



The Sizewell C Project

9.83 Written Submissions Responding to Actions Arising from Issue Specific Hearing 8: Air Quality, Noise and Vibration (25 August 2021)

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1 ISSUE SPECIFIC HEARING 8: AIR QUALITY, NOISE AND VIBRATION

1.1 Introduction

1.1.1 This document contains the Applicant's written submissions responding to actions arising from Issue Specific Hearing 8 (ISH8) on air quality, noise and vibration, including monitoring and mitigation, held on 25 August 2021.

1.1.2 This document corresponds to the Applicant's **Written Summaries of Oral Submissions made at ISH8** (Doc Ref. 9.79) submitted at Deadline 7.

1.2 Responses to East Suffolk Council and Suffolk County Council's Requests for Information

1.2.1 The second set of SZC Co. responses to requests for information from East Suffolk Council and Suffolk County Council were submitted in draft to the Councils on 16 August 2021.

1.2.2 A final version is appended to the updated **Statement of Common Ground between SZC Co. and ESC/SCC** at **Appendix 11B** (Doc Ref 9.10.12 B) submitted at Deadline 7.

1.3 Draft Noise Monitoring and Management Plan

1.3.1 An updated draft of the **Noise Monitoring and Management Plan** (NMMP) is submitted at Deadline 7 (Doc Ref. 9.68(A)), reflecting discussions with East Suffolk Council. The key amendments made to the NMMP are as follows:

- A reduction from 60dB LAeq,16hrs to 55dB LAeq,16hrs as the level at which SZC Co. and the contractor must seek ESC's agreement on construction methods and mitigation, and other matters as may be agreed, under a Bespoke Mitigation Plan.
- Increase in the time from a minimum of 14 days to a minimum of 28 days allowed for ESC to review and approve (or otherwise) any submitted Bespoke Mitigation Plan.
- Inclusion of a dispute resolution process that makes use of either a relevant Governance Group set up under the Deed of Obligation or by expert determination.

- Confirmation that copies of the Construction Environmental Management Plans that SZC Co. will require its contractors to prepare will be provided to ESC.
- Clarification of the purpose of further baseline monitoring.

1.3.2 All of these changes have been discussed and agreed in principle with ESC.

1.4 Response to Create Consulting

1.4.1 Four noise reports were submitted at Deadline 6 by Create Consulting Engineers (CCE) on behalf of:

- LJ and EL Dowley, in respect of Theberton House [REP6-054] and Potters Farm [REP6-053]
- Mr and Mrs Grant, in respect of Fordley Hall [REP6-066]
- Mr Beaumont, in respect of Theberton Hall [REP6-081]

1.4.2 SZC Co.'s comments on the noise reports are contained in the **Comments at Deadline 7 on Submissions from Earlier Deadlines** submission (Doc Ref 9.73).

1.4.3 In summary, SZC Co. does not accept the criticisms made by CCE for the following reasons:

- Contrary to CCE's assertions, the detail included in the construction calculations is commensurate with the stage of the project, as CCE accepts in Appendix A Section 6 of each report.
- The 'repeated' construction noise calculations undertaken by CCE are not on a like-for-like basis, and all of the plant is assumed to be at the shortest, and incorrect, distance.
- CCE states that SOAEL for construction noise should be based on the 'ABC' method set out in DMRB LA111¹, which they claim would lead to a SOAEL 10dB lower than that adopted by SZC Co. Aside from DMRB LA111 permitting alternative approaches to defining SOAEL, there is an incoherence in the way SOAEL is defined in DMRB LA111 that makes it unsuitable.

¹ Design Manual for Roads and Bridges (DMRB) LA111 Noise and vibration (May 2020)

- There is no material effect of the lower baseline noise levels that CCE measured; the only effect on the assessment of construction noise is to reduce the category of effect between negligible and minor adverse, neither of which is significant in an EIA context, and the level at which an observed adverse effect on health and quality of life is deemed to occur (LOAEL). The consequence of exceeding LOAEL is that steps should be taken to mitigate and minimise noise effects². Mitigation will be implemented irrespective of whether LOAEL is exceeded or not through the **Code of Construction Practice (CoCP)** (Doc Ref. 8.11(D)) and **NMMP** (Doc Ref. 9.68(A)), which apply throughout the works.
- Baseline noise measurements are not used in road traffic noise assessments using DMRB LA111 in the way suggested by CCE. SZC Co. considers that its assessment of road traffic noise follows the methods set out in DMRB LA111 in the appropriate way.

- 1.4.4 These responses apply to all four of CCE's submitted reports, as they each follow an almost identical format.
- 1.4.5 CCE 'strongly urge that a more detailed and exhaustive construction noise and vibration assessments should be undertaken once works processes have been finalised'. (paragraph 6.20 or 6.21 in Appendix A of each report).
- 1.4.6 This process of refining the assessments to define more detailed mitigation measures is exactly the process proposed by SZC Co. under the **NMMP** (Doc Ref. 9.68(A)), an updated draft of which is submitted at Deadline 7 for the main development site (Doc Ref 9.68(A)).
- 1.4.7 Under the **NMMP** (Doc Ref. 9.68(A)), the contractor and SZC Co. will be required to undertake further noise calculations in advance of the works, with the benefit of detailed contractor method statements, to determine how the works will be managed and monitored. Where the works are predicted to exceed a threshold of 55dB $L_{Aeq,16hrs}$, SZC Co. and the contractor must submit details of the construction methods and mitigation to ESC for approval, without which the works cannot be undertaken.
- 1.4.8 For the summary reasons set out here, with fuller explanations contained in the **Comments at Deadline 7 on Submissions from Earlier Deadlines** submission (Doc Ref 9.73), SZC Co. does not accept the criticisms made by CCE and is content that the submitted assessments are both robust and fit for purpose.

² Paragraph 5.11.9 of NPS EN-1

1.5 Acoustic Fencing adjacent to the Green Rail Route

1.5.1 Acoustic fencing is not currently proposed along the green rail route, as the assessment of railway noise suggests that there will be no adverse effects at nearby receptors.

1.5.2 The predicted night-time $L_{Aeq,8hrs}$ and L_{AFmax} noise levels at the receptors assessed along the green rail route are shown in **Table 9.3.C.5** in **Volume 3, Appendix 9.3.C** of the **First ES Addendum** [[AS-257](#)]; all of the predicted levels values are below the adopted LOAELs of 40dB $L_{Aeq,8hrs}$ and 60dB L_{AFmax} . On this basis, no adverse noise effects are expected.

1.5.3 A 2m high bund is proposed along the western edge of the rail alignment, to mitigate the visual harm to Leiston Abbey in conjunction with the landscaping proposals. No acoustic benefit is likely to be obtained from the 2m high bund, nor is any such benefit included in the noise assessment.

1.5.4 SZC Co. is willing to consider whether an acoustic fence installed on top of the 2m high bunds could provide a further level of protection to the receptor in the area, despite the expected level of rail noise being below the threshold where an adverse effect is expected.

1.5.5 However, any such fence would require careful assessment of the potential visual impact on Leiston Abbey. Since the current bund and landscaping proposals were designed to mitigate the visual impact on Leiston Abbey, the introduction of a hard, vertical feature may undermine the mitigation proposals. Should such a barrier be considered appropriate and acoustically beneficial, it would be secured through the **Rail Noise Mitigation Strategy** [[AS-258](#)].

1.6 60dB and 55dB construction noise thresholds

1.6.1 This section sets out:

- SZC Co.'s position in terms of noise thresholds for the control of construction noise at the main development site, including why SZC Co. considers them to be robust and appropriate.
- A response to ESC's preferred approach in terms of setting construction noise thresholds, including why SZC Co. considers that they are not appropriate or reasonable.

1.6.2 The points made here only relate to the main development site; SZC Co. understands there to be no material disagreement between the parties on the control of construction noise from the Associated Development sites, where the 'ABC' method contained in Annex E.3 of BS5228-1: 2009+A1:

20143 will apply. Using this method, thresholds are selected according to the existing ambient noise levels.

1.6.3 Reference is made throughout this section to various methods of assessing and controlling construction noise, all of which are contained in BS5228-1: 2009+A1: 2014. Four methods of assessment are included:

- Annex E.2 of the standard sets out two absolute criteria, 75dB or 70dB, which are selected depending on the location of the receptor. These are taken from guidance last published in 1976, and are no longer regularly used.
- Annex E.3 sets out the ‘ABC’ method, where three sets of criteria (A, B or C) are selected according to the existing ambient (L_{Aeq}) noise levels. Different criteria are recommended according to day of the week and time of day. This is the most commonly used approach to assessing and controlling construction noise.
- Annex E.3 also contains the ‘5dB change’ method, where a significant effect is declared where the existing ambient (L_{Aeq}) noise levels increase by 5dB(A) as a result of the construction noise, providing the construction noise levels exceed 65dB, 55dB or 45dB during the daytime, evening and night-time periods respectively. The outcomes using the ‘5dB change’ method are generally similar to the outcomes using the ‘ABC’ method, where Category A applies. The ‘5dB change’ method is cruder than the ‘ABC’ method, as it does not differentiate between, for example, weekdays and weekends.
- Annex E.5 sets out criteria for long-term earth moving works, providing that ‘Where construction activities involve large scale and long term earth moving activities, then this is more akin to surface mineral extraction than to conventional construction activity’. The quoted criteria are taken from former Technical Guidance to the National Planning Policy Framework (NPPF) (now Minerals PPG⁴) and formerly contained in Minerals Planning Guidance Note 11 and Minerals Policy Statement 2. Annex E.5 only recommends a criterion for the daytime period only. In SZC Co.’s experience, the Annex E.5 method is not a commonly used approach.

1.6.4 Annex E of BS5228-1: 2009+A1: 2014 is included in Appendix A.

³ British Standard BS5228-1 Noise: 2009+A1: 2014 – Code of Practice for noise and vibration control at open construction sites – Noise

⁴ Planning Practice Guidance. Minerals. Guidance on the planning for mineral extraction in plan making and the application process. MHCLG (2014)

a) SZC Co.'s approach

1.6.5 The assessment of construction noise at the main development site adopted the following thresholds as marking the point at which an effect would be considered significant in an EIA context⁵:

- 60dB $L_{Aeq,16hrs}$ daytime
- 45dB $L_{Aeq,8hrs}$ night-time
- 65dB L_{AFmax} night-time.

1.6.6 These values were derived in consultation with ESC, recognising the length and complexity of the main development site works where multiple activities are expected to combine.

1.6.7 In particular, the daytime L_{Aeq} threshold is lower than any limit that would be recommended by the 'ABC' or '5dB change' methods contained in Annex E.3 of BS5228-1: 2009+A1: 2014 for the daytime period, where the lowest numerical threshold would be 65dB $L_{Aeq,T}$. The 16 hour daytime period in the submitted assessments includes the four hour evening period from 19:00 to 23:00 hours; a threshold of 60dB over the evening period is numerically equal to Category B in the 'ABC' method.

1.6.8 The L_{Aeq} value for the night-time period is equal to the most stringent value that that would be recommended by the 'ABC' or '5dB change' methods contained in Annex E.3 of BS5228: 2009+A1: 2014.

1.6.9 There are no recommendations in BS5228-1: 2009+A1: 2014 for L_{AFmax} thresholds; SZC Co. has adopted an L_{AFmax} threshold to provide a robust assessment of night-time construction noise that goes beyond any criteria in British Standard guidance for construction noise.

1.6.10 The main development site will contain a range of different types of activity, for example earth-moving plant, construction plant, rail movements, unloading activities, and static plant, for which a range of different criteria would apply. Applying different criteria to these different activities is practically unworkable as it will not be possible to disaggregate noise from different activities in a way that would provide meaningful control.

