River Thames Scheme

Protecting our communities
Securing our economy
Enhancing our Thames

Preliminary Environmental Information Report

Volume 2

Chapter 14: Noise and Vibration

14 Noise and Vibration

14.1 Introduction

14.1.1.1 This chapter of our Preliminary Environmental Information Report (PEIR) considers the effects from construction and operation of the River Thames Scheme (RTS) ('the project') in relation to noise and vibration. Within this chapter we have included topic specific sections on:

- Legislation, policy and guidance (noting any changes since Environmental Impact Assessment (EIA) scoping);
- Engagement with consultees, including responses to comments received on the RTS EIA Scoping Report;
- The assessment methodology for this topic (again noting any changes or updates since EIA scoping);
- Key environmental considerations and opportunities,
- Primary and tertiary mitigation;
- Our preliminary assessment of effects;
- Secondary mitigation; and
- Future work for this topic of our EIA.

14.1.1.2 For a summary of the key baseline elements associated with noise and vibration see Section 5.8.

14.1.1.3 An explanation of the topic study area can be found in Section 14.2.3 of the RTS EIA Scoping Report (Environment Agency and Surrey County Council, October 2022) ('the EIA Scoping Report'). The study area includes noise sensitive receptors within 300 metres of construction and operation activities associated with the project. It is therefore slightly different to that presented in our EIA Scoping Report due to minor changes in the project boundary for EIA PEIR (see Figure 5.23).

14.1.1.4 Other aspects of noise and vibration which are not considered within this chapter but are instead covered in other chapters of our PEIR and should therefore be read in conjunction with this chapter. Chapter 7: Biodiversity considers disturbance to designated site interest features (e.g. birds) and other terrestrial and aquatic protected species from noise and vibration. Chapter 11: Health considers potential effects of noise and vibration on the health of local populations. Chapter 17: Traffic and Transport

considers the potential effects of traffic and has strong linkages with this chapter.

14.2 Legislation, Policy and Guidance

14.2.1.1 A summary of the key legislation, policy and guidance relevant to noise and vibration is provided in Appendix M of our EIA Scoping Report. Since the publication of our EIA Scoping Report in October 2022 the National Policy Statement (NPS) for Water Resources Infrastructure (Defra, 2023) has been updated and finalised. Otherwise, there has been no new legislation, policy or guidance relevant to the assessment of noise and vibration published since the submission of our EIA Scoping Report.

14.2.1.2 Changes to the NPS relevant to noise and vibration since the draft version was released in 2018 are:

- Further clarification of the stakeholders to consult in relation of noise and vibration effects on wildlife. This is considered further in Chapter 7: Biodiversity.
- A section is now included on mitigation. The measures listed have been considered and are consistent with the measures presented in our PEIR.

14.3 Engagement

14.3.1 Responses to EIA Scoping

14.3.1.1 Table 14-1 below summarises the comments and responses received on the Scoping Report following formal submission to the Planning Inspectorate (PINS) including the PINS EIA Scoping Opinion (dated 15 November 2022) (‘the PINS Scoping Opinion’) and any key comments received from statutory consultees. Full responses to consultee comments on our EIA Scoping Report and our responses to these comments are provided in Appendix 4.1.

Table 14-1: Responses to comments received on the EIA Scoping Report

Consultee or Organisation	Summary of Comment	Project Response
PINS	The Inspectorate agreed to scope out impacts from transportation and handling of hazardous waste from the major road network to placement at appropriate facilities offsite, on the basis that waste will be handled by a licensed waste carrier and will be disposed of in line with relevant permits. The Environmental Statement (ES) should be accompanied by an outline Construction Environmental Management Plan (CEMP), which demonstrates that appropriate measures are in place to manage the storage and handling of such waste on site.	This comment has been noted. The recommendation to include a CEMP with appropriate mitigation is agreed and will be developed based on the Environmental Action Plan produced for the ES. This will include measures to manage the storage and handling of waste on site, including those required to mitigate for potential noise and vibration effects.
PINS	The EIA Scoping Report proposed to scope out operational effects relating to the use of the new green open spaces and recreational facilities. PINS noted that a range of recreational facilities remain under consideration and that some proposed locations are in close proximity to noise sensitive receptors. It also noted that secondary mitigation might be required to control noise impacts from these activities. On this basis, PINS did not agree to scope this matter out.	This effect will be scoped in. The ES will include an assessment or otherwise explain how the use(s) would be designed and controlled to avoid significant effects from noise from the use of new open spaces.
PINS	The EIA Scoping Report proposed to scope out construction effects of vibration from offsite construction traffic on the basis that effects are unlikely to be significant because	This comment has been noted. The ES will present the outcome of the review of construction routes and receptors to ascertain whether vibration effects are likely.

