats whose external fabric is not capable of providing a sound reduction of 25dB, it is possible that moderate adverse effects could occur in the area predicted to be subject to noise levels of 60 to 70dB L_{AFmax}.

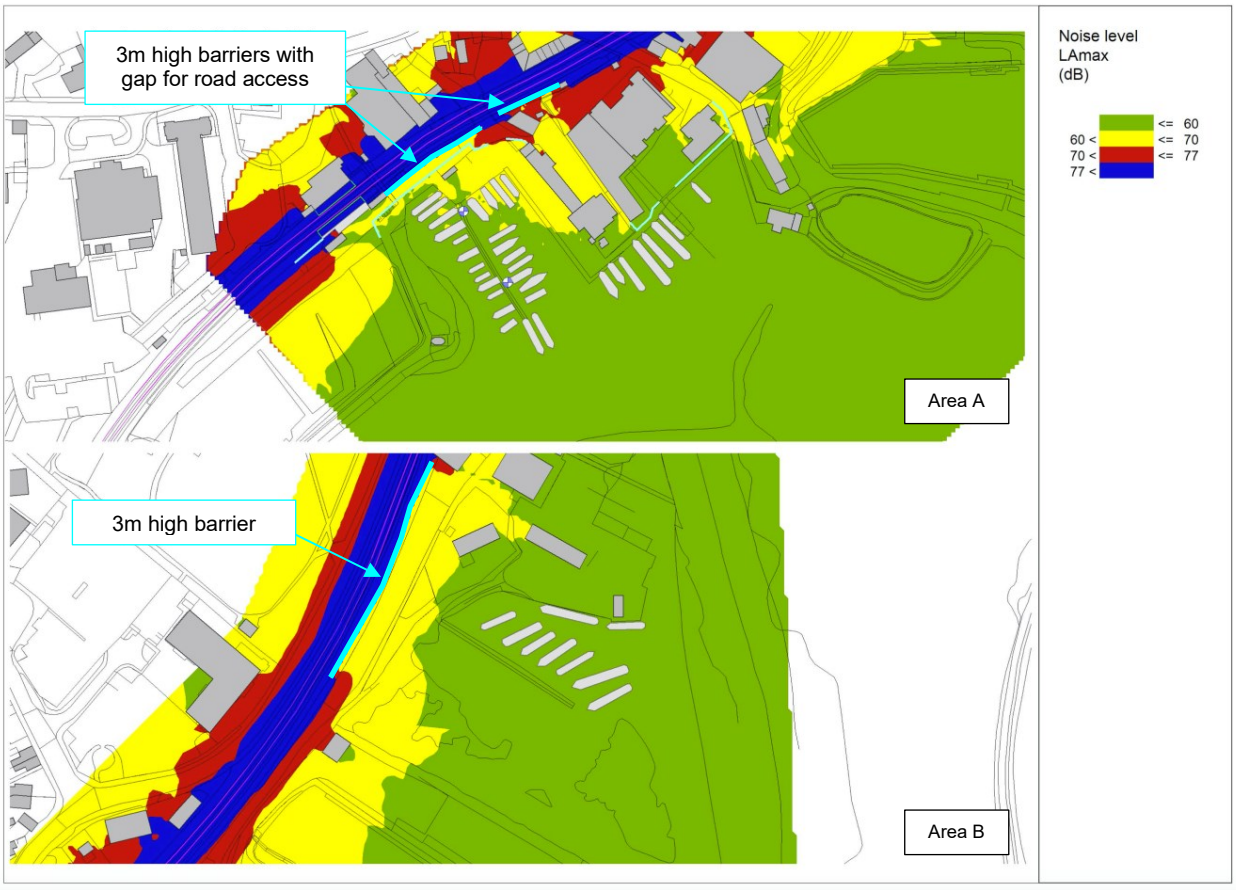
4.4.4 SZC Co. therefore proposes to further amend the Noise Mitigation Scheme to make specific provision for a more flexible application of mitigation for houseboats in the Woodbridge and Melton area. The amended Noise Mitigation Scheme will enable improvements to sound insulation to be considered to those houseboats whose external fabric may be acoustically weaker and where such improvements are practicable or feasible, so that the benefits can be provided at a lower noise threshold.

4.4.5 The amended scheme will also allow for a wider implementation of mitigation in respect of houseboats than the current glazing and/or ventilation offer. For example, it may be appropriate to offer affected boats air conditioning units, and the cost of operating them, to allow them to keep their windows closed through periods of warm weather.

4.4.6 The potential to install acoustic fences along the railway line continues to be explored with Network Rail and further calculations have been undertaken to determine the potential benefit of erecting 3m high acoustic barriers along the East Suffolk line.

4.4.7 Acoustic barriers have been considered to screen Areas A and B, as shown in Plate 4.4. Areas C and D are not considered as the boats in those areas are predicted to be exposed to L_{AFmax} noise levels of less than 60dB.

Plate 4.4: Noise contours for houseboats on the River Deben – with mitigation



4.4.8 It can be seen from Plate 4.4 that a 3m high acoustic barrier adjacent to the East Suffolk line could be an effective means of reducing noise levels in the most-affected parts of Areas A and B.

4.4.9 The L_{AFmax} noise levels in Area B could be brought below 60dB for all houseboats. For Area A, the noise levels would be reduced, but there could still be houseboats exposed to L_{AFmax} noise levels above 60dB. If the boats in those areas have external fabric that does not provide a sound reduction of 25dB, a moderate adverse effect could still occur, which would be a significant effect in terms of the EIA Regulations.

4.4.10 To be effective, the acoustic barrier would need to be imperforate, sealed at the base, and have a superficial density of at least 18kg/sq.m.

4.4.11 Should the discussions with Network Rail confirm that lineside acoustic barriers are feasible, the Noise Mitigation Scheme would be revised to enable delivery of such structures

4.4.12 Any such proposals would be subject to discussion with relevant authorities, including East Suffolk Council, Woodbridge Town Council and Melton Parish Council, and local residents, and subject to the necessary permissions and further assessment of other potential environmental effects, prior to any decision whether or not to install any barriers. In any event and as set out above, compliance with policy in terms of the impacts does not depend on the provision of barriers.

4.4.13 SZC Co. is willing to consider scope for moving houseboats within the marina, or within the area, if desired by individuals, but given the levels of noise forecast and the potential mitigation options set out here, it is not considered that this measure will be necessary.

4.4.14 In terms of planning policy, these outcomes would all fall below LOAEL or between LOAEL and SOAEL. The SOAEL would be avoided in line with policy, and the policy requirement is to mitigate and reduce noise to a minimum.

4.4.15 It is therefore necessary to balance mitigation that can be reasonably and practically delivered against reducing the adverse effects on health and quality of life to a minimum, in the context of Government policy on sustainable development.

5 CONCLUSIONS

5.1.1 This supplemental assessment provides further information on the potential effects for houseboats along the River Deben that are likely to be exposed to noise from night-time trains associated with the construction of SZC.

5.1.2 The assessment shows that none of the houseboats are predicted to be exposed to L_{AFmax} noise levels of more than 70dB. For the majority of boats whose external fabric is likely to provide a sound reduction of at least 25dB R_w, no significant adverse effects in EIA terms are likely.

5.1.3 For those boats whose external fabric does not provide a sound reduction of 25dB R_w, significant effects are possible at L_{AFmax} noise levels of between 60 and 70dB, the exact threshold depending on the sound reduction performance of the external fabric of the individual boat.

5.1.4 In all cases, the outcomes would all fall between LOAEL and SOAEL. As they do not exceed SOAEL, planning policy does not require the effects to be avoided. Rather, policy requires all reasonable steps to be taken to mitigate and minimise those adverse effects on health and quality of life whilst also taking into account the principles of sustainable development, which does not mean that such effects cannot occur (NPSE paragraph 2.24).

5.1.5 SZC Co. proposes to revise the Noise Mitigation Scheme to enable a more flexible application of mitigation for houseboats in the Woodbridge and Melton area than is currently possible under the terms of that document.

5.1.6 Acoustic barriers along the edge of the East Suffolk line could have a further beneficial effect, and the potential for installation of such barriers continues to be explored with Network Rail. Should Network Rail agree that lineside acoustic barriers are feasible, they will be subject to discussion with relevant authorities. In any event, compliance with policy in terms of the impacts does not depend on the provision of barriers.

5.1.7 On the basis of this further assessment, **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] would be updated as shown in **Table 5.1**. The figures in **Table 5.1** include the additional houseboats considered in this supplemental assessment, plus park homes at Whitearch Park, which have been subject to a similar assessment.

Table 5.1: Updated estimated of numbers of properties exposed to different noise levels from proposed night time use of the East Suffolk line between Saxmundham and Westerfield junction

Noise level, L_{AFmax}, dB (free-field)	Estimated number of dwelings	
	No mitigation	Mitigation (no stops in Saxmundham)
60-70(1)	424-444	349-379(2)
70-77	152-162	100-110
Over 77	41-51	5-10

Notes:

(1) **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] erroneously labelled this row as “60-79”; “60-70” is correct.

(2) Excludes any benefits from a potential acoustic barrier to screen houseboats in the Woodbridge area

REFERENCES

1. Department of Transport (1995) Calculation of Railway Noise (CRN)
2. World Health Organisation (1999) Guidelines for community noise
3. C.G. Rice and P.A. Morgan (1982) ISVR Technical Memorandum No 623 A Synthesis of Studies on Noise-Induced Sleep Disturbance
4. Basner et al, Aircraft noise effects on sleep: Application of the results of a large polysomnographic field study, Journal of the Acoustical Society of America **119**, 2772 (2006)
5. Basner et al, Single and combined effect of air, road and rail traffic noise on sleep and recuperation, SLEEP 2011; 34(1):11-23 (2011)
6. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No 572)
7. DECC (2011) Overarching National Policy Statement (NPS) for Energy (NPS EN-1)
8. DEFRA (2010) Noise Policy Statement for England

Sizewell C targeted consultation:

Rail noise at houseboats on the River Deben in Woodbridge and Melton

Proposals for Sizewell C, a new nuclear power station on the Suffolk coast, and associated development, are currently being examined by the Planning Inspectorate, the agency that deals with national infrastructure planning.