⁵ See Table 11.2 in Volume 2, Chapter 11 of the ES [\[APP-202\]](#)

- 1.6.11 The adopted approach provides a workable mechanism with which to monitor and control noise from the main development site, with clear enforceable and stringent thresholds.
- 1.6.12 These thresholds carry through to the **CoCP**⁶ (Doc Ref. 8.11(D)) and the initial draft of the **NMMP**⁷ [[REP6-029](#)] for the main development site. The contractor must use Best Practicable Means and best endeavours to adhere to these thresholds⁸.
- 1.6.13 The initial draft **NMMP** [[REP6-029](#)] for the main development site [[REP6-029](#)] included the requirement for SZC Co. and its contractor to agree the specific construction methods and mitigation to be employed where the noise from the construction works was expected to exceed these thresholds.
- 1.6.14 This ‘Bespoke Mitigation Plan’ process was designed to provide ESC with a level of control, and ultimately the power of veto, over works that were expected to exceed the stated thresholds.
- 1.6.15 The updated draft of the **Noise Monitoring and Management Plan** for the main development site submitted at Deadline 7 (Doc Ref 9.68(A)) has reduced the level at which the Bespoke Mitigation Plan must be agreed to 55dB LAeq,16hrs (from the previous 60dB LAeq,16hrs). This level was lowered in discussion with and in response to comments by ESC.
- 1.6.16 SZC Co. considers that the need to agree working methods and mitigation at a threshold of 55dB adds a further level of protection and robustness. It is a particularly stringent threshold, being 10dB lower than any threshold in the ‘ABC’ or ‘5dB change’ methods in Annex E.3 of BS5228-1: 2009+A1: 2014, and is equivalent to the lowest value for the evening period in the same methods. In SZC Co.’s view it represents an appropriate balance between providing ESC with the control mechanisms they seek, while balancing the need to deliver the project to programme.
- 1.6.17 It was noted by the Examining Authority at ISH8 that, irrespective of any prior agreement of ESC to the adopted construction noise thresholds, the evening period might ordinarily be considered more sensitive than the daytime period.
- 1.6.18 The revised Bespoke Mitigation Plan process, which must now be used where construction noise levels are likely to exceed 55dB, provides ESC with control at a level that is equivalent to the most stringent evening

⁶ See **Table 3.2** of **Part B** of the **CoCP** (Doc Ref. 8.11(D))

⁷ See **Table 4.1** of the draft **Noise Monitoring and Management Plan** [[REP6-029](#)]

⁸ See **paragraph 3.2.4** of **Part B** of the **CoCP** (Doc Ref. 8.11(D))

thresholds recommended by the ‘ABC’ or ‘5dB change’ methods in BS5228. This requirement applies across the daytime and evening period, as part of the adopted combined 16 hour approach. Therefore, SZC Co.’s approach takes full account of the potential sensitivity of the evening period.

1.6.19 SZC Co. also notes that its approach at Sizewell C is more stringent than the approach adopted by the Secretary of State in making the Hinkley Point C DCO, both in respect of the daytime and evening periods. The Hinkley Point C DCO had a requirement (MS9) imposing a construction noise limit of 65dB $L_{Aeq,1hr}$ for the 07:00 – 19:00 period and of 60dB $L_{Aeq,1hr}$ for the 19:00 – 23:00 evening period (with provision to go up to an increased threshold of 75dB $L_{Aeq,1hr}$ by agreement with the local authority in advance)⁹. SZC Co.’s approach of an overall threshold of 60dB $L_{Aeq,16hrs}$ for the entire 07:00 – 23:00 period is more stringent than the 60dB adopted at Hinkley Point C, which only applied for the evening period; and SZC Co.’s additional lower threshold of 55dB is more stringent than both the daytime and evening thresholds adopted at Hinkley Point C.

1.6.20 In summary:

- The adopted thresholds were determined in light of the length and complexity of the main development site works, to provide an overarching approach where numerous different activities would otherwise require a range of criteria.
- Disaggregating noise from a range of activities will be practically unworkable and SZC Co’s approach provides clear enforceable thresholds for each period.
- The Bespoke Mitigation Plan process contained in the **NMMP** (Doc Ref 9.68(A)) requires SZC Co. and its contractors to agree specific working methods and mitigation at a threshold below that which SZC Co. says a significant adverse effect, in an EIA context, will occur.

b) ESC’s preferred approach

1.6.21 ESC has stated that the criteria for large-scale earth moving works set out in Annex E.5 of BS5228-1: 2009+A1: 2014 would be a more suitable basis for control of the main development site construction works¹⁰. The noise

⁹ See Requirement MS9 of The Hinkley Point C (Nuclear Generating Station) Order 2013 SI 2013 No. 648 (included at Appendix B)

¹⁰ See page 6 of ESC’s Comments on Deadline 5 submissions from the Applicant and other Interested Parties (submitted at Deadline 6) [[REP6-032](#)]

thresholds quoted in Annex E.5 are taken from those applied to minerals extraction sites¹¹. Annex E.5 states:

“Where construction activities involve large scale and long term earth moving activities, then this is more akin to surface mineral extraction than to conventional construction activity.”

1.6.22 SZC Co. does not consider this approach to be applicable at Sizewell C, for the following reasons (which are expanded upon below):

- The main development site is not an earth-moving project or akin to one. It is a construction project, containing a range of different types of activity that would not be appropriately controlled by the methods suggested. Nor is the earth-moving proposed at Sizewell C equivalent in scale to a minerals extraction project.
- In any event, the 55dB $L_{Aeq,16hrs}$ threshold adopted in the **Noise Monitoring and Management Plan** (Doc Ref 9.68(A)) provides ESC with control at a level equivalent to the 55dB included in their preferred approach from Annex E.5.
- BS5228-1: 2009+A1: 2014 only recommends the adoption of one element of the minerals extraction guidance, which is effectively already embedded into SZC Co.’s control measures for construction noise at the main development site.
- ESC is seeking to apply all of the elements of the minerals extraction guidance quoted in Annex E.5 of BS5228-1: 2009+A1: 2014, which is not what Annex E.5 advises. ESC’s position also does not take account of the wider aspects of that minerals guidance.

i. Overall Suitability of ESC’s Preferred Approach

1.6.23 Minerals extraction sites are not similar to construction sites. They are different and that is why different guidance applies to them. A construction site will tend to utilise a sequence of different activities that progress the project to a point of completion. Minerals extraction sites tend to use the same methods, repeated over a period of time often measured in decades, without significant variation other than the depth or height at which the activities occur.

¹¹ Formerly contained in Technical Guidance to the NPPF, now contained in Planning Practice Guidance. Minerals. Guidance on the planning for mineral extraction in plan making and the application process. MHCLG (2014)

- 1.6.24 The advice in Annex E.5 of BS5228-1: 2009+A1: 2014 is to be applied to situations where there are large-scale and long-term earth moving activities, i.e. where the nature of the works is materially similar to minerals extraction sites.
- 1.6.25 The main development site does contain a significant amount of earth-moving activity, for example during the initial soil strip and at the borrow pit locations. However, the scheme taken as a whole is not an earth-moving project or akin to one. It is a construction project and contains a range of different types of activity, such as earth-moving plant, construction plant, rail movements, unloading activities, and static plant.
- 1.6.26 Different criteria would apply to each of these activities, derived from a range of appropriate guidance document and standards. Applying different criteria to different activities is practically unworkable and it will not be possible to disaggregate noise from different activities in a way that would provide meaningful control.

ii. **BS5228 Recommendations**

- 1.6.27 Annex E.5 of BS5228-1: 2009+A1: 2014 quotes the following extract from the former Technical Guidance to the NPPF:

“Subject to a maximum of 55 dB(A) $L_{Aeq, 1h}$ (free field), mineral planning authorities should aim to establish a noise limit at the noise-sensitive property that does not exceed the background level by more than 10 dB(A). It is recognised, however, that in many circumstances it will be difficult to not exceed the background level by more than 10 dB(A) without imposing unreasonable burdens on the mineral operator. In such cases, the limit set should be as near to that level as practicable during normal working hours (0700–1900) and should not exceed 55 dB(A) $L_{Aeq, 1h}$ (free field). Evening (1900–2200) limits should not exceed background level by more than 10 dB(A) and night-time limits should not exceed 42 dB(A), $L_{Aeq, 1h}$ (free field) at noise-sensitive dwellings.”

- 1.6.28 Annex E.5 goes on to state:

“Based upon the above, it is suggested that the limit of 55 dB $L_{Aeq, 1h}$ is adopted for daytime construction noise for these types of activities but only where the works are likely to occur for a period in excess of six months.”

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- 1.6.29 While Annex E.5 of BS5228-1: 2009+A1: 2014 acknowledges the quoted text from the former Technical Guidance to the NPPF, Annex E.5 clearly only recommends for adoption the daytime threshold of 55dB. No reference is made to the evening or night-time thresholds.
- 1.6.30 SZC Co. considers this omission to be deliberate, and is no doubt because of the differences between construction and minerals projects. The standard is not recommending the adoption of the quoted approach to setting limits for the evening and night-time periods.
- 1.6.31 SZC Co's proposed approach set out in the updated draft of the **Noise Monitoring and Management Plan** for the main development site submitted at Deadline 7 (Doc Ref 9.68(A)) sets the level at which the Bespoke Mitigation Plan must be agreed at 55dB, which is equivalent to the daytime threshold recommended in Annex E.5 of BS5228-1: 2009+A1: 2014.
- 1.6.32 Accordingly, ESC will have control over the construction methods at the level they seek.

iii. Evening Period and Wider Guidance

- 1.6.33 ESC stated at ISH8 that all of the advice in former Technical Guidance to the NPPF is relevant, as the quoted text in Annex E.5 is preceded by this sentence:

“In this situation, the guidance contained within the Technical Guidance to the National Planning Policy Framework needs to be taken into account when setting criteria for acceptability.”

- 1.6.34 ESC stated at ISH8 that an appropriate threshold for the evening should follow this approach, i.e. setting a threshold 10dB above the background sound level. SZC Co. notes that ESC had not stated this requirement, in those terms, prior to ISH8; previous references to Annex E.5 had focussed on the adoption of a daytime 55dB threshold.
- 1.6.35 This new approach suggested for the first time at ISH8 in respect the evening period is inappropriate. In particular:
- Controlling evening construction noise levels to a level set 10dB above the existing background sound levels is unachievable. It is so low that it would effectively preclude any evening working. This would extend the duration of the main development site works and is incompatible with SZC Co.'s programme for delivery of the project; and

- ESC is not seeking to implement all of the advice in the former Technical Guidance to the NPPF, only that which is quoted in Annex E.5 of BS5228-1: 2009+A1: 2014.

- 1.6.36 On the first point, the evening noise levels in the area around the main development site are shown in **Volume 2, Appendix 11A** of the **ES [APP-203]**, and were found to range from the mid-20s to the mid-30s (L_{A90} dB). This would lead to construction noise thresholds as low as the mid-30s to mid-40s ($L_{Aeq,T}$ dB) if ESC's preferred approach were adopted.
- 1.6.37 The predicted construction noise levels for Phases 3 and 4 of the main development site works, which are generally the quietest works, are predicted to be above 45dB $L_{Aeq,T}$ at most receptors¹². Applying an evening threshold in the mid-40s (dB) based on the minerals extraction guidance in this way would effectively prevent evening working, thereby precluding the two shift working pattern required to deliver the project on-time and in accordance with the urgent national need for delivery.
- 1.6.38 All construction projects are a balance between the timely delivery of a scheme and the protection of the surrounding population. The criteria routinely applied to minerals extraction sites that may operate for 20 to 25 years are not an appropriate approach for the construction of a nationally significant infrastructure project for which there is an urgent need. ESC's approach would be substantially and unjustifiably more stringent than that adopted by the Secretary of State for the comparable Hinkley Point C project, as set out above.
- 1.6.39 Secondly, the minerals extraction guidance specifically allows for annual periods of elevated noise levels, of up to 70dB, for 'essential site preparation and restoration work and construction of baffle mounds where it is clear that this will bring longer-term environmental benefits to the site or its environs'.¹³
- 1.6.40 ESC has not extended their preferred use of the Annex E.5 advice to all aspects of the minerals extraction guidance. SZC Co. does not necessarily say that annual eight week periods of elevated noise levels are appropriate for the main development site, but it is this balanced approach underpinning the guidance that makes it suitable for minerals extraction sites. That balance is missing from ESC's preferred approach.