Consultee or Organisation	Summary of Comment	Project Response
	heavy road traffic would only be expected to lead to potentially significant vibration levels if it is within 5 to 10 m distance from the sensitive receptors and the roads are in poor condition. PINS agreed that this approach is acceptable and specified that the outcome of the review should be reported in the ES.	
PINS	PINS noted that no reference is made to ecological receptors within the Noise and Vibration chapter of the EIA Scoping Report. The EIA Scoping Opinion noted that the ES should present noise and vibration baseline information at relevant sensitive ecological receptors and appropriate cross-referencing to where the assessment is presented in the ES.	This information will be clearly presented in more detail in the ES, with the assessment on ecological receptors documented in the Biodiversity chapter.
PINS	Non-residential receptors considered in the assessment should include existing and proposed green spaces and recreational areas and operational noise impacts on use of those sites. Effort should be made to agree suitable assessment location(s) with relevant consultation bodies.	As indicated in paragraph 14.7.1.9 of the EIA Scoping Report the ES will assess potential noise impact on tranquil outdoor spaces. In preparation of the PEIR, we asked local authorities to identify quiet spaces and spaces prized for their tranquillity for the assessment. We received responses from Spelthorne and Runnymede Councils and as a result Thorpe Hay Meadow, Sunbury Walled Gardens and Chertsey Meads Local Nature Reserve have been added as receptors within the assessment. Activities associated with the provision of the new green open spaces and other landscape works have the potential for negative

Consultee or Organisation	Summary of Comment	Project Response
		noise effects on residential and non-residential receptors. Likely significant effects as a result of this will be assessed according to the methodology presented in Section 14.7.4 of the Scoping Report.
Marine Management Organisation (MMO)	The MMO would expect the method(s) of piling proposed for use (for example percussive or vibropiling) to be specified and a more comprehensive assessment of potential impacts of underwater noise in relation to fish receptors.	It is considered likely that in most cases the airborne noise will have a greater impact than waterborne noise, so the assessment of effects will concentrate on airborne noise at these receptors. Waterborne noise predictions will however be carried out and presented where the cumulative impact of these is likely to be significant. See paragraph 14.4.5.3 for further information.
Local Planning Authority (LPA) project group	The classification of temporary accommodation receptors (including traveller sites and houseboats, if any exist within the study area) as non-residential should be justified within the ES, if they are considered to be non-residential. Parks/outdoor amenity areas are not included within the list. Any existing or proposed parks/outdoor amenity areas within the study area should also be outlined within the PEIR and assessed within the ES.	For the PEIR all houseboats and traveller sites that have been identified have been assumed to be permanently occupied but this will be reviewed for the ES. As noted above, quiet spaces and spaces prized for their tranquillity have been included in our PEIR. Noise from activities associated with the provision of the new green open spaces and other landscape works have also been included in our PEIR and will be assessed in more detail for the ES.

14.3.2 Other Engagement Since EIA Scoping

14.3.2.1 Section 14.2.2 of our EIA Scoping Report summarises the stakeholder engagement relevant to Noise and Vibration that was undertaken prior to submission of the EIA Scoping Report.

14.3.2.2 As noted above, since EIA Scoping, we have asked LPAs to identify quiet spaces and spaces prized for their tranquillity for the assessment. We received responses from Spelthorne and Runnymede Councils and as a result Thorpe Hay Meadow, Sunbury Walled Gardens and Chertsey Meads Local Nature Reserve have been added as receptors within the assessment.

14.4 Methodology

14.4.1 Introduction

14.4.1.1 This section should be read in conjunction with Chapter 4 'Approach to the Environmental Assessment' which sets out relevant information on the design parameters and information that have informed our PEIR assessment, and how we have approached various aspects of the assessment including:

- The scope of the assessment;
- The methodology (including the approach to defining the baseline environment, topic study areas, and assessment methodology and criteria);
- The approach to mitigation; and
- The approach to cumulative effects.