This follows our (NNB Generation Company (SZC) Limited) May 2020 submission of an application for development consent for the project, which included an assessment of potential noise effects of Sizewell C freight trains running on the East Suffolk line.

Since submission of the application, we have carried out additional work to further consider potential effects on houseboats on the River Deben at Woodbridge and Melton.

This document outlines the findings of this work, while a detailed report of the assessment can be found in the Sizewell C Noise Assessment and Mitigation Plan - Houseboats.

We are now seeking feedback on the additional assessment work in this targeted consultation which closes on Friday 11 June 2021.

If you have any comments you can send responses by email to **info@sizewellc.co.uk**, or by post to **FREEPOST SZC CONSULTATION** (no stamp or further address required).

If you are unable to use email or post, please call **0800 197 6102** (9am – 5pm, Monday to Friday) to arrange for your response to be collected.

Construction transport: rail

We are proposing to use road, rail and sea-based transport to move materials for the construction of Sizewell C. At the peak of construction, our rail proposals provide for up to four trains a day (eight movements, and we expect seven of these to be at night), operating five and sometimes six days a week.

Trains would travel from the south along the East Suffolk line, joining the refurbished Saxmundham to Leiston branch line, and unloading at a temporary facility on land east of Eastlands Industrial Estate. We are also proposing to build a temporary rail extension (the 'green rail route') from just west of Leiston to a new unloading terminal on the northern side of the Sizewell C site.

This will be in use within two years of the start of the project, running up to four trains a day. While the green rail route is being built, a maximum of two trains a day (four movements, three of which we expect will be at night) will run along the refurbished Saxmundham to Leiston branch line.

Our rail proposals also include a commitment to mitigation through the:

1. **Noise Mitigation Scheme**, providing improved sound insulation for properties meeting qualifying criteria; and
2. **Rail Noise Mitigation Strategy**, which includes measures to reduce train noise by, for example, improving trackbeds and rails for smoother running, upgrading signalling, limiting night speeds to 10mph at some locations, and using quieter locomotives.

The details of these proposals can be found in the Planning Inspectorate's Examination Library as documents [APP-210] and [AS-258].

If you have difficulties accessing these documents online, please contact us by email, post, or phone (0800 197 6102 open 9am – 5pm, Monday to Friday) and we will provide you with hard copies.

Additional assessment

Our additional assessment of rail noise focuses on potential airborne noise at certain locations affected by Sizewell C construction trains, including houseboats on the River Deben at Woodbridge and Melton.

It considers maximum noise levels at night, which earlier assessments showed as having the most impact due to the change in noise level, since there are currently limited night-time rail movements.

Assessments were carried out in line with government policy, which sets tests for noise based on the lowest observed adverse effect on health and quality of life (LOAEL) and significant observed adverse effects on health and quality of life (SOAEL).

For night-time (11pm to 7am) railway noise, the LOAEL is considered to be 60dB LAFmax and the SOAEL is considered to be 77dB L_{AFmax}. Policy requires levels between the LOAEL and SOAEL to be mitigated and reduced to a minimum, while levels above the SOAEL should be avoided.

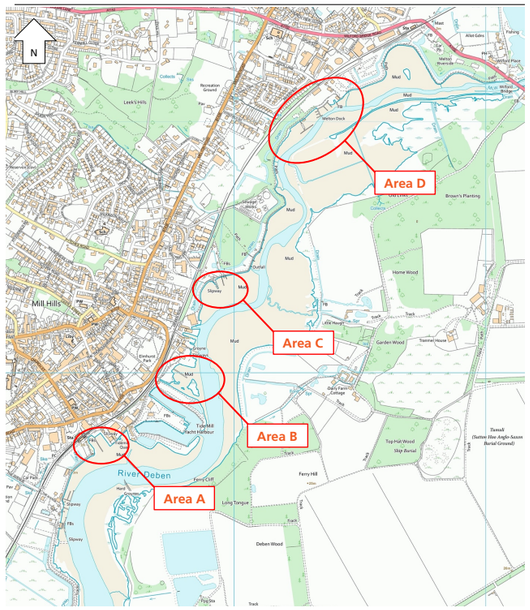


Figure 1

Rail noise at houseboats on the River Deben at Woodbridge and Melton

There are four areas along the River Deben at Woodbridge and Melton (as shown in Fig. 1) – opposite Woodbridge Station, to the north of Tide Mill Yacht Harbour, to the north east of Lime Kiln Quay, and near to Melton Dock (see Noise Assessment and Mitigation Plan - Houseboats for details) - where houseboats could potentially be affected by rail noise.

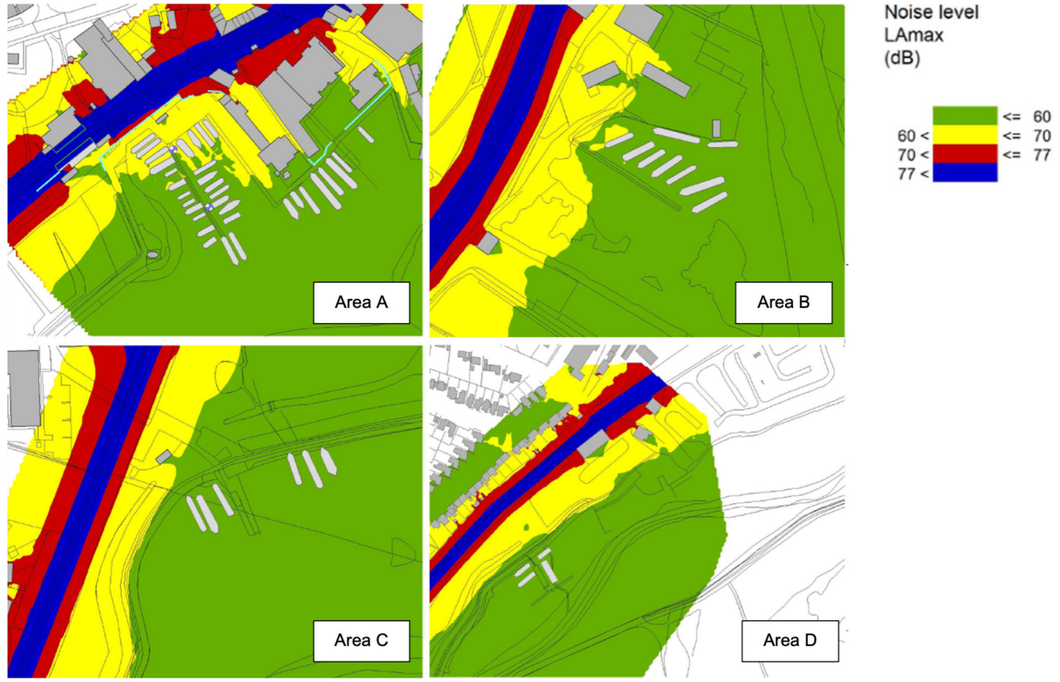
The houseboats at Woodbridge and Melton are too far from the railway line to be significantly affected by ground-borne noise or vibration from construction trains or are disconnected from the land in such a way that the transmission of ground-borne noise or vibration will be greatly reduced.

Similarly, while Network Rail may do work to improve some sections of the East Suffolk line, it would be considered routine maintenance rather than substantive construction works, so we have not considered construction noise or vibration here.

None of the houseboats are predicted to be exposed to night-time noise levels above 70dB, as can be seen from Figure 2, where none of the houseboats fall into the red or blue shaded areas. The majority are predicted to experience night-time noise levels below 60dB, with others at levels between 60dB and 70dB, i.e. the yellow and green shaded areas in Figure 2. While all houseboats will be below the LOAEL or between the LOAEL and SOAEL, the external fabric or state of repair of some boats could mean residents are affected by rail noise.

Our assessment predicts that houseboats in the 60dB to 70dB range could qualify for mitigation. We are proposing to amend the Noise Mitigation Scheme as the Examination progresses to allow for a more flexible approach to providing noise insulation for these houseboats.

Figure 2



Additional potential mitigation measures

While the Noise Mitigation Scheme and Rail Noise Mitigation Strategy will reduce noise as required by policy, we are also working with Network Rail to explore the potential for installing acoustic barriers or noise screens between the railway line and some houseboats.

If acoustic screening is feasible and acceptable, we will amend the Noise Mitigation Scheme to enable it, however it will require further discussion with the boat owners and mooring owners, plus further assessment of potential environmental effects and planning permission from the local authorities would also be required.

This process would be separate to the planning process for Sizewell C and we will continue to engage with boat owners and mooring owners.

We will consider providing help with moving houseboats within the marina, or within the area, if desired by houseboat owners. Given the levels of predicted noise and proposed mitigation, we do not consider this will be necessary, particularly as the other mitigation measures are considered to be effective.

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*Calls to 0800 numbers are free from UK landlines. Call costs from mobile and international numbers may vary.
**By appointment between 10am and 4pm Monday to Friday.

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APPENDIX D: NOISE ASSESSMENT AND MITIGATION PLAN AND SUMMARY DOCUMENT WHITEARCH PARK

The Sizewell C Project

Noise Assessment and Mitigation Plan - Whitearch Park

Revision:	1.0
Applicable Regulation:	Regulation 5(2)(q)
PINS Reference Number:	EN010012

May 2021

Planning Act 2008
Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009

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CONTENTS

PLATES

1 INTRODUCTION

1.1 Overview

1.1.1 NNB Generation Company (SZC) Limited ('SZC Co.') has made an application to the Planning Inspectorate under the Planning Act 2008 for a Development Consent Order (DCO) for the Sizewell C Project. The application is currently the subject of an examination by the Planning Inspectorate (application reference EN010012).