¹² See **Table 11.19** in **Volume 2, Chapter 11** of the **ES [APP-202]**, electronic page 44]

¹³ See paragraph 31 of the former Technical Guidance to the NPPF, or paragraph 022 in the Planning Practice Guidance for Minerals

iv. Summary

1.6.41 In summary:

- The main development site is not an earth-moving project nor akin to one, but a complex mix of earth-moving plant, construction plant, rail movements, unloading activities, and static plant.
- It is not possible to disaggregate noise from a complex mix of sources to apply the appropriate criteria for each activity, and SZC Co.'s approach reconciles this complexity.
- Taken as a whole, the selective use of the minerals guidance is not an appropriate way to control noise from the main development site, and the approach preferred by ESC would extend the duration of the works and be incompatible with the construction programme.
- SZC Co.'s proposed approach is robust and stringent, for all the reasons set out above under part (a) of this section: SZC Co.'s approach is based on and goes beyond applicable guidance, and it is supported by the approach adopted by the Secretary of State at Hinkley Point C (indeed it also represents a tightening of that approach).

1.7 Operational Noise at the Main Development Site

1.7.1 SZC Co. sets out in this section:

- its reasoning as to why an operational noise limit is unnecessary and of no practical benefit;
- what an operational noise limit should be, if the ExA is minded to set such a limit; and
- why the operational noise limit preferred by ESC is unenforceable and unreasonable, and does not comply with relevant policy.

1.7.2 In making these points, SZC Co. only refers to operational noise limits for the power station itself, and not to ancillary plant or equipment associated with the Associated Development sites.

1.7.3 Operational noise limits have been suggested in the submitted noise assessments for ancillary plant and equipment associated with the Associated Development sites, and these are to be secured by Design Principle 12 in the **Main Development Site Design and Access Statement** [[REP5-075](#)] for plant at the accommodation campus (for

example a combined heat and power unit (CHP), air source heat pump (ASHP) and / or back-up generator), and by the **Associated Development Design Principles** (Doc Ref 8.3(B)) for plant at the Associated Development sites (such as air conditioning condenser units and air handling units).

1.7.4 It is SZC Co.'s position that the enforcement of operational noise limits for the power station are an order of magnitude more complex than is the case for plant or equipment associated with the Associated Development sites. Similarly, the means of rectifying breaches of any operational noise limits differ by an order of magnitude for plant or equipment associated with the Associated Development sites, which could be screened, enclosed, relocated, or exchanged for a different model, compared to the power station where there will be limited options, if any, for making a material difference to its noise output.

1.7.5 It is also SZC Co.'s position that noise from the normal operation of the power station has been found to give rise to effects that are no worse than minor adverse during the daytime, and negligible at night when assessed using an appropriate assessment method¹⁴, taking account of appropriate contextual considerations, as required by the standard.

a) **The need for an operational noise limit**

1.7.6 SZC Co. does not consider a noise limit necessary to regulate the noise emissions from the operation of the power station. There is no prospect of materially reducing the noise levels from the power station, for the reasons stated in this section, such that either:

- the power station meets the limit, in which case the limit has no effect, or
- the power station exceeds the limit, but as it cannot be made materially quieter, the limit fails the tests of reasonableness and enforceability in paragraph 4.1.7 of NPS EN-1.

1.7.7 The absence of operational noise limits has precedent for a complex industrial or commercial NSIP. Tilbury 2, a port development in Essex, was consented with no operational noise limits; the site is to be operated in accordance with an '*Operational Management Plan*' to provide the necessary controls to achieve the aims of national noise policy and ensure good practice¹⁵.

¹⁴ British Standard 4142: 2014+A1: 2019 Methods for rating and assessing industrial and commercial sound

¹⁵ Requirement 11 of The Port of Tilbury (Expansion) Order 2019 SI 2019 no 0000

- 1.7.8 A nuclear power station is a complex and highly regulated assemblage of parts, with exacting tolerances, and every element of the design has been optimised to achieve its purpose, all on the basis of known inter-relationships between systems and structures.
- 1.7.9 The noise emissions from the normal operation of the power station have been shown to give rise to no worse than minor adverse effects during the daytime, and negligible effects at night, and therefore no significant adverse effects are likely¹⁶.
- 1.7.10 A report is attached at **Appendix C**, listing the noise sources assessed as part of the normal operation of the power station, in order of contribution from highest to lowest. To materially alter the noise emissions from the operational power station would require intervention on a scale that would inevitably affect the design of the power station.
- 1.7.11 By way of example, the source listed as the noisiest is the turbine hall vents, which comprises 90 no. individual sources of noise. To reduce the noise from these would require the installation of 90 no. attenuators on the roof of the turbine hall, which would result in a significant increase in the mass of the roof, and possibly the need for larger fans to overcome the additional air resistance, increasing the roof loading further.
- 1.7.12 Assuming that this additional loading could be accommodated within the design tolerances of the turbine hall, reducing every vent by 5dB would reduce the overall noise levels by less than 1dB.
- 1.7.13 That is not to say that reductions are entirely unachievable. At Hinkley Point C, a modest reduction in the overall noise emissions has been achieved through the installation of attenuators on nine exhaust fan vents on the sides of the turbine building.
- 1.7.14 This measure was necessary to achieve a noise level at a specific point on the boundary of the site to meet the 45dB $L_{Aeq,1hr}$ receptor noise limit imposed on Hinkley Point C in Requirement MS12 of its DCO¹⁷. Such detailed design adjustments should also be possible at SZC, but at Hinkley Point C they were needed to achieve compliance with the 45dB noise limit; they do not create the potential for a significant reduction below that level.
- 1.7.15 In summary:
- The assessment of noise from the normal operation of the power station was shown to give rise to no worse than minor adverse effects

¹⁶ See **Table 11.34** of **Volume 2, Chapter 11** of the **ES** [[APP-202](#)]

¹⁷ The Hinkley Point C (Nuclear Generating Station) Order 2013. SI 2013 No. 648 (included in Appendix B)

during the daytime, and negligible effects at night. Significant adverse effects are not considered likely.

- Although detailed design work may provide scope for further small decreases in noise emission, there is no prospect of a significant reduction in the overall noise emissions.
- In this context, a noise limit will either be achieved, in which case it serves no purpose, or it will be exceeded and with no prospect of it being met, it would be unreasonable and unenforceable and so fail to meet the tests sets out in paragraph 4.1.7 of NPS EN-1.

b) A suitable noise limit, if a limit is required

1.7.16 Without prejudice to SZC Co.’s position that a noise limit is not appropriate, if a limit was to be imposed for operational night-time noise from the power station then SZC Co.’s position is that it should be a façade noise limit of 45dB $L_{Aeq,8hrs}$. This is comparable to the noise limit imposed on Hinkley Point C (requirement MS12).¹⁸

1.7.17 A façade value of 45dB $L_{Aeq,8hrs}$ is stated in the World Health Organisation’s ‘Guidelines for Community Noise’¹⁹ as the external threshold that should not be exceeded for the protection of sleep (emphasis added):

“For bedrooms the critical effect is sleep disturbance. Indoor guideline values for bedrooms are 30 dB L_{Aeq} for continuous noise and 45 dB L_{Amax} for single sound events. Lower noise levels may be disturbing depending on the nature of the noise source. At night-time, outside sound levels about 1 metre from facades of living spaces should not exceed 45 dB L_{Aeq} , so that people may sleep with bedroom windows open. This value was obtained by assuming that the noise reduction from outside to inside with the window open is 15 dB.” (Executive Summary, page xiii)

1.7.18 The use of WHO guidelines to determine the threshold at which an effect begins is well-established; the National Physics Laboratory’s (NPL) 1998 report ‘Health effect based noise assessment methods: A review and feasibility study’²⁰, concluding that the guideline values recommended by the WHO at that time represented:

¹⁸ The Hinkley Point C (Nuclear Generating Station) Order 2013. SI 2013 No. 648 (included in Appendix B)

¹⁹ World Health Organisation ‘Guidelines for Community Noise’ (1999)

²⁰ National Physics Laboratory Health Effect Based Noise Assessment Methods: A Review and Feasibility Study, I Flindell (1998)

“...a consensus view of international expert opinion on the lowest threshold noise levels below which the occurrence rates of particular effects can be assumed to be negligible. Exceedances of the WHO guideline values do not necessarily imply significant noise impact and indeed, it may be that significant impacts do not occur until much higher degrees of noise exposure are reached.” (see Section 5.4 of NPL report)

- 1.7.19 The guideline values that the WHO publish continue to adopt this approach; they define the point at which an effect begins to happen, i.e. the LOAEL. For instance, the same precautionary principle is adopted in the ‘Night Noise Guidelines’, which state in relation to the 40dB L_{night} value:

‘...an $L_{\text{night, outside}}$ of 40 dB should be the target of the night noise guideline (NNG) to protect the public, including the most vulnerable groups such as children, the chronically ill and the elderly.’

- 1.7.20 SZC Co. used a free-field value of 40dB L_{night} as part of its assessment of operational noise from the power station.
- 1.7.21 The free-field 40dB L_{night} and the façade 45dB $L_{\text{Aeq,8hrs}}$ values are broadly equivalent, once they are adjusted so that both are either free-field or façade values. In both instances, they are considered to represent LOAEL, i.e. the level below which there is no prospect of an adverse effect.
- 1.7.22 Although SZC Co. used the free-field 40dB L_{night} value as part of its assessment of operational noise from the power station, SZC Co. accepts that setting a limit based on L_{night} would, strictly speaking, require a year of monitoring to test compliance, which would not be reasonable.
- 1.7.23 On the basis of these points, and without prejudice to SZC Co.’s position that a noise limit is not appropriate, if a limit were imposed on the scheme, then SZC Co.’s position is that it should be a façade noise limit of 45dB $L_{\text{Aeq,8hrs}}$. This would provide robust protection for the surrounding population and accord with appropriate guidance.

c) Why ESC’s approach is not appropriate

- 1.7.24 ESC prefer a night-time noise threshold of 35dB as a rating level ($L_{\text{Ar,T}}$), as the Council explained at ISH8 and in written submissions.
- 1.7.25 Rating levels are a method of quantifying noise levels that is not based solely on measurable physical noise levels, but they include notional corrections that are added to the predicted or measured noise levels to

allow for characteristics of the noise that might affect the potential impact of the noise on residential receptors.

- 1.7.26 These corrections are to take account of how certain acoustically distinguishing characteristics might attract attention, for example, tones, impulses and intermittency.
- 1.7.27 Any limit specified as a rating level must, by definition, include this correction for acoustic characteristics that are likely to attract attention, and that judgement is made at the receptor²¹. The acoustic character correction will vary, however, according to the acoustic conditions at any given receptor, and at any given time; the size of the acoustic character correction is not fixed, and the effect of the limit will vary as a result.
- 1.7.28 For these reasons, a rating level limit has the potential to be imprecise, which would fall foul of the requirements set out in paragraph 4.1.7 of NPS EN-1, which include that requirements must be “precise” and “reasonable”. A rating level limit is neither. It lacks precision and it is unreasonable for a limit to be imposed with which SZC Co. cannot know in advance whether compliance will be possible.
- 1.7.29 Indeed, the evidence is in fact clear that it will not be possible for SZC Co. to comply with this limit, which makes the limit unreasonable for that further reason also. The predicted night-time rating levels set out in **Table 11.28** in **Volume 2, Chapter 11** of the **ES [APP-202]** show that a limit of 35dB $L_{Ar,T}$ cannot be met at many of the assessed receptor locations.
- 1.7.30 As noted in part (a) of this section, a modest reduction in the overall noise emissions at Hinkley Point C has been achieved through the installation of attenuators on nine exhaust fan vents on the sides of the turbine building.
- 1.7.31 This measure was necessary to achieve a noise level at a specific point on the boundary of the site to meet the 45dB $L_{Aeq,1hr}$ receptor noise limit in Requirement MS12 of its DCO, but such detailed design adjustments do not create the potential for a significant reduction below that level. Even allowing for such detailed design adjustments, a limit of 35dB $L_{Ar,T}$ is highly unlikely to be achievable.
- 1.7.32 It is critical that a requirement is not imposed for operational power station noise which SZC Co. cannot meet. It would render the project undeliverable.

²¹ See Section 9.1 of BS4142: 2014+A1: 2019

- 1.7.33 ESC has not fully explained the rationale for its proposed 35dB $L_{Ar,T}$ limit; it is understood to be derived from part of BS4142: 2014+A1: 2019 that states:

“Where background sound levels and rating levels are low, absolute levels might be as, or more, relevant than the margin by which the rating level exceeds the background. This is especially true at night.”²²

- 1.7.34 No definition is provided in BS4142: 2014+ A1: 2019 as to what rating level or background sound level would be regarded as ‘low’ such that reference can be made to absolute criteria. It is understood that ESC is basing their definition of what a low rating level might be on a document produced by the Association of Noise Consultants²³.