14.4.1.2 The assessment methodology used for the noise and vibration assessment in our PEIR and to be used in the Environmental Statement (ES) is presented in Section 14.7 of our EIA Scoping Report with the following clarifications.

14.4.2 Noise and Vibration Sensitive Receptors

14.4.2.1 In response to the PINS Scoping Opinion, the following clarifications are provided to the list of noise and vibration sensitive receptors in Section 14.3.1 of the EIA Scoping Report:

- The assessment will consider houseboats and traveller communities' sites to be residential where they are permanently occupied or likely to be occupied for a substantial duration of the construction phase. For our PEIR all that have been identified have been assumed to be permanently occupied but this will be reviewed for the ES;

- As indicated in paragraph 14.7.1.9 of the EIA Scoping Report, our PEIR and the ES will assess potential noise effect on tranquil outdoor spaces. Local authorities have been asked to identify quiet spaces and spaces prized for their tranquillity for the assessment. Information has been received from environmental health officers from Spelthorne Borough Council and Runnymede Borough Council and these spaces have been included as receptors within our PEIR;
- Any ecological receptors sensitive to noise and vibration are set out in Chapter 7: Biodiversity.

14.4.2.2 The approximate location of noise and vibration receptors assessed within our PEIR are provided in Figure 14.1.

14.4.2.3 As stated in our EIA Scoping Report, where identified, particularly sensitive equipment or infrastructure (e.g. utilities) will also be considered as a non-residential vibration sensitive receptor. No such receptors have been identified for our PEIR; however further review will be undertaken, and results presented within the ES as appropriate.

14.4.3 Noise Survey Measurements

14.4.3.1 Noise survey measurements have been completed according to the method set out in Section 14.2 of our EIA Scoping Report. Measurements have been completed at locations identified in the EIA Scoping Report with some minor modifications where there were access restrictions. Appendix 14.1 sets out the findings from these noise survey measurements and the measurement locations are shown on Figure 14.1. Additional noise survey measurements will be completed where required for project development and, if undertaken, these will be presented in the ES.

14.4.4 Significance Criteria

14.4.4.1 There are no changes to the significance criteria presented in Section 14.7.1 of our EIA Scoping Report.

14.4.5 Assessment of Effects from Construction

14.4.5.1 As set out in Section 14.7.3 of our EIA Scoping Report, the assessment of effects from construction noise and vibration includes assessment of:

- Noise and vibration from on-site construction; and
- Noise and vibration from offsite construction traffic.

14.4.5.2 In response to the Planning Inspectorate (PINS) EIA Scoping Opinion (dated 15 November 2022) ('the PINS Scoping Opinion'), the following clarifications are made:

- The assessment of potential noise effects from construction to existing tranquil outdoor spaces is being undertaken according to the method described in paragraph 14.7.1.9 of our EIA Scoping Report.
- While we stated in our EIA Scoping Report that significant levels of vibration from offsite construction traffic are unlikely; a review of vibration sensitive receptors within five to ten metres of traffic routes associated with the transportation of excavated material will be undertaken and results presented in the ES.
- As referred to in the PINS EIA Scoping Opinion, noise and vibration impacts on ecological receptors and associated impacts are set out in Chapter 7 Biodiversity.

14.4.5.3 Houseboats and other water-based receptors have the potential to be affected by waterborne noise and vibration from works in or near to the watercourse. For example, vibration from piling in the watercourse can transmit through the water and into the structure of houseboats or boats as vibration and, depending on the frequency of the vibration, be retransmitted inside as audible noise. This is different to airborne noise which transmits through the air. It is considered likely that in most cases the airborne noise will have the greater impact, so the assessment of effects will concentrate on airborne noise at these receptors, but for the ES waterborne noise predictions will be carried out and presented where the cumulative impact of waterborne and airborne noise is likely to be significant.

14.4.5.4 For the PEIR, detailed information related to the construction of the project is not yet available, so detailed noise and vibration predictions have not been completed. The assessment of noise and vibration effects presented in our PEIR is therefore approximate and preliminary and will be updated in greater detail for the ES.

14.4.5.5 The assessment of construction noise and vibration presented in our PEIR has been based on:

- Approximated distances that effects are likely to occur from the different construction activities presented in Chapter 2 Project Description;
- The baseline noise survey results presented in Appendix 14.1; and
- Professional judgement.

14.4.5.6 The approximated distances that effects are likely to occur within are based on the work methods and plant which are likely to be required for the construction activity. No allowances have been made, at the PEIR stage, for detailed noise propagation such as the positive effect of any acoustic screening.