1.1.2 As part of the application, an Environmental Statement was submitted to the Planning Inspectorate in May 2020, which included an assessment of rail noise arising from the transport of construction materials by train on the East Suffolk line. An Environmental Statement Addendum was subsequently submitted in January 2021, which included an updated assessment of rail noise.

1.1.3 This document provides a more detailed assessment of potential noise effects from the use of the rail infrastructure on park homes located at Whitearch Park, south of Saxmundham. This more detailed assessment has been undertaken as envisaged in **paragraph 1.6.6** of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546].

1.1.4 Sections 1, 2 and 3 set out relevant background information, to provide context for the noise assessment which is set out in section 4.

1.2 Proposed Development

1.2.1 To facilitate the construction of SZC, a combination of transportation modes is proposed to deliver construction materials to the site. The proposed transportation modes are road, rail and sea-based.

1.2.2 This supplemental assessment focuses on the potential for airborne noise effects from rail movements, as the locations considered will be most-affected by that particular mode of transportation.

1.2.3 The **Freight Management Strategy** (Doc Ref 8.18) [AS-280] for the project provides for up to four trains per day at the peak of construction, equating to eight train movements per day. Of these eight train movements per day, it is envisaged that seven movements will occur at night, as there is insufficient rail capacity during the daytime. The possibility of a fifth train each day has been investigated with Network Rail but is not thought to be possible within the rail timetable and is no longer being considered.

1.2.4 At the peak of construction, the train movements are likely to occur on six nights per week.

1.2.5 Trains would travel from the south along the East Suffolk line, and join the Saxmundham to Leiston branch line, which would be refurbished. In the early years of the construction works, the trains would travel to a temporary unloading facility built on land east of Eastlands Industrial Estate.

1.2.6 A new rail extension, called the 'green rail route', will be constructed to a new unloading terminal on the northern side of the main SZC site, departing from the Saxmundham to Leiston branch line just west of Leiston. The green rail route is expected to be complete and in use within two years of the start of the project.

1.2.7 In the early years before the green rail route is complete, there will be a maximum of two trains per day, equating to four train movements, three of which we expect will be at night. Once the green rail route is complete, up to four trains per day will be run.

1.3 Previous Noise and Vibration Assessments

1.3.1 SZC Co. has submitted a suite of environmental assessments, considering the full range of potential effects that might arise from the SZC project.

1.3.2 The assessment of operational railway noise and vibration was originally set out in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545], including its associated **Appendix 4B** (Doc Ref 6.10) [APP-546]. The derivations of the assessment methods and criteria were set out in **Volume 1, Appendix 6G** of the **ES** (Doc Ref 6.1) [APP-171].

1.3.3 Additional noise surveys and assessment work carried out over the summer and autumn of 2020 resulted in a modification to the way in which railway noise, and in particular vibration, were assessed. The updated assessment was presented in **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188] and its associated appendices in **Volume 3, Appendices 9.3.A to 9.3.E** in the **ES Addendum** (Doc Ref 6.14) [AS-257 and AS-258].

1.3.4 Three of the key findings from the previous assessments have informed the approach adopted in this supplemental assessment:

- the effect of the additional trains on the East Suffolk line during the daytime was found to be negligible;
- at night, the increase in noise level over the whole of the night-time period along the East Suffolk line and the maximum levels due to the

peak of noise from individual passing trains would both result in a significant adverse effect for some receptors; and

- for all receptors, the most significant effects were determined by the maximum noise levels, assessed using the L_{AFmax} parameter, not the overall noise levels across the whole of the night-time period.

1.3.5 In light of these findings, this supplemental assessment focuses on the night-time period, and considers the maximum noise levels only. These two factors were found to be the combination that resulted in all adverse airborne railway noise effects in the previous assessments.

1.3.6 The previous noise and vibration assessments considered the potential effects of both the construction and operational use of rail infrastructure on nearby sensitive receptors. The receptors that were considered covered a range of sensitivities and geographically covered the route of the rail line from Westerfield junction to each of the freight terminals adjacent to the site.

1.3.7 The previous noise assessments considered effects using noise contour plots, which were calculated using information about the amount of noise that passing trains are likely to generate. The calculations used the calculation methods set out in the 'Calculation of Railway Noise' (CRN) [Ref 1], supplemented with data gathered through multiple train noise measurements, to identify representative maximum noise levels. CRN only considers average noise levels over daytime or night-time periods, so noise surveys were necessary to provide suitable data for the assessment of maximum noise levels.

1.3.8 The properties affected by noise from rail movements were aggregated according to the noise level to which they were predicted to be exposed, and a conclusion reached as to the overall effect of the project's use of rail freight.

1.3.9 The potential for the railway noise assessment to develop and further consider certain types of residential accommodation was noted in **paragraph 1.6.6** of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546], which stated:

'In reviewing the potential noise levels we have undertaken research to identify the number of properties which may be impacted: estimated numbers of properties affected are as shown in Table 1.9 below. These numbers will continue to be reviewed including, where relevant, permanent residential caravans and houseboats identified.'

1.3.10 **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] summarised the number of properties anticipated to fall into bands of noise levels that equated to magnitudes of impact. **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] is replicated here as **Table 1.1**.

Table 1.1: Estimated numbers of properties exposed to different noise levels from proposed night time use of the East Suffolk line between Saxmundham and Westerfield junction

Noise level, L_{AFmax}, dB (free-field)	Estimated number of dwelings	
	No mitigation	Mitigation (no stops in Saxmundham)
60-70(1)	390-410	320-350
70-77	150-160	100-110
Over 77	40-50	5-10

Note: (1) **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] erroneously labelled this row as "60-79"; "60-70" is correct.

1.3.11 Updates to this table are included in this supplemental assessment, where necessary.

1.3.12 This supplemental assessment considers the potential noise effects from the use of the rail infrastructure for park homes located at Whitearch Park, south of Saxmundham, as anticipated in **paragraph 1.6.6** of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546].

1.3.13 This supplemental assessment has been undertaken following formal and informal representations made to SZC Co. by the owner of Whitearch Park [RR-1265] and East Suffolk Council.

1.3.14 Only airborne noise from operational trains is considered in this supplemental assessment as the park homes are too far from the railway line to be significantly affected by groundborne noise or vibration.

1.3.15 No substantive construction works are proposed close to the park homes, so construction noise or vibration is not considered either. It is possible that there will be rail replacement along sections of the East Suffolk line, some of which falls under Network Rail's regular maintenance programme, and some that are brought forward by SZC Co. All such works would be undertaken by Network Rail and are considered to be routine maintenance rather than substantive construction works.

1.3.16 SZC Co. has committed to two key mitigation schemes that are relevant to this supplemental assessment of railway noise and vibration:

- The **Noise Mitigation Scheme** (**Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210].

- The 'Rail Noise Mitigation Strategy', set out in draft in **Volume 3, Appendix 9.3.E** of the **ES Addendum** (Doc Ref 6.14) [AS-258].

1.3.17 The 'Noise Mitigation Scheme' will provide the means to improve the sound insulation of those properties that meet certain qualifying criteria. For railway noise, the criteria are:

A. an offer for noise insulation based on averaging rail noise over the day and night time periods, which is consistent with the national Rail Noise Regulations.

(i)(a) the Future (Rail) Noise Levels exceed façade noise levels of 69dB $L_{Aeq,16hrs}$ during the hours of 07:00 to 23:00 or 58dB $L_{Aeq,8hrs}$ during the hours of 23:00 to 07:00;

(b) the Future (Rail) Noise Levels are at least 1dB higher than the Existing (Rail) Noise Levels as a result of the use of the new or amended railway line associated with the Development; and

(c) the contribution from the new or amended railway line associated with the Development to the Future (Rail) Noise Levels at the façade is at least 1dB; or

B. an offer for noise insulation based on the max noise level created at night:

(ii) maximum sound level L_{AFmax} 73dB between 23:00 and 07:00 hours.

1.3.18 The same criteria are applied to noise resulting from SZC construction trains irrespective of whether they use existing rail lines or new / altered rail lines.

1.3.19 It should be noted that the 73dB façade L_{AFmax} threshold has been amended from the 80dB façade L_{AFmax} value originally set out in **Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210] as a result of discussions with the local planning authorities. The mitigation package has been strengthened in this respect.

1.3.20 The measures set out in the draft 'Rail Noise Mitigation Strategy' (**Volume 3, Appendix 9.3.E** of the **ES Addendum** (Doc Ref 6.14) [AS-258]) include:

- Installation of a crossover north of Saxmundham station and upgrades to the signalling system to permit trains to join or leave the Saxmundham to Leiston branch line without stopping, known as the 'change arrangements at Saxmundham'.

- The Saxmundham to Leiston branch line will be upgraded with a refurbished trackbed, concrete or steel sleepers, and welded rails to provide a consistent rail cross-section consistent gauge, and smooth running surface.

- The proposed rail extension route will be constructed using the same approach as the upgraded Saxmundham to Leiston branch line.

- Under ballast mats will be installed where the Saxmundham to Leiston branch line or proposed rail extension route pass within 15 metres of a residential receptor, and will be installed for a minimum of 10 metres either side of the property. An alternative design may be substituted, if its effectiveness is equal and approved.

- Night-time speed limits of 10 mph will apply at three locations along the East Suffolk line: Woodbridge/Melton, Campsea Ashe, and Saxmundham.

- Speed on the Saxmundham to Leiston branch line will be limited to 10mph during the early years.