- 1.7.35 However, even if this definition was correct, it does not constitute a reasonable basis for a noise limit; no acoustic effect is stated by any guidance document at this level of 35dB $L_{Ar,T}$. It is simply an inferred level as to where a particular part of a British Standard might be applied. It is illogical on its own terms.

- 1.7.36 In summary, there is no technical basis for ESC’s preferred approach, and even if there were, it cannot be achieved at Sizewell C and should not be imposed for that reason.

1.8 Construction Traffic Management Plan

- 1.8.1 The **Construction Traffic Management Plan (CTMP)** [REP2-054] sets out the proposed HGV timing restrictions at paragraph 4.4.13. Within the **CTMP** [REP2-054] it is currently proposed to restrict the time of arrival / departure of HGVs at the main development site access.

- 1.8.2 The Examining Authority (ExA) asked in ISH8 about control in respect of avoiding HGVs routing on the B1122 outside of the times set out in the **CTMP** [REP2-054]. As discussed at ISH2 on transport matters, the **CTMP** is being updated so that all Heavy Duty Vehicle (HDV) movements (i.e. HGVs and buses) associated with Sizewell C, which route through Theberton and Middleton Moor on the B1122 during the early years, are to be included in the daily HDV cap of 600 two-way movements for the early years. Monitoring and enforcement of this will be achieved by use of a GPS geofence. The line of the geofence will be located to include all Sizewell C HDVs in the early years travelling along the B1122 through Theberton and Middleton Moor. Therefore, the **CTMP** [REP2-054] timing restrictions will

²² See Section 11(1) of BS4142: 2014+A1: 2019

²³ Association of Noise Consultants BS4142: 2014+A1: 2019 Technical Note. Version 1.0 (March 2020).

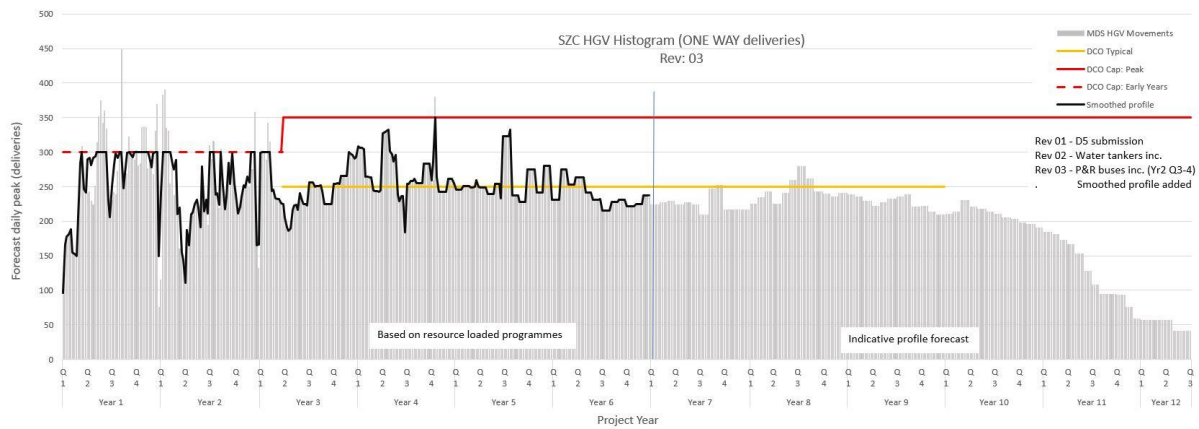
be updated to reflect the revised monitoring location of the B1122 rather than the main development site entrance and that compliance with the timing restrictions will be monitored via the DMS-tracker and proposed geofence.

1.9 HGV Profile

1.9.1 The HGV profile in the **Material Imports and Modal Split paper** (Figures 1 and 2 in Appendix A to SZC Co.'s **Written Submissions Responding to Actions Arising from ISH2** [REP5-114]) showed HGV peaks in excess of the caps, with the text on page 4 explaining that:

“The exceedances will be smoothed/managed through the Delivery Management System (DMS) by allocating daily movements to ensure activity remains within the proposed limits. This day by day smoothing opportunity has been reviewed and the Project is confident it can be delivered through having transparency of operations provided through the DMS.”

1.9.2 In response to a request by the ExA in ISH8, the HGV profile has been smoothed to inform the mitigated HGV movements, which takes account of the management and controls proposed in the **CTMP** [REP2-054]. The ‘smoothed’ profile is provided below. It should also be noted that the ‘smoothed’ HGV profile includes the forecast water tankers associated with the proposed temporary desalination plant. In addition, it also includes bus movements along the B1122 routing between the northern and southern park and ride facilities and the main development site during the short period between the park and ride facilities being operational and prior to the Sizewell link road being operational. 130 two-way bus movements per day have been included within the profile, which is 25% of the peak park and ride bus movements to align with the forecast workforce during that time.



1.9.3 The proposed delivery management system will allocate individual daily delivery slots for each HGV up to the approved limits, thus ensuring that daily movements do not exceed the agreed caps. This will require the advanced import and on-site storage of some deliveries prior to the forecast peaks (when movements would otherwise exceed the caps) to reduce and spread the period and flatten the profile. It should also be noted that this forecast shows the peak expected daily movements each week and it is therefore not expected that this level of movement will be sustained throughout the working week. It is likely that there will be further 'natural' smoothing of the profile as the work progresses due to the resource levelling of the programme and progress on site, which would result in a smoother profile compared to the forecast profile.

1.10 Shift Patterns

1.10.1 The shift patterns assumed for modelling of the early years and peak construction phases are set out in **Appendix 7B** to the **Consolidated Transport Assessment** [REP2-046].

1.10.2 In the early years 400 (27%) of the 1,500 MDS construction workers are assumed to work a night shift (see **Table 27** in **Appendix 7B** to the **Consolidated Transport Assessment** [REP2-046]). With 600 workers living at the LEEIE caravan site and 578 workers assumed to drive, walk or cycle to the LEEIE park and ride facility (see **Table 28** in **Appendix 7B** to the **Consolidated Transport Assessment** [REP2-046]), a total of 1,178 workers would be bused between the LEEIE and main development site per day, and of these, around 320 of the 400 night shift workers. Assuming as a rule of thumb 40 people per bus, that would require around 8 buses to carry workers for the night shift. In order to provide a robust assessment, 12 buses have been modelled to carry workers each way (24 movements), split equally between the secondary site access (SSE) on Lover's Lane and the Sizewell B access on Sizewell Gap, during the night shift start and end

periods. However, due to the shift start and end periods (**Table 27** in **Appendix 7B** to the **Consolidated Transport Assessment** [[REP2-046](#)]), not all of the workers (and therefore buses) would travel within the ‘night-time’ hours of 11pm-7am. The number of buses assessed during 11pm-7am, as part of the Noise and Vibration assessment presented in **Volume 1, Chapter 3** of the **ES Addendum** [[AS-182](#)], between the LEEIE and the SSE on Lover’s Lane, is 6 bus movements (3 each way), with the same number between the LEEIE and the Sizewell B entrance. The remaining 80 night shift workers would travel directly by car to the MDS, with some workers car-sharing and again not all travelling during the night-time hours of 11pm-7am.

- 1.10.3 At peak construction it is assumed that 536 (around 7%) of the 7,900 construction workers would work the night shift, with around 240 of these travelling by direct or park and ride bus. However, as in the early years, due to the shift start and end periods (**Table 1** in **Appendix 7B** to the **Consolidated Transport Assessment** [[REP2-046](#)]) not all of the night shift workers would travel during the night-time hours of 11pm-7am. Considering the other shifts that would operate during peak construction, some of the construction workers on ‘early’ or ‘late’ shifts would also travel during the night-time hours of 11pm-7am, as well as a number of associated development operational workers (**Table 3** in **Appendix 7B** to the **Consolidated Transport Assessment** [[REP2-046](#)]). It is estimated that around 1,400 worker movements, split between two directions, would be made by bus during the night-time hours of 11pm-7am. Assuming as a rule of thumb 40 people per bus, that would require around 35 buses to carry workers for the night shift. Assuming each movement would need to make a return journey, this would be around 70 bus trips. The modelling assumes 378 buses each way (756 movements) per day (**Table 7.5** in the **Consolidated Transport Assessment** [[REP2-045](#)]), of which 73 buses (146 movements) would travel in the night-time hours of 11pm-7am, which is around double the estimate based on the rule of thumb, to provide a robust assessment accounting for the varying destinations of the bus services and spread of shift start and end times. In addition there would be around 560 worker car trips (to/from the MDS) occurring during the night-time hours of 11pm-7am, which have been assessed as part of the Noise and Vibration assessment presented in **Volume 1, Chapter 3** of the **ES Addendum** [[AS-182](#)].

1.11 Options to attenuate traffic noise

- 1.11.1 Meetings were held on 21st July 2021 with representatives of Farnham Environment Residents and Neighbours (FERN), the owners and representatives of Mollett’s Farm, and Mr and Mrs Lacey of Oakfield House,

to discuss potential detailed landscaping amendments for the two village bypass and Sizewell link road to further reduce visual and noise effects.

- 1.11.2 The findings were sent to each party on 20th August 2021, with a plan showing the landscape proposals, and noise calculations setting out the likely effect of the proposals.
- 1.11.3 In addition to the effect of the landscaping proposals, the potential effect of quiet road surfaces on the two new roads was considered.
- 1.11.4 In broad terms, it was found that the 2m high bund along the western side of the two village bypass would reduce traffic noise levels by up to 1.5dB. For the Sizewell link road, the landscaping proposals were found to be ineffective, due to the location of the bund screening a section of the road already screened by cutting.
- 1.11.5 A quiet road surface was found to be reasonably effective, with the calculations suggesting that the majority of its 2.5 to 3dB reduction relative to a standard hot rolled asphalt surface was likely to be realised at the receptors.
- 1.11.6 Combining the bund and quiet road surface would provide a greater benefit, broadly equal to the cumulative total of each measure in isolation for the two village bypass. For the Sizewell link road, the combined effect of bund and quiet road surface was essentially equal to the effect of the quiet road surface alone, since the bund was found to be ineffective.
- 1.11.7 Copies of the correspondence with each party is submitted at Deadline 7 in the **Comments at Deadline 7 on submissions from earlier deadlines** submission (Doc Ref 9.73).
- 1.11.8 In respect of the potential to include bunding within the landscaping proposals, SZC Co. will progress these as part of the detailed design process, post-consent.
- 1.11.9 Discussions regarding the potential use of quiet road surfaces continue to progress with SCC.
- 1.12 **Requirement 25 and the draft Rail Noise Mitigation Strategy**
- 1.12.1 Requirement 25 of the **draft DCO** (Doc Ref 3.1(G)) has been updated to make it clear that the final **Rail Noise Mitigation Strategy** that is to be approved by ESC must be generally in accordance with the draft **Rail Noise Mitigation Strategy** [[AS-258](#)] that has been considered during the course of the Examination.

1.12.2 The amended Requirement 25 is contained in the updated draft DCO (Doc Ref 3.1(G)) submitted at Deadline 7.

1.13 Aldhurst Farm

1.13.1 The updated railway noise and vibration assessment can be found in **Volume 1, Chapter 9, section 9.3** of the **First ES Addendum** [[AS-188](#)], supported by **Volume 3, Appendices 9.3.A to 9.3.E** of the **First ES Addendum** [[AS-257](#) and [AS-258](#)].

1.13.2 The relevant outcomes for Aldhurst Farm are set out in the following locations:

- **Table 9.3.C.5** in **Volume 3, Appendix 9.3.C** of the **First ES Addendum** [[AS-257](#)], which shows that predicted noise levels at Aldhurst will be below the LOAEL of 40dB $L_{Aeq,8hrs}$ and 60dB L_{AFmax} . No adverse effect on health and the quality of life is therefore expected.
- **Figure 9.3.C.5** in **Volume 3, Appendix 9.3.C** of the **First ES Addendum** [[AS-257](#)], which shows a noise contour plot of night-time $L_{Aeq,6hrs}$ noise levels, based on seven train movements per night.
- **Figure 9.3.C.6** in **Volume 3, Appendix 9.3.C** of the **First ES Addendum** [[AS-257](#)], which shows a noise contour plot of night-time $L_{Aeq,6hrs}$ noise levels, based on eight train movements per night.
- **Figure 9.3.C.7** in **Volume 3, Appendix 9.3.C** of the **First ES Addendum** [[AS-257](#)], which shows a noise contour plot of L_{AFmax} noise levels.