14.4.6 Assessment of Effects from Operation

14.4.6.1 As set out in Section 14.7.4 of our EIA Scoping Report, the assessment of effects from operational noise and vibration includes assessment of:

- Noise effects from traffic movements from operation of the RTS;
- Noise from activities in new green open spaces;
- Noise from maintenance activities; and
- Noise from use of the flood alleviation channels and associated facilities.

14.4.6.2 In response to the PINS Scoping Opinion, the following clarifications are made:

- Activities associated with the provision of the new green open spaces and other landscape works have the potential for noise effects on residential and non-residential receptors. Likely significant effects as a result of this have been assessed for the PEIR according to the methodology presented in Section 14.7.4 of our EIA Scoping Report and will be further assessed using this methodology for the ES;
- Noise from flood alleviation channels and flow control structures including the flow of water and warning sounds have the potential for noise effects on residential and non-residential receptors. Likely significant effects as a result of this will be assessed according to the methodology presented in Section 14.7.4 of our EIA Scoping Report;
- The suitability of the acoustic environment in new green open spaces will be assessed and presented in the ES. This assessment will be based on guidance from WHO ‘Guidelines for Community Noise

1999' for outdoor spaces and also take into account the nature and character of the sounds within the proposed spaces and their suitability for the proposed uses.

14.4.6.3 The assessment of operational noise presented in our PEIR has been based on:

- Approximated distances that effects are likely to occur from the different operational activities presented in Chapter 2 Project Description;
- Baseline noise survey results presented in Appendix 14.1; and
- Professional judgement.

14.4.6.4 The approximated distances that effects are likely to occur are based on the likely worst case operational activities. No allowances have been made, at PEIR stage, for detailed noise propagation such as the effect of screening (secondary mitigation).

14.5 Key Environmental Considerations and Opportunities

14.5.1.1 The key considerations with respect to noise and vibration are:

- The large number of residential and non-residential receptors (e.g. schools, hospitals, hotels or offices) within the study area; these will be sensitive to changes in noise and vibration levels from major infrastructure projects such as the RTS.

14.5.1.2 The key opportunities with respect to noise and vibration are:

- The suitability of the acoustic environment in existing and new areas of public access where there is the opportunity to adapt these spaces so that the nature and character of the sounds within the spaces are suitable for, and in some cases enhance, the uses.

14.6 Primary and Tertiary Mitigation

14.6.1 Primary Mitigation

14.6.1.1 No specific primary mitigation in relation to noise and vibration effects has been identified at this stage, nevertheless, it is anticipated that the new planting being considered within our integrated landscape design process will provide noise attenuation benefits as well as visual screening.

Furthermore, the nature and character of the sounds from potential uses of areas of enhanced public connection will be explored as the design develops, to enhance user experience where feasible.

14.6.2 Tertiary Mitigation

14.6.2.1 The following tertiary mitigation is proposed in relation to noise and vibration effects.

- Best Practicable Means Noise and Vibration Mitigation. This may include, for example, selection of quieter equipment or working methods, temporary screening, and majority of construction work to take place during normal working hours. These details will be set out in the Construction Environmental Management Plan (CEMP).
- The production of a Construction Traffic Management Plan. This would aim to ensure all highways works are safe, planned and co-ordinated in order to secure the expeditious movement of traffic on the road network; and to minimise inconvenience to the public including associated noise disturbance.
- The production of a Construction Logistics Plan. This would detail the logistics management arrangements for worksites to minimise effects on communities and the environment from transportation of construction materials/waste, including consideration of associated noise and vibration disturbance.
- The production of a Construction Travel Plan. This aims to proactively manage and influence workforce (and visitor) travel to and from worksites to limit traffic movement and reduce disruption in the vicinity of the site, including associated noise disturbance.

14.7 Preliminary Assessment of Likely Significant Effects

14.7.1 Introduction

14.7.1.1 Our PEIR adopts a precautionary approach. Assessments reported within this chapter are a preliminary assessment of potential likely significant environmental effects based on the design parameters set out in Chapter 2 Project Description. This precautionary approach has been taken for the PEIR as there is some information on the project that is currently incomplete and the parameters within Chapter 2 are high level and account for a range of uses and allowance for design development within

a boundary that could possibly be refined once this work has been completed. For example, some designs, construction and mitigation details (and therefore also land requirements) or baseline information is still required from further surveys, assessments and/or consultation feedback.