- Pending the results of further assessment of the upgraded and mitigated Saxmundham to Leiston branch line during the early years operation, the speed limit on Saxmundham to Leiston branch line may be increased to 20mph. This further assessment work is described later in this section.

- The speed limit on the proposed rail extension route will match that applied to the Saxmundham to Leiston branch line. This enables constant train speeds to be maintained, thereby avoiding accelerating locomotive noise close to the north-western corner of Leiston.

- Class 66 locomotives will be used in preference to Class 68 locomotives, where there is equivalent choice.

- Night-time construction trains will not travel into or out of Leiston, instead being held on the Saxmundham to Leiston branch line to the west of the Saxmundham Road level crossing, at defined locations.

- Construction trains stabled overnight on the branch line will not be permitted to keep their engines idling.

1.3.21 The majority of these measures relate to rail operations north or east of Saxmundham, however, the selection of quieter locomotives is relevant beyond this area and to this supplemental assessment.

2 ASSESSMENT CRITERIA

2.1.1 As set out in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545], the EIA methodology considers whether impacts from the proposed development would have an effect on any resources or receptors. The assessment broadly considers the magnitude of impacts and the value/sensitivity of resources/receptors that could be affected to classify effects.

2.1.2 The effect of noise and vibration on a receptor or community is dependent on the magnitude of the impact, the sensitivity of the receptor, and may also depend on other factors, such as the existing acoustic environment.

2.1.3 A detailed description of the assessment methodology used to assess the potential effects on noise and vibration arising from the proposed development is provided in **Volume 1, Appendix 6G** of the **ES** (Doc Ref 6.1) [APP-171].

2.1.4 The assessment criteria for airborne railway noise that are relevant to this supplemental assessment are summarised in this section.

2.2 Receptor Sensitivity

2.2.1 The criteria used to determine the sensitivity of potentially affected receptors are set out in **Table 2.1**.

Table 2.1: Assessment of the value or sensitivity of receptors for noise and vibration

Sensitivity	Description
High	Receptors that are highly sensitive to noise or vibration such as theatres, auditoria, recording studios, concert halls and highly vibration sensitive structures or uses such as certain laboratories medical facilities or industrial processes.
Medium	Noise and vibration sensitive receptors such as permanent residential buildings, hospitals and other buildings in health/community use, buildings in educational use, hotels and hostels.
Low	Receptors with limited sensitivity to noise and vibration such as offices, libraries buildings in religious use, and other workplaces with a degree of sensitivity due to the need to concentrate.
Very Low	Receptors of very low sensitivity to noise and vibration such as industrial or commercial buildings and transient or mobile receptors.

2.2.2 These same criteria have been used for the assessment set out in this supplemental assessment. Residential accommodation is considered to be medium sensitivity, including for park homes.

2.3 Impact Magnitude

2.3.1 The magnitude of impact as a result of airborne railway noise was assessed by applying different criteria, according to the existing level of rail service along a particular rail line.

2.3.2 For the East Suffolk line, with its regular, predominantly passenger-based service, it was the change in noise level from the existing situation that was used to quantify the magnitude of impact.

2.3.3 For new lines, or lines that are to be brought back into regular service, as would be the case for the Saxmundham to Leiston branch line and green rail route, absolute criteria were derived from noise policy and guidance, to correlate with a particular magnitude of impact.

2.3.4 For night-time rail movements, the maximum noise levels associated with the peak of noise from passing trains were assessed against absolute criteria, again, derived from noise policy and guidance, to correlate with a particular magnitude of impact.

2.3.5 As was noted in Section 1 of this supplemental assessment, the change in noise level along the East Suffolk line during the daytime was found to be negligible, as a result of a single freight train being run in addition to the regular passenger service.

2.3.6 During the night-time, changes in the average night-time noise levels were found to be significant in some locations, as a result of the additional night-time freight movements being added to the current night-time rail movements, which are limited.

2.3.7 It was found that the maximum sound levels from individual passing trains were the most significant indicator when determining the magnitude of impact. Wherever a significant adverse effect was found to have occurred as a result of the change in the overall night-time noise level, maximum noise levels from passing trains also gave rise to a significant adverse effect, which was generally more acute.

2.3.8 On the basis of these previous outcomes, this supplemental assessment therefore only considers the maximum noise levels from passing trains, and only those criteria relevant to maximum noise levels are set out here.

2.3.9 The maximum noise level criteria, which relate to the L_{AFmax} noise index, are set out in **Table 2.2.** The L_{AFmax} values in **Table 2.2** are extracted from **Table 4.7** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545].

Table 2.2: Maximum noise level thresholds to determine the magnitude of impact from rail movements (all values are free field).

Sensitivity of receptor	Period	Magnitude of impact				Parameter
		Very low	Low	Medium	High	
Medium	Night	<60	60	70	77	L_{AFmax}, dB

2.4 Application of Maximum Noise Level Thresholds to Park Homes

2.4.1 Maximum noise levels are the most commonly-used measure of sound when considering sleep disturbance, and it is in that context that they informed the assessment of railway noise and the magnitude of impact criteria in **Table 2.2**.

2.4.2 Guidance on sleep disturbance generally relates to sound levels within properties, where people are most likely to be sleeping. The thresholds in **Table 2.2** are external measures of noise, i.e. they are to be measured or calculated at a point outside of a property within which people may be sleeping.

2.4.3 This is the normal approach in noise assessments, since the noise can be measured outside the property without requiring access into a property, which might potentially disturb the occupants.

2.4.4 However, since the thresholds are defined outside the property, but the effect occurs within the property at known noise levels, the difference between the sound levels inside and outside the property is critical. A full explanation of the derivation of the values set out in **Table 2.2** can be found in **Sections 3.2 and 3.3** in **Volume 3, Appendix 9.3.D** of the **ES Addendum** (Doc Ref 6.14) [AS-257].

2.4.5 In the context of this supplemental assessment, it is useful to understand how those values were derived, in broad terms, so that the appropriateness of the criteria for park homes can be determined.

2.4.6 The World Health Organisation's (WHO) 'Guidelines for Community Noise' [Ref 2] indicates that people sleeping may disturbed when the internal noise levels exceed 45dB L_{AFmax} 10 to 15 times per night. SZC Co. has adopted a precautionary approach to the assessment of night-time railway noise and, rather than apply the '10 to 15 times' part of the WHO guidance, SZC Co. has instead worked on the basis that the potential sleep disturbance

could occur as a result of a single occurrence of noise above 45dB L_{AFmax} inside the property.

2.4.7 It is known that a partially open window in a typical house will reduce external noise levels by approximately 15dB; this reduction is based on the proportion of the external façade that is made up by the partially open window relative to the amount of brickwork.

2.4.8 The 'low' magnitude of impact is considered to occur where the external noise level exceeds 60dB L_{AFmax}, which is derived from the 45dB L_{AFmax} internal WHO threshold, allowing for the 15dB reduction through a partially open window, i.e. 45dB + 15dB = 60dB.

2.4.9 At the other end of the scale, research by Rice and Morgan [Ref 3] and Basner et al [Ref 4, Ref 5] suggests that there is likely to be a significant adverse effect on health and quality of life where the external maximum noise level exceeds 80 or 85dB L_{AFmax}, depending on the number of events. These external values relate to an internal level in the region of 65dB and, again, assume a partially open window.

2.4.10 SZC Co. has adopted the more stringent interpretation of the research on a precautionary basis. The 80dB L_{AFmax} value is a façade value, measured 1m in front of the building façade, which is generally 3dB higher than the value that would occur at the same location if the building were not present. The difference is caused by sound reflecting off the building façade, effectively doubling sound pressure level at a point 1m in front of the building; a doubling of the sound pressure causes a 3dB increase in level, as noise is measured on a logarithmic scale.

2.4.11 The 'high' magnitude of impact in **Table 2.2** is a free-field value, which is a value measured away from any reflecting surfaces other than the ground, and is therefore 3dB lower than the façade level, i.e. 77dB instead of 80dB.

2.4.12 The 'medium' magnitude of impact in **Table 2.2** is the only value that is not based on the assumption that a window is partially open. It is derived from the same 45dB L_{AFmax} internal noise level that the WHO suggests marks the onset of sleep disturbance, but the correction applied to obtain an external noise level is based on a closed double-glazed window, which will typically reduce external noise levels by 25dB.

2.4.13 The important point in the context of this supplemental assessment is that if the sound reduction provided by the external fabric of park homes is less than 25dB, for example as a result of the use of lighter materials than are typically used in housebuilding, then an impact equivalent to the medium magnitude of impact could occur at a lower external noise level than the 70dB stated in **Table 2.2**.

2.4.14 The implications for the assessment of the sound reduction provided by the external fabric of park homes being less than 25dB are considered later in this supplemental assessment.

2.5 Classification of Effects

2.5.1 Following the classification of the magnitude of the impact and the value/sensitivity of the receptor/feature, the effect has been classified as shown in **Table 2.3** (originally **Table 4.11** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]).

Table 2.3: Classification of effects.

		Value/Sensitivity of Receptor			
		Very Low	Low	Medium	High
Magnitude	Very low	Negligible	Negligible	Negligible	Negligible
	Low	Negligible	Minor	Minor	Moderate
	Medium	Minor	Minor	Moderate	Major
	High	Minor	Moderate	Major	Major

2.5.2 Definitions of each of the different levels of effect, which can be adverse, beneficial or neutral are shown in **Table 2.4** (originally **Table 4.12** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]).

Table 2.4: Effect definitions

Effect	Description
Major	The noise causes a material change in behaviour attitude or other physiological response. Adverse change may result in the potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished or improved due to change in acoustic character of the area.
Moderate	Effects that may result in moderate changes in behaviour, attitude or other physiological response. Adverse effects may result in some reported sleep disturbance. Changes to the acoustic character of the area such that there is a perceived change in the quality of life.
Minor	Effects that may result in small changes in behaviour attitude or other physiological response. Adverse effects may result in some minor reported sleep disturbance. Small changes to the acoustic character of the area such that there is a low perceived change in the quality of life.
Negligible	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.