1.14 Rail Movements

1.14.1 SZC Co. is seeking consent to operate up to four trains per day, totalling eight movements. **Table 3.1** in the **Freight Management Strategy** [[AS-280](#)] envisaged up to five trains being possible at the peak of construction, totalling ten movements; however, this option is no longer being pursued by SZC Co.

1.14.2 At present there is no documented control on the number of trains permitted to run in support of the Sizewell C project. It is therefore proposed to include the maximum number of trains per day in the **Rail Noise Mitigation Strategy** when the document is next updated, in the following way in Section 3 of the document:

“Number of Trains

No more than four trains per day (eight movements) may be run.”

1.15 Air Quality Monitoring

- 1.15.1 Baseline deposited dust monitoring has been undertaken for a 12-month period with monthly reporting of data from eight monitoring sites and good data capture obtained. Results fluctuated as would be expected from a relatively coastal and agricultural area but were predominantly below the 100 mg/m²/day level. The proposed dust deposition Action Level is 200mg/m²/day (0.2g/m²/d).
- 1.15.2 In addition, NO₂ monitoring was undertaken at 24 monitoring locations for a 3-month period to supplement the monitoring already undertaken at key locations by ESC. Concentrations at all locations were well below the annual mean air quality object value of 40µg/m³.
- 1.15.3 The above information was used to inform the environmental assessments that supported the DCO application.
- 1.15.4 In addition, monitoring is proposed prior to and during construction, for deposited dust, PM₁₀ and nitrogen oxides to demonstrate that the proposed control and mitigation strategies are effective in preventing any exceedances of air quality strategy objectives. The scope and extent of the dust monitoring is to be agreed with the Councils through the **Dust Monitoring and Management Plan (DMMP)** which is secured through the **CoCP (Doc Ref. 8.11(D))** and in turn by requirement 2 of the **Development Consent Order**. The Applicant has also agreed to continue to financially support the gathering of nitrogen oxide monitoring data at points on the road traffic network and around the Air Quality Management Areas, so that the existing dataset can continue to be maintained to show that air quality does not deteriorate as a result of Project traffic.
- 1.15.5 In response to IP concerns regarding PM_{2.5} [REP2-353], monitoring of PM_{2.5} is not proposed nor is it considered necessary as no risk of exceedance of PM_{2.5} national Air Quality Strategy levels is predicted as a result of the Project. This position is agreed with the Councils. An assessment has been undertaken of potential PM₁₀ and PM_{2.5} effects and all results show insignificant effect. Due to the nature of construction dust the construction activities that will be undertaken will not give rise to significant PM_{2.5} emissions. Therefore, there is no justification for PM_{2.5} monitoring being required for the Project. Nevertheless, it is apparent from community and public responses that PM_{2.5} concentrations are a concern for some members of the local community and also that there is, to date, limited

information on current levels in the area. Therefore, the Applicant is willing to include the gathering of PM_{2.5} concentration data at the same locations as PM₁₀ monitoring is being proposed, with the results to be shared with the Councils for publication as they consider appropriate. This is secured through the **DMMP**, secured by the **CoCP** (Doc Ref. 8.11(D)) (Schedule 2, Requirement 2).

- 1.15.6 It has been agreed with the Councils that monitoring should be used to demonstrate compliance with annual average national Air Quality Strategy objectives and standards, rather than short term or peak effects, and therefore monthly monitoring and reporting is proposed. However, real time PM₁₀ monitoring data will additionally be gathered that will be used to assess the effectiveness of dust control measures, and action and trigger levels will be used to provide real time feedback to the contractors on the effectiveness of dust control measures. It is agreed with the Councils that any monitoring that is undertaken should use accredited and calibrated techniques and reference methods rather than instantaneous or hand-held devices which cannot be referenced or reproduced and which could give rise to very variable and transient readings.
- 1.15.7 Through the combination of existing monitoring, Council monitoring and proposed monitoring, it is considered that the baseline is adequately characterised, and that adequate monitoring data exists or will be collected to demonstrate the effectiveness of air quality control measures for the Project.
- 1.15.8 The Applicant presents the above information in response to IP concerns regarding the management of construction dust [REP2-481n].
- 1.15.9 The **Deed of Obligation** has been updated at Deadline 7 to reflect the commitment by SZC Co. to financially support the nitrogen oxide monitoring undertaken by ESC.
- 1.15.10 The **CoCP** (Doc Ref. 8.11(D)) has been updated at Deadline 7 to include the DMMP commitment. Finalisation of the wording relating to site electrification, so as to minimise diesel generator use during construction, is ongoing with the Councils.
- 1.15.11 The **Construction Traffic Management Plan (CTMP)** is being updated (to be submitted at Deadline 8) to reflect the commitment to HGV Euro VI engine performance.
- 1.15.12 The **Construction Worker Travel Plan (CWTP)** is being updated (to be submitted at Deadline 8) to reflect the commitment to HDV Euro VI engine performance.

- 1.15.13 For the main development site permanent car park, at least 20% of car parking spaces will have active electric vehicle charging, with a further 20% capacity for passive provision. The demand for the permanent development site electric vehicle charging shall be reviewed in line with the Operational Travel Plan.
- 1.15.14 During the construction phase, temporary car parking on the main development site, the northern park and ride and the southern park and ride sites will have capacity for up to 40% to be provided, with an initial 5% active electric vehicle charging provided on first occupation. The **CWTP** is being updated to provide for monitoring of the use of the electric charging points by the transport co-ordinator, which would be reported to the Transport Review Group (TRG) in the quarterly transport monitoring reports. Based on the monitoring the TRG can then direct SZC Co. to convert passive to active spaces. Based on discussions with SCC since ISH8 a trigger of 80% utilisation of the active vehicle charging spaces is proposed for the conversion of further passive spaces to active, which will be incorporated into the updated **CWTP**.
- 1.15.15 The **Associated Development Design Principles** have been updated at Deadline 7 to reflect the commitments for electric vehicle charging points.
- 1.16 **Air Quality Assessment**
- 1.16.1 It is confirmed as shown in **Table 12.12 of Volume 2 Chapter 12 Air Quality** of the **Environmental Statement** [APP-212] that the accommodation campus has been assessed for air quality effects as receptor LE42, (in response to REP2-481n).
- 1.16.2 Yoxford School is represented by a worst-case receptor (YX2) located at the junction of the A1120 and A12 (respectively 9m and 21m from the YX2 receptor, see **Figure 12B.2 to 12B.7, Volume 2, Appendix 12B** of the **Environmental Statement** [APP-213]). Yoxford School is located approximately 11m from the A1120, and 175m from the A12, and the playing field 50m and 170m from these roads respectively. No significant effects from construction dust or transport emissions are predicted at YX2 and pollutant concentrations remain well below the air quality objectives, and therefore, by extension, the effects at Yoxford School would also be not significant as the receptor is further away from the emissions source.
- 1.16.3 In response to questions on ozone formation, ozone is a regional pollutant that requires regional, national and international policies to control its formation. Ozone forms over several days in plumes of emissions from urban areas or industrial sources and increases local to those emission sources are much smaller in magnitude, when they occur. In fact, locally

the ozone concentrations are usually depressed if high nitrogen oxide levels are present, through reaction with nitric oxide. This position is agreed with the Councils.

- 1.16.4 It is recognised that locally in Suffolk, ozone concentrations are relatively high – primarily due to formation in aged plumes advected from continental Europe and the greater London area. Emissions from the Project will not exacerbate the current ozone levels in the area and control measures applied to emissions from the Project will similarly largely not affect ozone levels locally. Nevertheless, it is recognised that nitrogen oxides are emitted from traffic and combustion plant and that these are used for the Project, primarily during the construction phase. Therefore, the various measures that have been committed to by the Applicant to reduce emissions of nitrogen oxides – such as the progressive electrification of the construction site, the commitment to Euro VI compliant HGVs and the commitment to Stage IV compliant NRMM – will have the additional benefit of reducing emissions of ozone precursors and reduce ozone formation downwind of the Site.
- 1.16.5 In response to the question regarding reduction in future PM_{2.5} level at the A12/B1122 junction, the assessment of transport emissions in future construction and operation years includes a comparison (change) in pollutant concentration with the scheme when compared to a reference case scenario which predicts the pollutant concentrations if the scheme was not in place. The comparison uses the same emission years (e.g. for the early year construction scenario, a 2023 reference case scenario and a 2023 “with construction” scenario has been assessed), applying the same backgrounds and emission factors published by Defra. A decrease in PM_{2.5} in future years (for reference case scenario and “with construction” scenario) compared to current baseline is predicted (see **Tables 1.1 to 1.3, Volume 2, Appendix 12B** of the **Environmental Statement [APP-213]**) at the junction of the B1122 and A12 due to lower published emissions rates, as Defra’s emission factors and backgrounds assume an improvement in vehicle fleet emissions over time. The “with construction” scenario shows negligible difference to the reference case scenario, and both are lower than the current baseline.
- 1.16.6 Responses to Interested Parties’ comments ([\[REP2-481g\]](#), [\[REP2-481n\]](#), [\[REP2-353\]](#), [\[REP2-275\]](#)) are also provided in the appendices to the **Comments on Submissions from Earlier Deadline Responses** (Doc Ref. 9.73).
- 1.17 **Action Level for Dust**
- 1.17.1 The proposed dust deposition Action Level is 200mg/m²/day (0.2g/m²/d).

1.18 Stratford St Andrew and Woodbridge AQMA

- 1.18.1 It is agreed with the Councils that effects on the Stratford St Andrew and Woodbridge AQMAs have been adequately assessed and characterised and that through the proposed control and mitigation measures no significant effects or policy compliance issues will arise at either AQMA. SCC has confirmed that the ongoing scenario testing work on the **Traffic Incident Management Plan**, which is in the process of being updated, is expected to demonstrate that construction traffic will not be diverted into Woodbridge AQMA should there be delays on the A12.

APPENDIX A: ANNEX E OF BS5228-1: 2009+A1:2014

BS 5228-1:2009+A1:2014



BSI Standards Publication

Code of practice for noise and vibration control on construction and open sites – Part 1: Noise

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Foreword

Publishing information

This part of BS 5228 is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 1 January 2009. It was prepared by Subcommittee B/564/1, *Noise control working group*, under the authority of Technical Committee B/564, *Noise control on construction and open sites*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

Together with BS 5228-2:2009, this part of BS 5228 supersedes BS 5228-1:1997, BS 5228-2:1997, BS 5228-3:1997, BS 5228-4:1992 and BS 5228-5:1997, which are withdrawn.

BS 5228-1:2009+A1:2014 supersedes BS 5228-1:2009, which is withdrawn.

Relationship with other publications

BS 5228 is published in two parts:

- Part 1: *Noise*;
- Part 2: *Vibration*.

BS 6164 gives guidance on occupational health issues relevant to tunnelling.

Information about this document

This British Standard refers to the need for the protection against noise and vibration of persons living and working in the vicinity of, and those working on, construction and open sites. It recommends procedures for noise and vibration control in respect of construction operations and aims to assist architects, contractors and site operatives, designers, developers, engineers, local authority environmental health officers and planners.

Noise and vibration can cause disturbance to processes and activities in neighbouring buildings, and in certain extreme circumstances vibration can cause or contribute to building damage.

Noise and vibration can be the cause of serious disturbance and inconvenience to anyone exposed to it and in certain circumstances noise and vibration can be a hazard to health. Attention is drawn to the legislation summarized in Annex A.

BS 5228-1:2009 was a full revision of this part of BS 5228, and introduced the following principal changes:

- restructuring of the standard into two parts, one dealing with noise and one with vibration;
- updating of information relating to legislative requirements;
- updating of information relating to methods and equipment.

Text introduced or altered by Amendment No.1 is indicated in the text by tags $\boxed{A_1}$ $\langle A_1 \rangle$. Minor editorial changes are not tagged.

NOTE Copyright is claimed in Tables C.1 to C.11. The copyright holder is the Department for Environment, Food and Rural Affairs (Defra), Nobel House, 17 Smith Square, London SW1P 3JR.