14.7.1.2 In making a determination of likely significant effects, we have considered the sensitivity of receptors (a receptor being a feature of the environment that responds to change) and the potential magnitude (i.e. size) of change caused by the RTS. The methodology for defining sensitivity and magnitude varies by topic and are defined in the topic sections of our Scoping Report and in Section 14.4 of this chapter.

14.7.1.3 We are committed to including mitigation measures as necessary to address likely significant negative environmental effects as far as reasonably practicable. Both primary and tertiary mitigation are considered to form part of the RTS; those applicable to this topic are set out in Section 14.6. Several of these mitigation measures are still being developed, and therefore as a precaution, the preliminary assessment of effects for our PEIR does not assume full achievement of these in considering if a project effect is likely to be significant (Appendix 4.2 identifies the implementation status of primary and tertiary mitigation for the PEIR assessment). Furthermore, the potential likely significant effects reported within our PEIR have been assessed prior to the implementation of secondary mitigation measures. Those applicable to noise and vibration are set out in Section 14.7.5 below. These secondary mitigation measures are the subject of further development; and given they are still being developed, are not able to be applied to develop a ‘residual’ effects assessment.

14.7.1.4 Our PEIR is based on the latest design and construction parameters and baseline information. As such the findings of the preliminary environmental appraisal presented within our PEIR may be subject to change as the design progresses or as mitigation is further developed or information from baseline noise surveys become available. The final assessment of effects undertaken as part of the EIA and reported within the ES will be based on the latest information available at that time.

14.7.2 Potential Likely Significant Effects

14.7.2.1 Our preliminary assessment of likely significant environmental effects has identified the potential for the following significant effects from construction in relation to noise and vibration:

- Airborne noise causing a temporary disturbance to residential and non-residential receptors near construction areas. This includes noise from project construction activities including piling, material excavation and earthworks, use of materials processing sites, stockpiling of materials, the creation and use of the construction compounds, the movement of construction vehicles and equipment and other general construction activities.
- Vibration from piling activities and demolition of existing structures causing a temporary disturbance to residential and non-residential receptors near to those activities.

14.7.2.2 Our preliminary assessment of likely significant environmental effects has identified the potential for the following significant effects from operation in relation to noise and vibration:

- Airborne noise to residential and non-residential receptors from the use of weirs and flow control structures and from the use of publicly accessible areas and associated operational traffic.

14.7.2.3 Further details of the potential significant effects from construction and operation with respect to receptors, project components and project activities, in relation to noise and vibration can be found in Table 1 and 2 in Appendix 14.2.

14.7.3 Potential Likely Non-Significant Effects

14.7.3.1 Further details of the potential non-significant effects from construction and operation with respect to receptors, project components and project activities, in relation to noise and vibration can be found in Table 3 and 4 in Appendix 14.2.

14.7.3.2 Examples of non-significant noise and vibration effects include disturbance to certain residential or non-residential receptors from construction activities or traffic movements where the change in noise

levels is expected to be below the relevant thresholds for significant effects.

14.7.3.3 Receptors which are not identified within the tables in Appendix 14.2 but are within the study area are likely to be subject to negligible effects or no change from construction and operational noise and vibration.

14.7.4 In-Combination Climate Impact

14.7.4.1 Consideration of 'In-Combination Climate Impact' (ICCI) has been undertaken. The preliminary environmental assessment has considered a future climate scenario and has determined that the potential likely significant environmental effects identified for this topic are unlikely to be exacerbated further by climate change. Further consideration of ICCI will be included in the ES.

14.7.5 Secondary Mitigation

14.7.5.1 As noted in Section 14.7.1.3, primary and tertiary mitigation are still being developed, and therefore as a precaution, the preliminary assessment of effects for the PEIR does not assume full achievement of these in considering if a project effect is likely to be significant. Furthermore, the potential likely significant effects reported within this PEIR have been assessed prior to the implementation of secondary mitigation measures. For the majority of the identified likely significant environmental effects it is considered likely that the primary and tertiary mitigation will be sufficient at ES stage such that no secondary mitigation will be required. Where secondary mitigation is already under consideration for potential significant environmental effects this is detailed below

14.7.5.2 In order to reduce the magnitude of significant effects, the following secondary mitigation is currently being considered:

- During construction, additional location-specific best practicable means and/or receptor-specific noise mitigation will be implemented. Site specific measures may include management techniques such as carrying out noisy activities at less sensitive times, physical mitigation such as barriers or monitoring;
- During construction, the use of alternative piling methods that reduce noise and vibration where practicable will be investigated. A further Noise and Vibration Assessment will be carried out to inform the ES

and will identify whether alternative quieter piling methods should be considered. If they are considered practicable, they will form part of the construction design (embedded mitigation). Alternative piling methods could include consideration of hydraulic jack piling, rotary piling or hydraulic push piling.