2.5.3 Following the classification of an effect as detailed in **Tables 2.3** and **2.4**, a clear statement has been made as to whether the effect is 'significant' or 'not significant' in terms of the EIA Regulations [Ref 6]. As a general rule, major and moderate effects are considered to be significant and minor and negligible effects are considered to be not significant.

2.6 Use of LOAEL and SOAEL values in the assessment

2.6.1 In line with the 'National Policy Statement for Energy' (NPS EN-1) [Ref 7] and the 'Noise Policy Statement for England (NPSE) [Ref 8], levels for the lowest observed adverse effect on health and quality of life (LOAEL) and the significant observed adverse effects on health and quality of life (SOAEL) have been established for the assessment of railway noise. **Table 2.5** sets out broad descriptions of these categories, and the actions required for each.

2.6.2 **Table 2.5** was originally **Table 4.13** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545].

Table 2.5: Generic effect descriptions and recommended actions

Effect	Description	Action
Below LOAEL	Noise can be heard, but does not cause any change in behaviour, attitude or other physiological response. Can slightly affect the acoustic character of the area but not such that there is a change in the quality of life.	No specific measures required.
Between LOAEL and SOAEL	Noise can be heard and causes small changes in behaviour, attitude or other physiological response, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a small actual or perceived change in the quality of life.	Mitigate and reduce to a minimum.
Above SOAEL	The noise causes a material change in behaviour, attitude or other physiological response, 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.	Avoid

2.6.3 The LOAEL and SOAEL values for railway noise that are relevant to this supplemental assessment are set out in **Table 2.6** (extracted from **Table 4.16** in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]).

Table 2.6: LOAEL and SOAEL values for railway noise (all free-field values)

Time Period	LOAEL	SOAEL
Night (23:00-07:00)	60dB L_{AFmax}	77dB L_{AFmax}

2.6.4 The derivation of these values is detailed in **Volume 1 Appendix 6G** and **Annex 6G.1** of the **ES** (Doc Ref 6.1)) [APP-171], with further detail set out in **Volume 3, Appendix 9.3.D** of the **ES Addendum** (Doc Ref 6.14) [AS-257]. The LOAEL and SOAEL values match the 'low' and 'high' magnitudes of impact, respectively.

3 MODIFICATIONS TO THE NOISE MODELLING

3.1.1 As noted in Section 1 of this supplemental assessment, the assessment of railway noise and vibration was set out in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545], including its associated **Appendix 4B** (Doc Ref 6.10) [APP-546], with the derivation of the assessment methods and criteria set out in **Volume 1, Appendix 6G** of the **ES** (Doc Ref 6.1) [APP-171].

3.1.2 Additional noise surveys and assessment work carried out over the summer and autumn of 2020 modified the way in which railway noise, and in particular vibration, were assessed. The updated assessment was presented in **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188] and its associated appendices in **Volume 3, Appendices 9.3.A to 9.3.E** in the **ES Addendum** (Doc Ref 6.14) [AS-257 and AS-258].

3.1.3 This supplemental assessment further considers the potential effects on park homes located at Whitearch Park, south of Saxmundham where residential accommodation exists in the form anticipated in paragraph 1.6.6 of **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546].

3.1.4 This section identifies the modifications or refinements made to the noise modelling process for this supplemental assessment.

3.2 Source Data

3.2.1 The source data used in this supplemental assessment are the same as were used previously in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545]. As was noted in **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188], the additional noise survey and assessment work carried out over the summer and autumn of 2020 suggested that the L_{AFmax} levels used in the original noise modelling were higher than were likely to occur in practice.

3.2.2 Notwithstanding this, the original, higher values were retained to present a robust assessment, and these values have been used again here.

3.2.3 The height of the source assumed in the L_{AFmax} calculations has been modified as a result of the additional survey and assessment work undertaken over the summer and autumn of 2020.

3.2.4 The original noise calculations presented in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545] were based on the effective height of the source being either at rail level for locomotives not on full power, or at a height of 4m above rail level for locomotives on full power. These source

heights are specified in the 'Calculation of Railway Noise' (CRN) [Ref 1]. For clarity, locomotives will tend to operate on full power when accelerating.

3.2.5 The additional survey and assessment undertaken over the summer and autumn of 2020 suggested that the effective source height for a locomotive not operating on full power was between 2 and 3m above rail level, not at rail level; the source of peaks of noise appearing to come from the side of the locomotive, not from close to the wheels, as suggested in CRN.

3.2.6 On the basis of this additional information, the source height used in this supplemental assessment was either 4m above rail level for locomotives operating on full power, or 3m above rail level for locomotives not operating on full power.

3.3 Other Modelling Updates

3.3.1 Since this supplemental assessment focuses on a discrete area adjacent to the railway line, higher resolution topographical and building height data have been incorporated into the noise modelling software, and the noise contour plots have been calculated at a higher resolution.

3.3.2 Based on a visual inspection of the area, significant reflecting and screening structures have been included in the noise modelling software.

3.3.3 The potential sound reduction provided by the external fabric of the park homes has been estimated using professional judgment and publicly-available information; no sound insulation tests have been undertaken to determine the actual sound reduction performance of the external fabric of individual park homes.

3.3.4 To account for the lower height of the receptors considered in this supplemental assessment, all of the modelling uses a receptor height of 1.5m above ground level, as opposed to the 4.5m above ground level in **Volume 9, Chapter 4** of the **ES** (Doc Ref 6.10) [APP-545] and **Volume 1, Chapter 9** of the **ES Addendum** (Doc Ref 6.14) [AS-188].

4 NOISE ASSESSMENT

4.1 Background Information

4.1.1 Whitearch Park, at Main Road, Benhall, Saxmundham IP17 1NA, has been developed to provide what it describes as 'residential retirement homes'. using site or park homes.

4.1.2 The northern part of the site has been developed recently and, according to the website, further development is planned across the southern part of the site. The site layout plan is shown in Plate 4.1.

Plate 4.1: Whitearch Park

4.1.3 It is not known if all of the park homes shown in Plate 4.1 have been built, some may only be proposed at this stage. However, the layout shown in Plate 4.1 has been used as the basis for this supplemental assessment on the precautionary assumption that all of the park homes are present.

4.2 Assessment Criteria

4.2.1 The required specification for a residential park home is set out in BS 3632:2015 'Residential park homes – Specification' [Ref 9]. In relation to sound reduction performance, the standard states at paragraph 4.9.4:

'In order to minimize the transmission of airborne noise, the external walls (excluding doors and windows) shall have a sound reduction index (R) of 35 dB over a frequency range of 125 Hz to 4 000 Hz.'

4.2.2 Since the residential park homes at Whitearch Park are newly-built, it is likely that they will meet this standard. It is also likely that their windows would be at least equivalent to modern, standard double-glazing and would therefore achieve sound reduction of at least 25dB.

4.2.3 On the basis that the external fabric of the park homes is likely to have a sound reduction of at least 25dB, the same magnitude of impact categories as set out in **Table 2.2** can be used for them.

4.2.4 The LOAEL and SOAEL values were based on a lower sound reduction through an open window of 15dB, and it is considered that these values will remain valid for park homes with partially open windows.

4.3 Predicted levels

4.3.1 Train noise levels (L_{AFmax}) have been predicted using SoundPLAN 3D noise modelling software, based on the approach described in Section 3 of this supplemental assessment.

4.3.2 The predicted noise contours are shown in Plate 4.2.

Plate 4.2: Noise contours for residential park homes at Whitearch Park

4.3.3 It can be seen from Plate 4.2 that the majority of the park homes are predicted to be subject to night-time L_{AFmax} levels below 70dB (green and yellow shaded areas); two of the existing park homes are predicted to have noise levels of between 70dB and 77dB (red shaded area), with one park home predicted to be just over 77dB (blue shaded area).

4.3.4 The magnitudes of impact would therefore be either low or very low for the majority of park homes, which would equate to negligible or minor adverse effects when their medium sensitivity is taken into account. These would not be significant in terms of the EIA Regulations.

4.3.5 For the three park homes predicted to have L_{AFmax} noise levels of 70dB or more, a moderate adverse effect is predicted at two and a major adverse effect at one, all of which would be significant in terms of the EIA Regulations.

4.3.6 For all park homes except one, the outcomes would fall between the LOAEL and SOAEL. In planning policy terms, the requirement would be to mitigate and reduce noise to a minimum. For the single park home predicted to be

expose to L_{AFmax} noise levels above 77dB, planning policy requires the effect to be avoided, which can be achieved through the 'Noise Mitigation Scheme' (**Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210]).

4.4 Mitigation

4.4.1 As noted in Section 1 of this supplemental assessment, the draft 'Rail Noise Mitigation Strategy' (**Volume 3, Appendix 9.3.E** of the **ES Addendum** (Doc Ref 6.14) [AS-258] sets out the operational and physical mitigation that has been embedded into the operational use of the East Suffolk line.

4.4.2 Three of the park homes are predicted to be subject to noise levels of more than 70dB L_{AFmax}, and therefore would be eligible for sound insulation under the 'Noise Mitigation Scheme' (**Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210]).

4.4.3 The windows of the park homes are likely to be modern double-glazed units and therefore capable of achieving a sound reduction of at least 25dB. Similarly, it is expected that the sound reduction provided by the walls will be at least 35dB, given their good quality build and likely compliance with the materials specification for such buildings.

4.4.4 Overall, the sound reduction of the buildings will be no lower than the 25dB reduction adopted in the derivation of the 70dB L_{AFmax} eligibility threshold in the Noise Mitigation Scheme.