Use of this document

As a code of practice, this part of BS 5228 takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

Any user claiming compliance with this part of BS 5228 is expected to be able to justify any course of action that deviates from its recommendations.

Presentational conventions

The provisions in this standard are presented in roman (i.e. upright) type. Its recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Annex E (informative) Significance of noise effects

E.1 Example criteria for the assessment of the **A1** potential significance **A1** of noise effects

A1 This annex gives examples only. It does not comprise an exhaustive set of provisions regarding noise effects.

The examples cited in this annex offer guidance that might be useful in the implementation of discretionary powers for the provision of off-site mitigation of construction noise arising from major highways and railway developments [see Note to item a)]. These powers were introduced in the Noise Insulation Regulations 1975 [30, 31, 32] under the Land Compensation Act 1973 [33, 34, 35] (see **A.3.4**) and the Noise Insulation (Railways and other Guided Transport Systems) Regulations 1995 [37] (see **A.3.5**), respectively. Off-site noise mitigation might not be applicable in all circumstances or to other categories of construction project. See also **E.4.** **A1**

A pragmatic approach needs to be taken when assessing the noise effects of any construction project, i.e. the guidance provided below would generally only apply to projects of significant size, and lesser projects might not need to be assessed or might only require general consideration of noise effects and mitigation. Generally, the local planning authority, or a planning consultant experienced in these matters, will be able to advise as to the extent of the assessment that might be required.

Construction noise assessments are generally undertaken for three main reasons.

- a) *For Environmental Impact Assessments (EIAs).* Most major developments now need to be assessed in accordance with the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999 [47]. This is where the development might result in significant effects upon the environment. Therefore, criteria are needed to allow these assessments to be undertaken. **A1** Text deleted **A1**
- b) *Assessments for developments that do not require EIA.* Construction noise assessments are sometimes required by developers to advise on the likely effects that might arise and appropriate actions that might need to be taken to minimize effects.
- c) *Control of Pollution Act (CoPA) 1974 [9], Section 61, "Applications for prior consent for work on construction sites".* Applications under this section of the CoPA are often found to be desirable and useful by both the local authority and the contractor. The applications would usually include (as identified in the CoPA):
 - 1) details of the works and the method by which they are to be carried out; and
 - 2) the steps proposed to be taken to minimize noise resulting from the works.

However, it is good practice to carry out construction noise predictions to provide additional information and to determine, for projects of significant size, any eligibility for noise insulation or temporary re-housing. By gaining consent under Section 61, the contractor gains protection from action under Section 60 of the CoPA, whereby a stop or enforcement notice cannot be

A1 **NOTE** *The assessments can include likely eligibility for noise insulation or temporary re-housing, as forms of mitigation, but such eligibility needs to be confirmed later in the process when a contractor is appointed and detailed method statements and programme information are available.* **A1**

served on the contractor, as long as the works are carried out in accordance with the details in the application.

This annex describes methods to identify the likely significance of noise levels from surface construction activity.

E.2 **A₁** Potential significance based on fixed noise limits **A₁**

For projects of significant size such as the construction of a new railway or trunk road, historically, there have been two approaches to determining whether construction noise levels **A₁** could be significant. **A₁**

The older and more simplistic is based upon exceedance of fixed noise limits which were originally promoted by the Wilson Committee in their report on noise [60] as presented to Parliament in 1963. These noise limits were then included in Advisory Leaflet 72 [61], first published in 1968; the accompanying wording was subsequently revised and the 1976 version is quoted below:

“Noise from construction and demolition sites should not exceed the level at which conversation in the nearest building would be difficult with the windows shut. The noise can be measured with a simple sound level meter, as we hear it, in A-weighted decibels (dB(A))– see note below. Noise levels, between say 07.00 and 19.00 hours, outside the nearest window of the occupied room closest to the site boundary should not exceed:

- 70 decibels (dBA) in rural, suburban and urban areas away from main road traffic and industrial noise;
- 75 decibels (dBA) in urban areas near main roads in heavy industrial areas.

These limits are for daytime working outside living rooms and offices. In noise-sensitive situations, for example, near hospitals and educational establishments – and when working outside the normal hours say between 19.00 and 22.00 hours – the allowable noise levels from building sites will be less: such as the reduced values given in the contract specification or as advised by the Environmental Health Officer (a reduction of 10 dB(A) may often be appropriate). Noisy work likely to cause annoyance locally should not be permitted between 22.00 hours and 07.00 hours.”

The above principle has been expanded over time to include a suite of noise levels covering the whole day/week period taking into account the varying sensitivities through these periods. **A₁** Examples are provided in E.3.2 (see Table E.1) and in E.4 (see Table E.2), and the levels shown in Table E.2 are often used as limits above which noise insulation would be provided if the temporal criteria are also exceeded. **A₁**

E.3 **A₁** Potential significance **A₁** based upon noise change

E.3.1 General

An alternative and/or additional method to determine the **A₁** potential significance **A₁** of construction noise levels is to consider the change in the ambient noise level with the construction noise. **A₁** Text deleted **A₁** There are two main methods, both with similar approaches, of which examples are provided in E.3.2 and E.3.3.

E.3.2 Example method 1 – The ABC method

Table E.1 shows an example of the threshold of potential significant effect at dwellings when the site noise level, rounded to the nearest decibel, exceeds the listed value. The table can be used as follows: for the appropriate period (night, evening/weekends or day), the ambient noise level is determined and rounded to the nearest 5 dB. This is then compared with the site noise level. If the site noise level exceeds the appropriate category value, then a potential significant effect is indicated. The assessor then needs to consider other project-specific factors, such as the number of receptors affected and the duration and character of the impact, to determine if there is a significant effect.

Table E.1 Example threshold of potential significant effect at dwellings

Assessment category and threshold value period	Threshold value, in decibels (dB) ($L_{Aeq,T}$)		
	Category A ^{A)}	Category B ^{B)}	Category C ^{C)}
Night-time (23.00–07.00)	45	50	55
Evenings and weekends ^{D)}	55	60	65
Daytime (07.00–19.00) and Saturdays (07.00–13.00)	65	70	75

NOTE 1 A potential significant effect is indicated if the $L_{Aeq,T}$ noise level arising from the site exceeds the threshold level for the category appropriate to the ambient noise level.

NOTE 2 If the ambient noise level exceeds the Category C threshold values given in the table (i.e. the ambient noise level is higher than the above values), then a potential significant effect is indicated if the total $L_{Aeq,T}$ noise level for the period increases by more than 3 dB due to site noise.

NOTE 3 Applied to residential receptors only.

^{A)} Category A: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are less than these values.

^{B)} Category B: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are the same as category A values.

^{C)} Category C: threshold values to use when ambient noise levels (when rounded to the nearest 5 dB) are higher than category A values.

^{D)} 19.00–23.00 weekdays, 13.00–23.00 Saturdays and 07.00–23.00 Sundays.

E.3.3 Example method 2 – 5 dB(A) change

Noise levels generated by site activities are deemed to be potentially significant if the total noise (pre-construction ambient plus site noise) exceeds the pre-construction ambient noise by 5 dB or more, subject to lower cut-off values of 65 dB, 55 dB and 45 dB $L_{Aeq,T}$ from site noise alone, for the daytime, evening and night-time periods, respectively; and a duration of one month or more, unless works of a shorter duration are likely to result in significant effect.

These evaluative criteria are generally applicable to the following resources:

- residential buildings;
- hotels and hostels;
- buildings in religious use;
- buildings in educational use;
- buildings in health and/or community use.

A1 For public open space, the impact might be deemed to cause significant effects if the total noise exceeds the ambient noise ($L_{Aeq, T}$) by 5 dB or more for a period of one month or more. However, the extent of the area impacted relative to the total available area also needs to be taken into account in determining whether the impact causes a significant effect. **A1**

E.4 **A1** Example of thresholds used to determine the eligibility for noise insulation and temporary rehousing **A1**

A1 COMMENTARY ON E.4

If the contractor has applied best practicable means to the provision of mitigation, i.e. all reasonable measures have been taken to reduce the noise levels, but levels are still such that widespread community disturbance or interference with activities or sleep is likely to occur, there are two further provisions that can be made if the construction activities are likely to continue for a significant period of time either continuously or sporadically. These are as follows.

- a) *Noise insulation (NI). This is the provision of secondary glazing to the windows of affected habitable rooms. Additional ventilation provision might also be necessary to allow the windows to be kept closed whilst maintaining the appropriate number of air changes in the room. Secondary glazing increases attenuation and this can provide a significant improvement to the internal noise environment.*
- b) *Temporary or permanent re-housing (TRH). Where construction noise levels are such that noise insulation will not provide sufficient attenuation to prevent disturbance or interference with activities or sleep, then the occupants can be temporarily re-housed away from the construction site. However, if the nature of the construction activities means that re-housing would be necessary for a significant extent of time, e.g. in excess of six months, then there might be advantages in offering permanent re-housing, i.e. the property would be purchased by the developer and the occupants would purchase another property elsewhere. The property would then remain vacant or be used by site personnel for the duration of the works, after which it can be re-sold. **A1***

Where, in spite of the mitigation measures applied and any Section 61 consents under the Control of Pollution Act 1974 [9], noise levels at some properties are expected to exceed trigger levels for the periods defined below, a scheme for the installation of noise insulation or the reasonable costs thereof, or a scheme to facilitate temporary rehousing of occupants, as appropriate, will be implemented by the developer or promoter. The scheme will include provision for the notification of affected parties.

A1 Noise insulation, or the reasonable costs thereof, will be offered by the developer or promoter to owners, where applied for by owners or occupiers, subject to meeting the other requirements of the proposed scheme, where the construction of the development causes, or is expected to cause, a measured or predicted airborne construction noise level that exceeds either of the following at property lawfully occupied as a permanent dwelling:

- the noise insulation trigger levels presented in Table E.2 for the corresponding times of day;

- a noise level 5 dB or more above the existing pre-construction ambient noise level for the corresponding times of day;

whichever is the higher;

and for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months. $\langle A_1 \rangle$

Table E.2 Examples of time periods, averaging times and noise levels associated with the determination of eligibility for noise insulation

Time	Relevant time period	Averaging time, T	Noise insulation trigger level dB $L_{Aeq,T}$ ^{A)}
Monday to Friday	07.00 – 08.00	1 h	70
	08.00 – 18.00	10 h	75
	18.00 – 19.00	1 h	70
	19.00 – 22.00	3 h	65
	22.00 – 07.00	1 h	55
Saturday	07.00 – 08.00	1 h	70
	08.00 – 13.00	5 h	75
	13.00 – 14.00	1 h	70
	14.00 – 22.00	3 h	65
	22.00 – 07.00	1 h	55
Sunday and Public Holidays	07.00 – 21.00	1 h	65
	21.00 – 07.00	1 h	55

^{A)} All noise levels are predicted or measured at a point 1 m in front of the most exposed of any windows and doors in any façade of any eligible dwelling.

$\langle A_1 \rangle$ Temporary rehousing, or the reasonable costs thereof, will be offered by the developer or promoter to owners, where applied for by owners or occupiers, subject to meeting the other requirements of the proposed scheme, where the construction of the development causes, or is expected to cause, a measured or predicted airborne construction noise level that exceeds either of the following at property lawfully occupied as a permanent dwelling:

- a noise level 10 dB above any of the trigger noise levels presented in Table E.2 for the corresponding times of the day; or
- a noise level 10 dB above the pre-construction ambient noise level for the corresponding times of the day;

whichever is the higher;

and for a period of 10 or more days of working in any 15 consecutive days or for a total number of days exceeding 40 in any 6 consecutive months. $\langle A_1 \rangle$

$\langle A_1 \rangle$ Non-residential buildings the occupants of which are likely to be particularly sensitive to noise $\langle A_1 \rangle$ (these include commercial and educational establishments, hospitals and clinics) will be subject to individual consideration by the developer or promoter, upon application by the affected party.

E.5 Construction works involving long-term substantial earth moving

A1) Where construction activities involve large scale and long term earth moving activities, then this is more akin to surface mineral extraction than to conventional construction activity. In this situation, the guidance contained within the Technical Guidance to the National Planning Policy Framework [15] needs to be taken into account when setting criteria for acceptability.