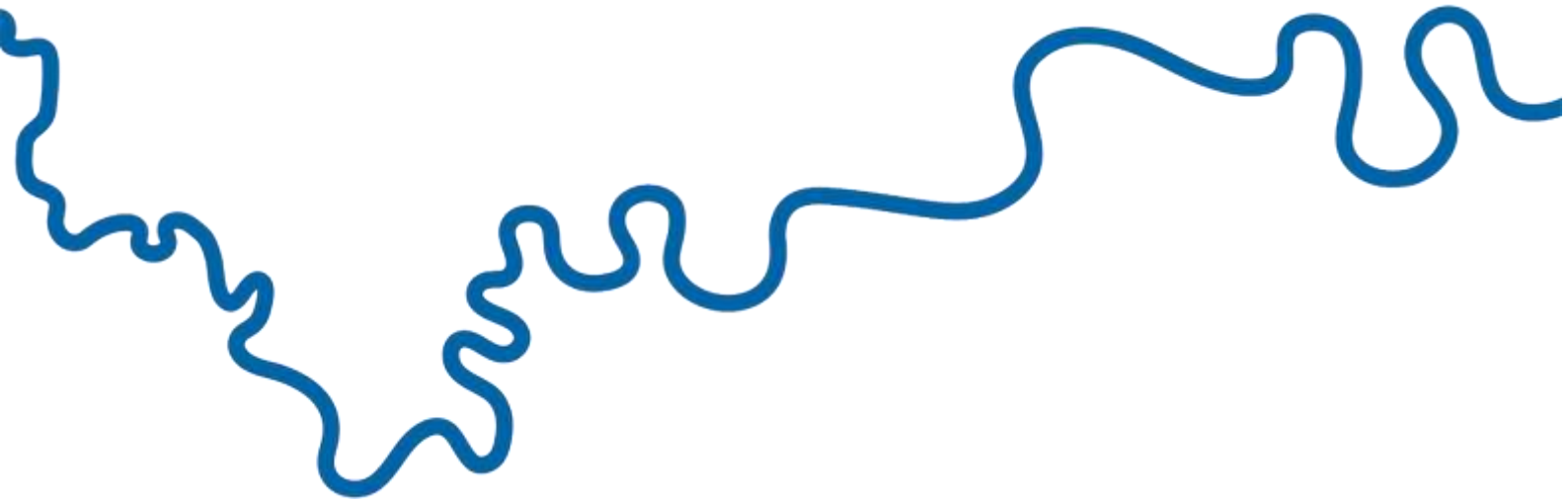
- To mitigate operational noise from activities in new green open spaces and noise associated with weir and / or fish passage operation and maintenance, operational noise mitigation may be required to avoid significant effects e.g. restricted hours of operation, screening or limitations on operation of noise generating activities.

14.8 Further Work for the EIA

14.8.1.1 The assessment of noise and vibration effects will be undertaken following the methodology set out in Section 14.7 of our EIA Scoping Report and clarified in Section 14.3.2.1 above. This has been informed by the PINS Scoping Opinion and other consultation feedback on baseline, methodology and effects scoped into the assessment.

14.8.1.2 The assessment of noise and vibration will be informed by any additional baseline information from surveys, noise and vibration modelling, assessments, and planned engagement known to be required for the ES and further information received during the statutory consultation process.

14.8.1.3 The ES will state the predicted significance of effects, provide further detail of relevant mitigation, and document the subsequent residual effects. We consider that the further development of the project design and mitigation measures which will be reflected in the ES and DCO application, will enable reduction in the scale of identified negative likely significant effects set out in this chapter.



SURREY COUNTY COUNCIL

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The River Thames Scheme represents a new landscape-based approach to creating healthier, more resilient and more sustainable communities by reducing the risk of flooding and creating high quality natural environments.

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