4.4.5 It is considered that the improvements in sound insulation offered by the Noise Mitigation Scheme will be achievable for the park homes and a betterment in the sound reduction performance of the external fabric of the park homes attained. On this basis, the SOAEL will be avoided for the one park home that is predicted to be exposed to the highest noise level, and the internal sound levels within all three park homes will be mitigated and minimised as required more generally by policy.

4.4.6 Consideration has also been given to mitigation in the form of the installation of an acoustic barrier between the site and the railway.

4.4.7 Three acoustic barrier locations have been assessed, these being close to the railway line on Network Rail's land, along the boundary between Whitearch Park and the railway, and close to the park homes themselves.

4.4.8 The optimum solution was found to be an acoustic barrier along the boundary between Whitearch Park and the railway, which avoids impacting Network Rail's operations and avoids encroaching on the park homes themselves.

4.4.9 A 2.5m high acoustic barrier has been tested to illustrate the benefits that could be gained, and the resultant L_{AFmax} noise contours are shown in Plate 4.3.

Plate 4.3: Noise contours for Whitearch Park – with acoustic barrier

4.4.10 The acoustic barrier is predicted to result in L_{AFmax} noise levels of less than 70dB at all of the park homes. This would result in effects that are no worse than minor adverse, which are not significant. It would also avoid the need to alter the external fabric of the park homes under the Noise Mitigation Scheme.

4.4.11 To be effective, the acoustic barrier will need to be imperforate, sealed at the base, and have a superficial density of at least 18kg/sq.m.

4.4.12 SZC Co. proposes to further amend the Noise Mitigation Scheme to make specific provision for the potential erection of an acoustic barrier at Whitearch Park. Any such barrier would be subject to discussion with the relevant authorities, including Network Rail, East Suffolk Council and Benhall and Sternfield Parish Council, the owner and residents at Whitearch Park, and subject to the necessary permissions and further assessment of other potential environmental effects, prior to any decision

whether or not to install any barriers. In any event and as set out above, compliance with policy in terms of the impacts does not depend on the provision of barriers.

5 CONCLUSIONS

5.1.1 This supplemental assessment provides further information on the potential effects of night-time railway noise on the park homes at Whitearch Park, south of Saxmundham.

5.1.2 The assessment shows that two of the park homes could be exposed to L_{AFmax} noise levels of between 70dB and 77dB, with one of them predicted to be exposed to L_{AFmax} noise levels of more than 77dB. These park homes would be subject to moderate or major adverse effects, which are considered to be significant in terms of the EIA Regulations.

5.1.3 The levels would be below the SOAEL in all instances, except for the single park home predicted to be exposed to L_{AFmax} noise levels above 77dB, which will exceed SOAEL.

5.1.4 It is considered that the improvements in sound insulation offered by the Noise Mitigation Scheme (**Volume 2, Appendix 11H** of the **ES** (Doc Ref 6.3) [APP-210]) will be achievable for the park homes given their modern, high quality construction. On this basis, the SOAEL will be avoided for the one park home that is predicted to be exposed to the highest noise level, and the internal sound levels within all three park homes will be mitigated and minimised as required more generally by policy.

5.1.5 The remaining park homes are predicted to be subject to L_{AFmax} noise levels of less than 70dB, which will equate to no more than minor adverse effects, which are not significant in terms of the EIA Regulations.

5.1.6 An acoustic barrier between the railway line and the park homes has also been shown to be effective at reducing noise levels at the site, so that none of the park homes would be exposed to L_{AFmax} noise levels of 70dB or more.

5.1.7 SZC Co. proposes to revise the Noise Mitigation Scheme to enable the potential installation of an acoustic barrier between Whitearch Park and the railway line. Any such barrier would be subject to discussion with the relevant authorities, the owner and residents at Whitearch Park, and the necessary permissions. In any event, compliance with policy in terms of the impacts does not depend on the provision of barriers.

5.1.8 On the basis of this further assessment, **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] would be updated as shown in **Table 5.1**. The figures in **Table 5.1** include the additional park homes considered in this supplemental assessment, plus houseboats along the River Deben in Woodbridge, which have been subject to a similar assessment.

Table 5.1: Updated estimated of numbers of properties exposed to different noise levels from proposed night time use of the East Suffolk line between Saxmundham and Westerfield junction

Noise level, L_{AFmax}, dB (free-field)	Estimated number of dwellings	
	No mitigation	Mitigation (no stops in Saxmundham)
60-70(1)	424-444	349-379(2)
70-77	152-162	100-110
Over 77	41-51	5-10

Notes:

(1) **Table 1.9** in **Volume 9, Appendix 4B** of the **ES** (Doc Ref 6.10) [APP-546] erroneously labelled this row as "60-79"; "60-70" is correct.

(2) Excludes any benefits from a potential acoustic barrier to screen houseboats in the Woodbridge area

REFERENCES

1. Department of Transport (1995) Calculation of Railway Noise (CRN)
2. World Health Organisation (1999) Guidelines for community noise
3. C.G. Rice and P.A. Morgan (1982) ISVR Technical Memorandum No 623 A Synthesis of Studies on Noise-Induced Sleep Disturbance
4. Basner et al, Aircraft noise effects on sleep: Application of the results of a large polysomnographic field study, Journal of the Acoustical Society of America **119**, 2772 (2006)
5. Basner et al, Single and combined effect of air, road and rail traffic noise on sleep and recuperation, SLEEP 2011; 34(1):11-23 (2011)
6. The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (SI 2017 No 572)
7. DECC (2011) Overarching National Policy Statement (NPS) for Energy (NPS EN-1)
8. DEFRA (2010) Noise Policy Statement for England
9. British Standard 3632: 2015 Residential park homes – Specification

Sizewell C targeted consultation:

Rail noise at Whitearch Park, Benhall

Proposals for Sizewell C, a new nuclear power station on the Suffolk coast, and associated development, are currently being examined by the Planning Inspectorate, the agency that deals with national infrastructure planning.

This follows our (NNB Generation Company (SZC) Limited) May 2020 submission of an application for development consent for the project, which included an assessment of potential noise effects of Sizewell C freight trains running on the East Suffolk line.

Since submission of the application, we have carried out additional work to further consider potential effects on homes at Whitearch Park, Benhall.

This document outlines the findings of the additional work, while a detailed report of the assessment can be found in the Sizewell C Noise Assessment and Mitigation Plan – Whitearch Park.

We are now seeking feedback on the additional assessment work in this targeted consultation which closes on Friday 11 June 2021.

If you have any comments you can send responses by email to **info@sizewellc.co.uk**, or by post to **FREEPOST SZC CONSULTATION** (no stamp or further address required).

If you are unable to use email or post, please call **0800 197 6102** (9am – 5pm, Monday to Friday) to arrange for your response to be collected.

Construction transport: rail

We are proposing to use road, rail and sea-based transport to move materials for the construction of Sizewell C. At the peak of construction, our rail proposals provide for up to four trains a day (eight movements, of which we expect seven to be at night), operating five and sometimes six days a week.

Trains would travel from the south along the East Suffolk line, joining the refurbished Saxmundham to Leiston branch line, and unloading at a temporary facility on land east of Eastlands Industrial Estate.

We are also proposing to build a temporary rail extension (the 'green rail route') from just west of Leiston to a new unloading terminal on the northern side of the Sizewell C site.

This will be in use within two years of the start of the project, running up to four trains a day. While the green rail route is being built, a maximum of two trains a day (four movements, we expect three of which will be at night) will run along the refurbished Saxmundham to Leiston branch line.

Our rail proposals also include a commitment to mitigation through the:

1. **Noise Mitigation Scheme**, providing improved sound insulation for properties meeting qualifying criteria; and
2. **Rail Noise Mitigation Strategy,** which includes measures to reduce train noise by, for example, improving trackbeds and rails for smoother running, upgrading signalling, limiting night speeds to 10mph at some locations, and using quieter locomotives.

The details of these proposals can be found in the Planning Inspectorate's Examination Library as documents [APP-210] and [AS-258].

If you have difficulties accessing these documents online, please contact us by email, post, or phone (0800 197 6102 open 9am – 5pm, Monday to Friday) and we will provide you with hard copies.

Additional assessment

Our additional assessment of rail noise focuses on potential airborne noise at certain locations affected by Sizewell C construction trains, including Whitearch Park.

It considers maximum noise levels at night, which earlier assessments revealed as having the most impact due to the increase from the current limited number of night-time rail movements.

Assessments were carried out in line with government policy, which sets tests for noise based on the lowest observed adverse effect on health and quality of life (LOAEL) and significant observed adverse effects on health and quality of life (SOAEL).

For night-time (11pm to 7am) railway noise, the LOAEL is considered to be 60dB L_{AFmax} and the SOAEL is considered to be 77dB L_{AFmax}. Policy requires levels between the LOAEL and SOAEL to be mitigated and reduced to a minimum, while levels above the SOAEL should be avoided.

Rail noise at Whitearch Park

The homes at Whitearch Park are too far from the railway line to be significantly affected by ground-borne noise or vibration from construction trains.

Similarly, while Network Rail may do work to improve some sections of the East Suffolk line, it would be considered routine maintenance rather than substantive construction works, so we have not considered construction noise or vibration here.

Our additional assessment of airborne rail noise effects on park homes at Whitearch Park, Benhall, shows:

- two homes could be exposed to L_{AFmax} noise levels of between 70dB and 77dB;
- one home is predicted to be exposed L_{AFmax} noise levels of more than 77dB; and
- the remaining homes are predicted to be subject to L_{AFmax} noise levels of less than 70dB.