The Technical Guidance states:

“Subject to a maximum of 55 dB(A) LAeq, 1h (free field), mineral planning authorities should aim to establish a noise limit at the noise-sensitive property that does not exceed the background level by more than 10 dB(A). It is recognised, however, that in many circumstances it will be difficult to not exceed the background level by more than 10 dB(A) without imposing unreasonable burdens on the mineral operator. In such cases, the limit set should be as near to that level as practicable during normal working hours (0700–1900) and should not exceed 55 dB(A) LAeq, 1h (free field). Evening (1900–2200) limits should not exceed background level by more than 10 dB(A) and night-time limits should not exceed 42 dB(A), LAeq, 1h (free field) at noise-sensitive dwellings.”

Based upon the above, it is suggested that the limit of 55 dB $L_{Aeq, 1h}$ is adopted for daytime construction noise for these types of activities but only where the works are likely to occur for a period in excess of six months. Precedent for this type of approach has been set within a number of landmark appeal decisions associated with the construction of ports.

Other recommendations with regard to noise emissions given in paragraphs 28 to 31 of the Technical Guidance to the National Policy Planning Framework [15] should also be taken into account, where appropriate. **A1)**

APPENDIX B: THE HINKLEY POINT C (NUCLEAR GENERATING STATION) ORDER 2013. SI 2013 NO. 648

2013 No. 648

INFRASTRUCTURE PLANNING

**The Hinkley Point C (Nuclear
Generating Station) Order 2013**

Made - - - -

18th March 2013

Coming into force - -

9th April 2013



Cannington Traffic Calming Measures

<i>Drawing number</i>	<i>Rev</i>	<i>Drawing description</i>	<i>Scale</i>	<i>Paper size</i>
400	01	Construction Area Boundary	1:1250	A2
402.1	01	General Arrangements, Road Markings and Signage (1 of 3)	1:250	A0
402.2	01	General Arrangements, Road Markings and Signage (2 of 3)	1:250	A0
402.3	01	General Arrangements, Road Markings and Signage (3 of 3)	1:250	A0

Huntworth Roundabout

<i>Drawing number</i>	<i>Rev</i>	<i>Drawing description</i>	<i>Scale</i>	<i>Paper size</i>
800	01	Construction Area Boundary	1:500	A2
802	01	General Arrangement	1:500	A2

SCHEDULE 2

Article 3

Requirements

Interpretation

1.—(1) In this Schedule—

“commencement” means the carrying out of a material operation, as defined in section 155 of the Planning Act 2008 (which explains when development begins), comprised in or carried out for the purposes of the authorised project and the words “commence” and “commenced” and cognate expressions shall be construed accordingly;

“commissioning” means the process during which plant components and systems, having been constructed or modified, are made operational and verified to be in accordance with design assumptions and to have met the appropriate safety criteria;

“Construction Method Statement” means Annex 2 to the Environmental Statement;

“development” means the carrying out of a material operation, as defined in section 155 of the Planning Act 2008, comprised in or carried out for the purposes of the authorised project and such operations shall exclude non-material ecological and habitat management works;

“Environmental Statement” means the environmental statement submitted by the undertaker with its application for development consent in respect of the authorised project;

“enter operation” means the point at which a reactor unit begins generating electricity at or near its rated output;

“exceptional circumstances” are those defined within section 3.4.2 of the TIMP;

“HGV” means any vehicle exceeding a maximum gross weight of 3.5 tonnes (being the maximum allowable total weight when loaded) travelling to or from the HPC Development Site for the purposes of the construction of the Power Station but excluding buses, minibuses and vehicles transporting abnormal indivisible loads;

“HPC construction works” means—

- (a) construction activities associated with the construction of Work Nos. 1A, 1B, 1C, 2A to 2H, 3, 6A to 6J, 8A, TJ1, TJ2 and TJ3; and
- (b) the carrying out of Work No. TJ0;

“HPC helipad” means the proposed helipad identified as no. 60 on Site Layout Plan (Operational) (Ref: HINK-A1-SL-00-GA-010);

<i>(1)</i> <i>Reference No.</i>	<i>(2)</i> <i>Requirements</i>
	(4) Following completion of construction of Work No. 1A, all temporary structures, plant and equipment required for construction of the development shall be removed and landscape restoration works implemented in accordance with the details approved for MS26 and MS28.
MS8	<p>Permanent fencing</p> <p>(1) No permanent security fences, walls or other means of enclosure shall be erected until details of their layout, scale and appearance, having regard to guidance document ‘Finding A Balance, Guidance on the Sensitivity of Nuclear and Related Information and its Disclosure’, Office of Nuclear Regulation (Office for Civil Nuclear Security), April 2005, have been submitted to and approved by West Somerset District Council.</p> <p>(2) No permanent fencing of Work No. 1A shall be erected unless in accordance with the approved details.</p>
MS9	<p>Construction noise</p> <p>(1) As determined at the façade of any dwelling, lawfully in existence at the date on which this Order is made, outside of Work No. 1A, the level of noise emitted from the site during the construction of Work No. 1A, including the removal of temporary construction development and landscape restoration works, 1B, 1C, 2A to 2H and TJ0 to TJ3 shall not exceed the following levels—</p> <p>(a) Monday to Saturday—</p> <p style="margin-left: 20px;">(i) 07.00 to 19.00: 65 dB LAeq, 1hour;</p> <p style="margin-left: 20px;">(ii) 19.00 to 23.00: 60 dB LAeq, 1hour; and</p> <p style="margin-left: 20px;">(iii) 23.00 to 07:00: 45 dB LAeq, 1hour, and 65 dB LAmax;</p> <p>(b) Sundays and public holidays—</p> <p style="margin-left: 20px;">(i) 07.00 to 19.00: 60 dB LAeq, 1hour;</p> <p style="margin-left: 20px;">(ii) 19.00 to 23.00: 55 dB LAeq, 1hour; and</p> <p style="margin-left: 20px;">(iii) 23.00 to 07:00: 45 dB LAeq, 1hour, and 65 dB LAmax.</p> <p>(2) The noise level restriction referred to in paragraph (1)(a)(i) shall apply except for specific, short duration construction or demolition activities during which an increased noise threshold of 75 dB LAeq, 1hour shall apply. A scheme for notifying local residents shall be submitted to and approved by West Somerset District Council before the increased noise threshold is applied. Notice of the application and duration of the increased threshold shall be given to West Somerset District Council and to local residents, in accordance with the approved scheme, at least 48 hours before the increased threshold is applied. The number and duration of occasions on which the increased noise threshold is applied shall be limited to those approved by West Somerset district Council.</p> <p>(3) Monitoring of the noise levels during construction of the development shall be carried out pursuant to the details approved pursuant to requirement MS11.</p>
MS10	<p>Prohibition of Construction Activities</p> <p>The following construction activities shall be prohibited between the hours of 23:00 and 07:00—</p> <p>(a) construction of the emergency access road and its bridge over Bum Brook;</p> <p>(b) landscaping works south of the 144750mN site boundary;</p> <p>(c) rock ripping and crushing associated with deep excavations; and</p> <p>(d) construction of the HPC Accommodation Campus (Work No. 3).</p>
MS11	<p>Noise Monitoring Scheme</p> <p>(1) Work Nos. 1A, 1B and 1C shall not commence until a noise monitoring scheme for the site has been submitted to and approved by West Somerset District Council. The noise monitoring scheme shall set out details of—</p> <p>(a) a methodology for monitoring noise to ensure compliance with Requirement MS10;</p>

<i>(1)</i> <i>Reference No.</i>	<i>(2)</i> <i>Requirements</i>
	<p>(b) the location of representative monitoring points outside residential properties;</p> <p>(c) the frequency and format of reporting monitoring information to West Somerset District Council; and</p> <p>(d) contingency measures to be taken if noise limits specified in requirement MS10 are exceeded.</p> <p>(2) The details of the noise monitoring scheme may be revised from time to time, subject to the approval of West Somerset district Council.</p> <p>(3) The noise monitoring scheme as approved shall be implemented for the duration of construction of Work Nos. 1A, 1B and 1C, and throughout any subsequent site restoration and landscaping.</p>
MS12	<p>Operational Noise</p> <p>When measured at the façade of any dwelling, legally in existence at the date on which this Order is made, between 23:00 and 07:00 hours, operational noise from the proposed power station shall not exceed 45 dB LAeq, 1 hour.</p>
MS13	<p>Construction lighting</p> <p>Installation of external construction lighting shall be carried out in accordance with the Construction Lighting Strategy, Appendix A3 of the Construction Method Statement submitted on the 31st October 2011.</p>
MS14	<p>Construction workforce parking</p> <p>During the construction of Work No. 1A, the number of car and minibus parking spaces for the HPC construction workforce at the site shall not exceed 200 spaces for construction workers and a further 100 spaces for business visitors, VIP visitors, disabled parking and bus parking for the Public Information Centre, unless otherwise approved by West Somerset District Council.</p>
MS15	<p>Operational Car Parking</p> <p>(1) Car parking for HPC operational staff shall not exceed 430 spaces, excluding spaces allocated for disabled HPC operational staff, unless otherwise agreed by West Somerset District Council.</p> <p>(2) Car parking for the Public Information Centre shall be operated in accordance with the details approved pursuant to MS40.</p> <p>(3) Car parking associated with the Training and Simulator Building and Outages and maintenance shall be operated in accordance with the details approved pursuant to MS39.</p>
MS16	<p>Building design</p> <p>(1) Construction of the Interim Spent Fuel Store (comprised in Work No. 1A(g)), including associated ancillary plant, shall not commence until details of the layout, scale and external appearance of those buildings have been submitted to and approved by West Somerset District Council.</p> <p>(2) The details referred to in paragraph (1) shall be in accordance with parameter plans HINK-A2-HHK-00-GP-000 (Rev 01), HINK-A2-HHK-00-GE-001 (Rev 01) and HINK-A2-HHK-00-GE-002 (Rev 01) and chapters 6 and 9 of the HPC development site Design and Access Statement.</p> <p>(3) The works shall be carried out in accordance with the approved details.</p>
MS17	<p>Access Control Building</p> <p>(1) Construction of the Access Control Building (comprised in Work No. 1A(g)) shall not commence until details of the layout, scale and external appearance of that building have been submitted to and approved by West Somerset District Council.</p> <p>(2) The details referred to in paragraph (1) shall be in accordance with parameter plan HINK-A2-HUD-00-GA-001 (Rev 01) and chapters 6 and 9 of the HPC development site Design and Access Statement.</p> <p>(3) The works shall be carried out in accordance with the approved details.</p>

APPENDIX C: SIZEWELL C OPERATIONAL NOISE: CONSIDERATION OF THE POTENTIAL FOR MITIGATION (SHARPS ACOUSTIC, AUGUST 2021)

sharps acoustics

Sizewell C

Operational noise: consideration of the
potential for mitigation

Clive Bentley BSc (Hons) CIEH MIEEnvSc MIOA CEnv CSci
Acoustic Consultant
Sharps Acoustics LLP
31st August 2021

1.0 Introduction

1.1 Sharps Acoustics have been asked to review operational noise sources proposed from Sizewell C Power Station and to comment on the potential effectiveness of potential additional mitigation.

1.2 In order to consider this, the following points are considered:

- Which sources contribute most significantly to offsite levels?
- What reduction might be gained by mitigating these sources?

1.3 This note considers these points.

1.4 This note is not based on what reductions are possible in real terms, only what theoretically what might be achieved to bring about a reduction in the noise emissions from the normal operation of the power station.

2.0 Analysis of source contributions

2.1 The noise assessment work within the Volume 2, Chapter 11 of ES [APP-202] found that all receptors would experience negligible effects from noise during the night and that, with the exception of Abbey Farm, Keepers Cottage, Plantation Cottages and Reckham Lodge, all would also experience negligible effects from noise during the day. At Abbey Farm, Keepers Cottage, Plantation Cottages and Reckham Lodge, however, a minor adverse effect was predicted during the day from noise.

2.2 The predicted rating levels which result in minor adverse noise effects at these receptors range from 31dB to 38dB, L_{Ar} . This rating level is derived from a predicted level of 27 to 34dB, $L_{Aeq,1h}$ with 4dB added to account for the tonal character of the sound. These levels are very low, but since the background noise levels in the area are extremely low in these locations, the assessment outcome is that they would result in a minor adverse effect. To set these levels in context, the World Health Organisation advises that below a level of 40dB, L_{night} , there would be no adverse effects due on sleep due to night time noise. Although these levels would be present during the day and should not strictly be compared to night time guidelines, this provides a benchmark against which a lay person can understand how quiet the predicted levels are.