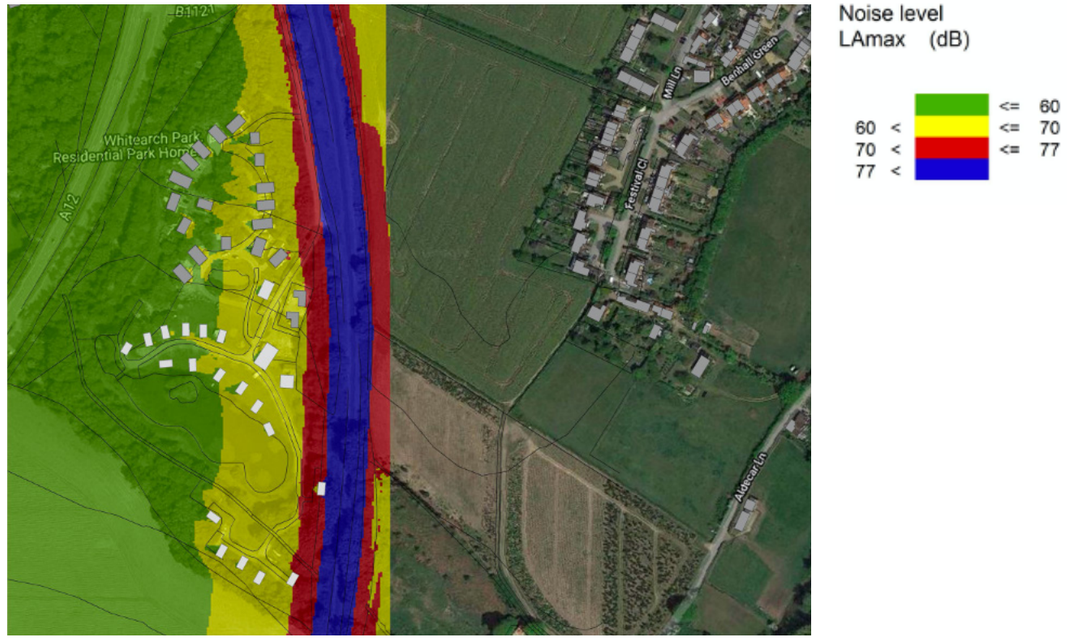
The three homes can be seen in or touching the red and blue shaded areas in Figure 1.

For all homes at Whitearch Park except one, the noise level is either below the LOAEL or between the LOAEL and the SOAEL. In the latter case, we are required to mitigate and reduce noise to a minimum.

For the home exposed to higher noise levels, which is shown just touching the blue shaded area in Figure 1, the requirement is to avoid the effect. As the homes at Whitearch Park are modern and newly built, we consider the improvements in sound insulation offered by the Noise Mitigation Scheme will successfully avoid the SOAEL for the one home predicted to have higher noise levels.

It will also mitigate and minimise the internal sound levels in the other two homes predicted to be exposed to noise levels of more than 70dB.

Figure 1



Additional potential mitigation measures

While the Noise Mitigation Scheme and Rail Noise Mitigation Strategy will reduce noise to the required levels at Whitearch Park, it has also been shown that an acoustic barrier or noise screen between the railway line and the park homes would reduce noise levels at Whitearch Park so that none of the homes would be exposed to L_{AFmax} noise levels of 70dB or more.

We are proposing to amend the Noise Mitigation Scheme as the Examination progresses to allow for the potential construction of an acoustic barrier, however it would require further discussion with the owner and residents of Whitearch Park, plus assessment of potential environmental effects and planning permission from the local authorities before being built. This process would be separate to the planning process for Sizewell C.

CONTACT

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*Calls to 0800 numbers are free from UK landlines. Call costs from mobile and international numbers may vary.
**By appointment between 10am and 4pm Monday to Friday.

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APPENDIX E: CONSULTATION FEEDBACK REDACTED

APPENDIX E - CONSULTATION RESPONSES

Name	Date	Response
[redacted]	16/06/2021	Rail Noise at Whitearch Park, Benhall The Parish Council welcomes the opportunity to comment on the proposals for noise mitigation at Whitearch Park, Benhall. The plan for night movements of freight trains will clearly be a matter of concern for the owner and residents of Whitearch Park, and we believe their views should be of paramount importance. We know that the owner and many residents have been in direct contact with EDF, copying in the Parish Council. The Parish Council is supportive of all the views expressed, which are summarised as follows: • It is generally accepted that night freight trains will be disruptive to sleep. • Notwithstanding the noise level contours that you have produced, it is strongly felt that all the Park will be affected because of the otherwise quiet nature of the area.

		• The Park homes are of lightweight construction, and not built to be resistant to noise and vibration. • An acoustic barrier is essential, and strongly supported. • The barrier must be in place before the first night freight train runs. • The barrier must be effective. EDF must demonstrate that the material, height and length give the most efficient mitigation, and cost must not be a factor. • It is not accepted that there will be no ground-borne noise or vibration. • The proposal does not demonstrate that any effort has been made to reduce the number of night trains through improvements to the rail infrastructure. • Reinstatement of the second track would allow more daytime trains and reduce the need for night trains.

		• Mitigation for rail disruption must be considered on an equal footing to that being delivered for road disruption. In addition: The Parish Council notes that along some lengths of the line a 10 mph speed limit for freight trains will be imposed to reduce impact. One such length is one mile away at Saxmundham. This clearly begs the question whether the limit can be extended to include Whitearch Park, and what the noise reduction would be, albeit over a longer time. The consultation document does not state whether the barrier would be temporary – just for the duration of construction. Will there be night freight train movements during the operation of Sizewell C that will require on-going mitigation. We note that you acknowledge that further discussion with the owner and residents of Whitearch Park will be required, and the Parish Council strongly advocates that EDF arranges that as soon as possible, as contact restriction are lifted. The Parish Council would be pleased to be represented at any such meeting, if invited.
[redacted] Melton Parish Council	11/06/2021	Melton Parish Council Sizewell C Project - PINS Reference No. EN010012 Response to Targeted

		Consultation on Rail Noise impacts/mitigation (Houseboats) INTRODUCTION Shortly after publication of the targeted consultation document, your office confirmed that it had also been hand-delivered to houseboats in Melton. In turn, Melton Parish Council (MPC), handdelivered a note to each houseboat inviting comments on your targeted consultation as part of our all-Parish consultation exercise on the overall SZC night trains proposal. At the time of writing, MPC had not received any comments from Houseboat residents on your consultation proposals. MPC HAS PROPOSED CHANGES TO THE "RAIL NOISE MITIGATION STRATEGY" In May 2021, such was MPC's concern about SZC's night train proposal and the community's general lack of awareness of its implications, that our volunteers leafleted all 2,100 households in Melton to inform residents of what was being planned and invite them to complete an on-line survey where they could have their say. Residents' responses to the on-line survey have confirmed MPC's view that freight movement by Sea is its first choice mode of transport. Rail in daytime-only is its second choice. Most residents oppose night trains. MPC has

		recommended to the Examining Authority a number of mitigations to the SZC freight train proposal, including the following: • there should be a further increase in the volume of construction material be moved by sea; • rail freight movements must be in daytime only, on an upgraded East Suffolk Line which is dual-tracked between Melton and Saxmundham, and without the loss of any regular daytime passenger services; The latter mitigation, while consistent with EDF proposals in the earlier stages of consultation, has been excluded from SZC's current draft "Rail Noise Mitigation Strategy". MPC has also asked the Examining Authority to include Houseboat residents within its overall consideration of the impact on households of night train noise and vibration and the accompanying disturbance of sleep. MPC's detailed response to the SZC night train proposal, including other recommended mitigations, is set out in its Written Representation (Deadline 2) to the Examining Authority, and can be viewed here: Sizewell C – Melton Parish Council (melton-suffolk-pc.gov.uk) MPC's statements and recommendations in its Written

		Representation to the Examining Authority apply to all the households in the parish, including Houseboats. SZC "NOISE MITIGATION SCHEME" Woodbridge Town Council's (WTC) Written Representation (Deadline 2) contains a technical report entitled "Review of Railway Freight Transport with specific reference to Noise and Vibration impact in Woodbridge" that has been shared with MPC. We agree with WTC's contention that EDF has understated the effects of train noise through Woodbridge (and by implication Melton and other areas) in a number of ways, including a failure to heed the latest international guidance by the World Health Organisation on maximum noise levels for night-time train traffic. We support WTC's request that EDF should be asked to look again at these issues using the range of expertise available to them to see whether greater mitigation should be provided. That review should also extend to the measurements of railway noise and vibration used to assess the impact on Houseboats. Subject to the outcome of the above review and acceptance that your mitigations would need to form part of the final DCO whether or not dual-tracking or a passing loop is provided, we support the proposal to further amend the "Noise Mitigation Scheme" to make specific provision

		for a more flexible application of mitigation for Houseboats in Melton. We note you are proposing riverside acoustic barriers in Woodbridge but not in Melton (because you say noise impact here is less). It is hard to imagine there would be public support for acoustic barriers beside the River Deben in Melton - therefore, we ask that if your recalibrations of noise mean that acoustic barriers become a possible option for Melton, please contact us immediately. Melton Parish Council 11 June 2021
[redacted]	10/06/2021	Dear Chief Planning Officer, please find the attached document with regard to the expected effect of trains for the Sizewell C project, on Whitearch Park and in particular, [redacted] Yours faithfully [redacted] For the sake of little animals, when drinking from packs of 4 cans, please cut every loop of the plastic retainer. Dear Chief Planning Officer, [redacted] are residents of Whitearch Park, Benhall. Whilst we are actually against Sizewell C Project in principle, we must be pragmatic and deal with the consequences of its acceptance. The issue we wish to deal with is the large number and long length of heavy trains that will pass remarkably close to Whitearch Park, mostly at night.

		1. We refer to our own property, [redacted]. At that point approximately on the railway, the line enters a 'cutting'. We would expect as a result, that vibration through the ground will increase and possibly sound through the air reduce around that point. Further south, the opposite, more sound through the air which would hopefully and presumably be dealt with by the proposed barrier which we would have thought an absolutely essential minimum. Hopefully such a barrier would not be an eyesore and possibly be camouflaged. 2. The Tingdene Ltd homes are made of wood with a surface coating. They have a brick 'skirt' wall surrounding the base but the home does not rest on that, there is a 25mm gap all around between the 'skirt' and the home, thus open to sound penetrating beneath the home, which area cannot be sound proofed because there is a large air vent beneath the kitchen. The brick 'skirt' rests on a concrete pad above hardcore. As far as we are able to determine, the roof ridge is open to sound penetration because daylight can be seen in the loft under the ridge tiles. The window vents to the kitchen, facing the railway in our case, cannot be closed due to the use of LPG.

		3. Because the homes do not rest on the 'skirt' they are supported on multiple steel 'tripods'. Our home already vibrates from an unknown source that either sounds (or feels) like a lorry ticking over at random times. This can often be felt when sitting in a chair or laying in bed. We have approached Tingdene Ltd regarding this, suggesting cushioning between the 'tripods' and the 'I' beams under the floor. Their response... "We would not advice [sic] to bed anything to the top of the jacks under the home. These should be steel on steel to ensure that the construction is stable and will affect integrity on your home above." 4. The homes built by Tingdene Ltd. are built to a sound insulation standard as reported by them below... "With regards to the sound standard in your home, we carry out acoustic testing. These regulations pass the BS3632 standard and are varied depending on the internal and external finish to the external walls. There are many variations." Under the circumstances of the 'variations' suggested by that quote, we are prepared to offer the opportunity for you to place beneath/in our home, at no charge, sound and vibration measuring equipment, provided that it does not record voice, to enable accurate measurements to be assessed.

		5. We are fortunate in that the railway rails are continuous, nevertheless, there will, we assume, be a lot of 'clanking' of the goods train wagons and loads. Obviously the longer the trains the less quiet time between them in any period. The short passenger trains that pass here are already loud enough to wake us. Oddly, of late they seem somewhat louder but we are unable to measure or understand why. It goes without saying, that we would prefer less trains and shorter ones to leave more quiet time between them. Perhaps the scheduling could take into account most people's deepest sleep periods. Hopefully the fixings of the freight could have extra care taken to minimise any rattle. It would also help if trains had a 'no unnecessary braking or speed change' rule in this location, to avoid wagons closing up and pulling apart, thus reducing buffer noise. We would be grateful if you would take into account in your deliberations any of the above that you did not already account for, and if needed take up our offer above. Yours faithfully [redacted] [redacted]

		[redacted]
[redacted]	09/06/2021	Good afternoon. We have just finished a meeting with [redacted] and 2 people from Dalcour Maclaren and a gentleman from the sound and vibration team. We said that a number of residents had heard the test trains and felt the vibrations which were running in the middle of the night. The gentleman in charge of the sound detection asked when that roughly was, but we didn't know. We have since been told it was around October November last year at around 3-3:30am and it lasted several days. Can this information please be forwarded to [redacted], who can then in turn, forward this to the gentleman who did the sound survey. Kind regards [redacted]

[redacted]	03/06/2021	Dear sirs I am a resident of Whitearch Park and very concerned about the noise these trains will cause to me and structure to my home. I find it hard to understand why anyone would even consider putting extra trains on over night when you already know this will cause a problem to the people who live in and around the railway line. We have a train that runs every hour and that is sufficient beside a retirement residential park. Ask yourself, Would you like this to be happening at the end of your garden, I feel sure the answer would be no, so why do you think its ok for us in our later years when all we ask for is peace and quite. [redacted] [redacted]
[redacted]	03/06/2021	Dear Sir I reside at [redacted], [redacted], [redacted]. I am concerned about the plans for excessive night time rail traffic for the Sizewell C project. Whitearch Park is a quiet, peaceful and tranquil community for over 50?s, generally retired people.

		Many of the residents here suffer from illnesses/ailments, a few with life threatening complaints. It is totally unacceptable that the each night will be disrupted by the movement of 7 massive freight trains. Daytime trains are disruptive by way of noise and vibration, but this is accepted as the norm. The night-time traffic is totally abnormal and I am concerned that the proposal for a 2.5 meter barrier is only paying lip service to a problem that will severely adversely affect residents on the Park. I personally am a light sleeper and the thought of a massive freight train trundling through on an hourly basis fills me with horror. The technicalities of noise levels and proposed reductions are meaningless to alayman. What is highly significant, however, is the question? will my sleep be adversely affected?? I would like information please on the effect of the proposed barrier on the noise reduction and how this barrier will have any positive effect on vibration. In addition, I would like to be aware of? Plan B?,that if the proposed barrier is inadequate, what other solutions are there, and would this night freight traffic be halted until a full solution is in place to the satisfaction of all residents. Yours Sincerely [redacted]

[redacted]	02/06/2021	Dear Sirs Further to your report concerning the noise that will be generated by the extra rail traffic on the railway line by the the side of Whitearch Park. As a resident of said park I strongly support the construction of an Acoustic Barrier and would like this to be in place BEFORE the trains start running rather than as an afterthought. Eight journeys through the night transporting over 3,000 tons of material will cause a great deal of disruption to our sleep and vibration to our properties. We understand progress has to happen to supply the country with electricity but not at the detriment of the people living by the railway line. It is very easy for people to oppose the sound barrier as they do not live anywhere near the line. So when this comes to voting for planning permission please remember the people this will effect mentally and health wise. I am sure the Parish Councils and Residents of Campsea Ash and Woodbridge who live near the railway line will have the same reservations of us the residents of Whitearch Park. Yours sincerely [redacted] and [redacted].

[redacted]	02/06/2021	I write on behalf of all residents of Whitearch Park in relation to the above-mentioned consultation. We have a recognised Residents Association here at Whitearch and [redacted] [redacted]. Your proposal for night trains has disturbing concerns for many reasons. The noise from the trains and the length of time it will take to pass by will spoil the peace and quiet of all the residents of Whitearch. This will cause disrupted sleep which will have a significant impact on all our lives. Some retired and some who haven't moved to Whitearch for a more serene and relaxed lifestyle, now to be impeded by the impact of the noise of these night trains. We have an abundance of wildlife which we enjoy in their natural habitat and we fear that we will lose most of the animals and birds. We expect these trains will be longer and heavier and more pollutant. We do not have homes built of bricks and mortar but of wooden structures. Even a low flying helicopter causes our windows and homes to vibrate and the trains will be worse. I ask on behalf of us all here at Whitearch that you will consider reducing the amount of trains that will pass Whitearch by night and the sound reflectors are be adequate than the ones you are proposing. Regards [redacted]

[redacted]	02/06/2021	From [redacted] We live on Whitearch Park, and our views and concerns of the proposed changes to our environment are as follows : We are not against the construction of Sizewell C, but it is unfortunate that the transportation of the materials has to be on the edge of our properties. But more so of the size and time of the day /night, that is going to cause great discomfort to retired people. And the damage over a period of time that the vibrations into our homes, is really a big worry to us. The first reason for coming to live here was the beautiful trees around the park, and the peace and quiet of being here. We have waited so long in our lives to find an area where we can relax and have peace in a lovely surround. The construction of an Acoustic Barrier is without doubt a necessity and is one step in the right direction, but having just returned from living in Spain for 15 years on the Spanish/French border we have experienced construction of a new Fast Train across the country (Opposite in speed to what we are talking about here)but the same disruptions

		to both people and animals in the countryside area along the new track. A Acoustic Barrier was erected along side these areas and large area's of the main roads. Our main point being the 2.5 meter height is not high enough, and feel it should be a minimum of three meters, to protect both retired people and the numerous night life we share the area with. We would not want to loose these wonderful creatures and birds to other area's if they are forced off to other places because of the noise. Lastly We hope we are not looked upon as retired people who can make up sleep time by snoozing during the day. We came here to live and not sit in a chair all day and watch Television. [redacted]
[redacted]	02/06/2021	Acoustic barrier Whitearch Park, Benhall. Dear EDF. This is a representation from [redacted], owners of the [redacted]. We consider it essential that the proposed acoustic barrier to the boundary between our park and the rail track, is erected in a manner that is effective in reducing the noise levels from the heavy goods trains travelling this route up

		to seven times between 11pm and now 7am, possibly over a period of up to ten years. It has been stated that the average person will not understand the decibel figures, this is probably true, however,at midday on Thursday the 27th of May 2021, standing on the boundary of the park a reading of 80.5db was taken from the passenger train, a train that passes in seconds, how has the figure of 60 to 70 db been arrived at, heavy goods trains at night hauling possibly 3,000 tons and travelling at low speed, can this estimate be correct, to my knowledge no representative has been to the park to take readings or taking into account the variations in levels and soil type, at the entrance to the park the rail track is below the soil level, which is of a light clay nature, midway down the drive the track and soil are on the same level, the soil being sand based, at the lake level the track is about fifteen feet above the land and homes, with the soil being semi marsh, all of these factors will probably effect noise and vibration levels, vibrations have already been evident during night trials, this being on the far side of the park at [redacted] and probably others. We have recently had an appeal turned down to turn the park into full residential, as a result we now have eighteen holiday homes that all positioned on the lower levels of the park, people on there annual holidays will not wish to stay in accommodation, that is going to be effected by heavy

		goods trains using this track seven times a night from 11pm to 7am, putting the park into a blight situation. We respectfully request that the proposed acoustic barrier becomes a reality and is erected to effectively reduce noise levels and assist in reducing sleep deprivation to our residents. It will be noted at the time of trains using the track at these times to make sure no homes are exposed to L afmax levels of 70 db or more as stated under additional potential mitigation measures. Another choice would be to reinstate the second track to enable all trains to run through the day. Signed [redacted]