2.3 In order to consider source contributions for an example receptor, the daytime rating level predicted at Reckham Lodge (36dB, L_{Ar}) was analysed. This level is a predicted noise level of 32dB, $L_{Aeq,1h}$ with the 4dB character correction added.

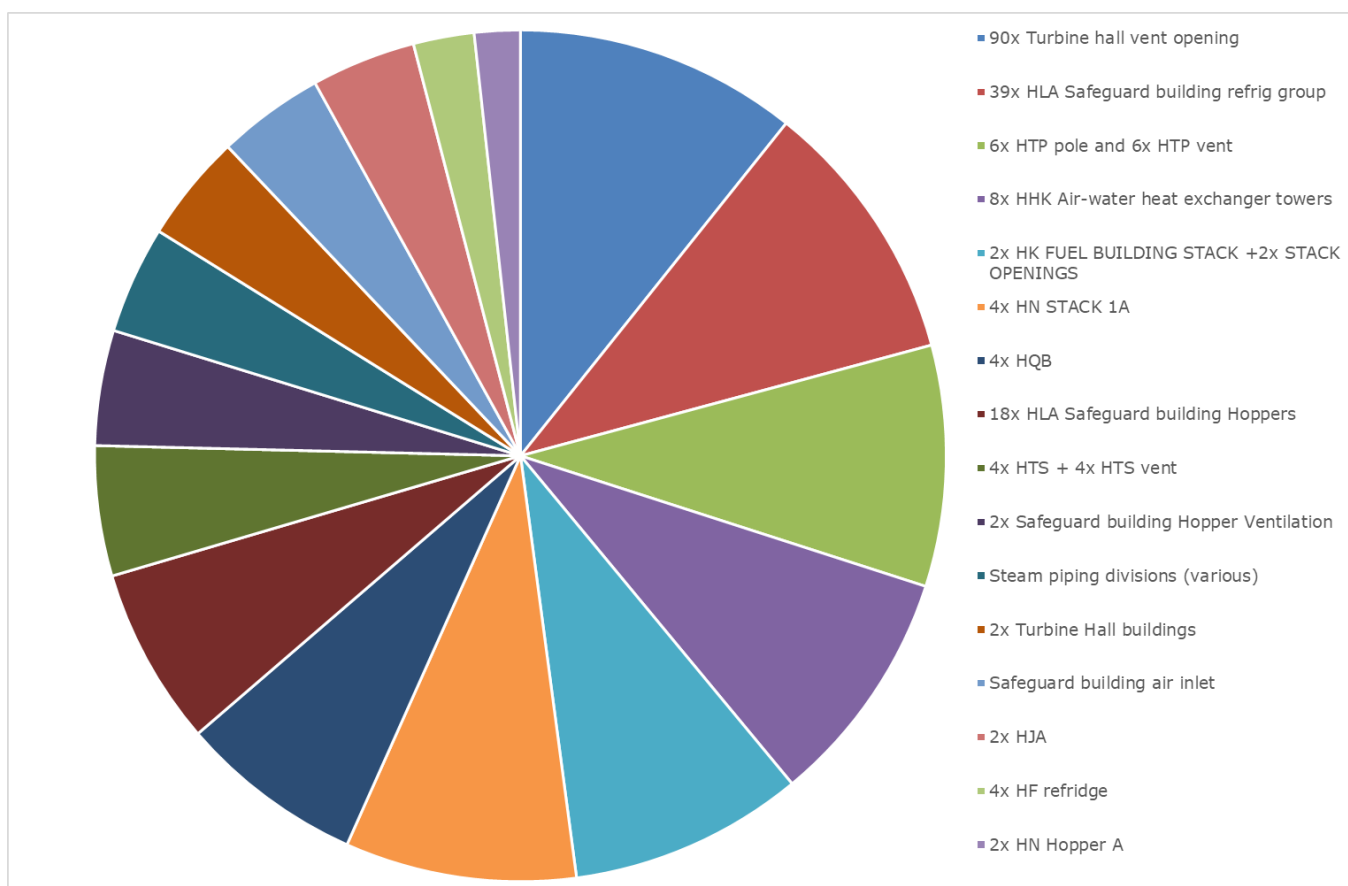
2.4 Table A1 in Appendix A contains a breakdown of the contribution of each source to the overall level. Only those sources which contribute 2dB or more to the overall predicted level at Reckham Lodge have been included in the list. There are around 200 individual sources on site which each contribute a small amount to the overall level at Reckham Lodge.

2.5 The relative source contributions at other receptors in the same area (such as Keepers Cottage) would be much the same. At other locations, the relative contributions would differ a little, but the overall

picture would be much the same: there are a great many sources on site and they all contribute a small amount to the overall level.

2.6 Each type of source has been grouped together to provide an overview of the types of sources and the amount that each contributes to the overall level. The results are shown in the pie chart in Figure 2.1 below.

Figure 2.1: Pie chart illustrating source contributions from groups of sources



2.7 The noisiest groups of plant are listed in Table 4.1 below. There are around 150 individual sources contained in the seven noisiest groups (shaded grey). Complete removal of all of the remaining sources would result in a less than 1dB reduction, so any consideration of mitigation for these would be a secondary consideration.

Table 4.1: Sizewell C plant noise contributions, grouped by source type and in order of level

Plant item	Predicted level at receptor
90x Turbine hall vent opening	26.5
39x HLA Safeguard building refrig group	24.9
6x HTP pole and 6x HTP vent	22.6
8x HHK Air-water heat exchanger towers	22.3

Plant item	Predicted level at receptor
2x HK Fuel building stack +2x Stack openings	22.0
4x HN STACK 1A	21.7
4x HQB	17.3
18x HLA Safeguard building hoppers	16.7
4x HTS + 4x HTS vent	12.2
2x Safeguard building hopper ventilation	10.8
Steam piping divisions (various) combined	10.1
2x Turbine Hall buildings	10.1
Safeguard building air inlet	10.0
2x HJA	9.8
4x HF refrig	5.7
2x HN Hopper A	4.3
All other sources	<2dB

3.0 Theoretical reduction from mitigation

- 3.1 Before considering the potential mitigation that may be possible for each individual noise source on site, it is worth stepping back and looking at the overall situation to find out the level reduction which might be expected from the sorts of sound reductions which might be possible.
- 3.2 Although the largest contribution (when sources are grouped together) is from the turbine roof vents, if each one of the 90 vents were to be reduced in level by 6dB this would result in approximately a 1dB reduction at Reckham Lodge. If one could somehow completely remove the five noisiest sources listed in Table A1 in Appendix A (those with the highest contributions to the offsite levels: there are actually a total of 16 individual sources making up these five) this would only result in a 1dB reduction to the offsite level.
- 3.3 Obviously, removal of such plant is only a theoretical notion: all listed plant are essential to the operation of the power station; this example is merely intended to demonstrate how little difference a large change in a (relatively) prominent onsite source would make.

4.0 Conclusion

- 4.1 A breakdown of the individual noise sources modelled at Sizewell C is provided, set out in order of size of contribution.
- 4.2 Consideration has been given to the size of reduction that might be achieved, in theory, but without taking account what might be technically or physically possible.

Appendix A: Noise source contributions

Table A1: Source level contributions at Reckham Lodge, sorted by level (descending)

Source	Predicted level, $L_{Aeq, 1hr}$, dB
HK Fuel Building Stack	20.1
HTP	18.4
HTP	17.3
HTP	16.8
HK Fuel Building Stack	16.8
HN Stack	16.3
HN Stack	16.2
HHK	15.9
HHK	15.7
HHK	15.5
HN Stack	15.1
HN Stack	15
HHK	14.9
HQB	13.3
HQB	12
HQB	11.8
HLA Safeguard building refrig group	11.2
HLA Safeguard building refrig group	11.2
HLA Safeguard building refrig group	11.2
HLA Safeguard building refrig group	11.2
HLA Safeguard building refrig group	11.2
HLA Safeguard building refrig group	10.5
Turbine Hall Vent	10.2
HLA Safeguard building refrig group	10.1
HLA Safeguard building hopper 3	10
HLA Safeguard building refrig group	9.9
HLA Safeguard building refrig group	9.9
HLA Safeguard building refrig group	9.9
HLA Safeguard building refrig group	9.9
Turbine Hall Vent	9.8
HLA Safeguard building refrig group	9.8

Source	Predicted level, $L_{Aeq, 1hr}$, dB
HLA Safeguard building refrig group	8.4
Turbine Hall Vent	8.3
Turbine Hall Vent	8.3
Turbine Hall Vent	8.2
Turbine Hall Vent	8.2
HHK	8.1
HHK	8
Turbine Hall Vent	7.9
HLA Safeguard building refrig group	7.9
Turbine Hall Vent	7.9
Turbine Hall Vent	7.9
Turbine Hall Vent	7.9
Turbine Hall Vent	7.9
Turbine Hall Vent	7.8
Turbine Hall Vent	7.8
Turbine Hall Vent	7.8
Turbine Hall Vent	7.8
Turbine Hall Vent	7.7
Turbine Hall Vent	7.6
HLA Safeguard building refrig group	7.6
Turbine Hall Vent	7.5
Turbine Hall Vent	7.5
Turbine Hall Vent	7.4
Turbine Hall Vent	7.4
Turbine Hall Vent	7.4
Turbine Hall Vent	7.3
HLA Safeguard building refrig group	7.3
HLA Safeguard building refrig group	7.3
HLA Safeguard building refrig group	7.3
HLA Safeguard building hopper 3	7.3
HLA Safeguard building refrig group	7.1
Turbine Hall Vent	7.1
Turbine Hall Vent	7
HLA Safeguard building refrig group	7

Source	Predicted level, $L_{Aeq, 1hr}$, dB
HLA Safeguard building refrig group	7
HLA Safeguard building refrig group	7
HLA Safeguard building hopper 3	7
Turbine Hall Vent	7
Turbine Hall Vent	6.9
Turbine Hall Vent	6.9
Turbine Hall Vent	6.9
Turbine Hall Vent	6.9
Turbine Hall Vent	6.8
Turbine Hall Vent	6.8
Turbine Hall Vent	6.8
Turbine Hall Vent	6.7
Turbine Hall Vent	6.7
Turbine Hall Vent	6.6
Turbine Hall Vent	6.6
Turbine Hall Vent	6.6
HK FUEL BUILDING STACK	6.6
Turbine Hall Vent	6.5
Turbine Hall Vent	6.5
Turbine Hall Vent	6.5
Turbine Hall Vent	6.5
HLA Safeguard building hopper 3	6.5
Turbine Hall Vent	6.5
Turbine Hall Vent	6.5
HTP	6.4
HLA Safeguard building refrig group	6.3
Turbine Hall Vent	6.3
Turbine Hall Vent	6.3
Turbine Hall Vent	6.2
Turbine Hall Vent	6.2
Turbine Hall Vent	6.1
Turbine Hall Vent	6.1
Turbine Hall Vent	6.1
Turbine Hall Vent	6.1

Source	Predicted level, $L_{Aeq, 1hr}$, dB
Turbine Hall Vent	6
Turbine Hall Vent	6
Turbine Hall Vent	6
HTP	6
Turbine Hall Vent	6
Turbine Hall Vent	5.9
Turbine Hall Vent	5.9
Turbine Hall Vent	5.8
Turbine Hall Vent	5.7
Turbine Hall Vent	5.6
Turbine Hall Vent	5.6
Turbine Hall Vent	5.6
Turbine Hall Vent	5.6
Turbine Hall Vent	5.6
Turbine Hall Vent	5.5
Turbine Hall Vent	5.4
Turbine Hall Vent	5.4
Turbine Hall Vent	5.4
Turbine Hall Vent	5.4
Turbine Hall Vent	5.3
Turbine Hall Vent	5.2
HLA Safeguard building hopper 3	5.2
Turbine Hall Vent	5.2
Turbine Hall Vent	5.1
HK Fuel Building Stack	4.9
HTP	4.9
Turbine hall roof	4.2
HF Refrig	3.6
Turbine hall roof	3.6
Turbine Hall Vent	3.1
Turbine hall	2.2
HQB	2.2
HTS	2.2

Note: Sources with contributions of less than 2dB are not included on this list