

Lower Thames Crossing

9.86 Post-event submissions, including written submission of oral comments, for ISH6

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1 Introduction

Please note: this document contains the Applicant's oral summary of evidence and post-hearing comments on submissions made by others at Issue Specific Hearing 6 held on 8 September 2023.

Where the comment is a post-hearing comment submitted by National Highways, this is indicated. This document uses the headings for each item in the agenda published for Issue Specific Hearing 6 [\[EV-045\]](#) on 8 September 2023 by the Examining Authority.

1.1 Welcome, introductions, arrangements for the Hearing

1.1.1 National Highways (the Applicant), which is promoting the A122 Lower Thames Crossing (the Project), was represented at Issue Specific Hearing 6 (ISH6) by Andrew Tait KC, Counsel (AT).

1.1.2 The following persons were also introduced to the Examining Authority (ExA):

- a. Tom Henderson, BDB Pitmans, Partner (TH)
- b. Nick Clark, Lower Thames Crossing, Lead Ecologist (NC)
- c. Dr Emma Long, Lower Thames Crossing, Environmental Design Advisor (EL)
- d. Andrew Kay, Lower Thames Crossing, Landscape Design Lead (AK)
- e. Barney Forrest, Lower Thames Crossing, Environmental Lead (BF)
- f. Russell Cryer, Lower Thames Crossing, Habitats Regulations Assessment Lead (RC)
- g. Alison Powell, Lower Thames Crossing, Population and Human Health Lead (AP)
- h. Steve Roberts, Lower Thames Crossing, Design and Engineering Director (SR)

2 Purpose of the Issue Specific Hearing

2.1.1 The Applicant did not make any submissions under this agenda item.

3 ExA Questions on: Mitigation, Compensation and Enhancement

3.1 Item 3(a) Distinctions between Mitigation, Compensation and Enhancement

Item 3(a)(i)

Item 3(a)(i) the ExA would like to understand how the three terms have been applied to the EIA biodiversity assessment and whether the assessment is explicitly clear about the amount and location of mitigation, compensation and enhancement areas proposed:

- 3.1.1 The Applicant noted the ExA's suggestion to address Agenda Items 3(a)(i) and (ii) together. NC noted that the biodiversity assessment in Chapter 8: Terrestrial Biodiversity [APP-146], Section 8.5 Project Design & Mitigation details the embedded, good practice and essential measures proposed to offset adverse effects from the Project on terrestrial biodiversity. NC explained that the term mitigation is used here in relation to the mitigation hierarchy to cover measures which avoid, lessen and compensate adverse effects. Within Section 8.6 Assessment of Likely Significant Effects, the Applicant details where measures to avoid or mitigate adverse effects are secured in the Code of Construction Practice (CoCP) [REP3-104] such as those to avoid disturbance and incidental mortality to breeding birds, and the provision and management of land to provide suitable habitat for foraging and roosting birds.
- 3.1.2 Regarding compensation, NC noted that much of the habitat creation proposed by the Applicant compensates for the loss of habitats impacted by the construction and operation of the Project. The details of these habitat losses and gains are reported in Table 8.31 and Table 8.35 of Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity [APP-146]. NC added that the Works Plans [REP3-033, REP3-037 and REP3-039] detail where ecological habitat creation and receptor sites for protected species are located within the Project Order Limits.
- 3.1.3 NC stated that the Applicant has been clear throughout its application in recognising the loss of irreplaceable habitats cannot be mitigated and has therefore used the term 'compensation' when describing any planting proposals designed to address such habitat loss. Similar terminology has been used for impacts from nitrogen deposition on designated sites, and in relation to habitat loss from Shorne and Ashenbank Woods SSSI. The Applicant's approach to ancient woodland compensation planting is reported in paragraphs 8.5.31 – 8.5.34 in ES Chapter 8 [APP-146]. Detail of the mitigation and compensation proposed to address the effects of nitrogen deposition on designated sites is reported in ES Appendix 5.6: Project Air Quality Action Plan [APP-350]. NC explained that a technical note has been provided to Natural England, which is appended to the SoCG the Applicant has with Natural England [REP2-008] (Annex C.9), which details the location and extent of habitat creation proposed to offset habitat loss within Shorne and Ashenbank Woods SSSI.

- 3.1.4 The Project design, as NC described, has also sought to make efficient use of land within the Order Limits, so certain parcels have multiple functions which can be both mitigation and compensation. For example, the land at Coalhouse Point provides mitigation for effects on the Thames Estuary and Marshes SPA/Ramsar, and also compensation for the loss of saline ditch habitat at the North Portal.
- 3.1.5 With respect to enhancements, NC explained that ES Chapter 8: Terrestrial Biodiversity [APP-146] Section 8.5 Project design and mitigation, includes information on enhancement measures which the Applicant commits to (see paragraphs 8.5.59 – 8.5.62), and which covers enhancements south of the River Thames, designed in conjunction with the RSPB. NC added that these enhancement measures involve the creation of ditch and pond habitats as well as grassland and scrub to support water vole, Great Crested Newts and foraging and nesting birds (secured via Register of Environmental Actions and Commitments (REAC) commitment TB022, CoCP [REP3-104]). The Applicant is also supporting water vole conservation work across Essex which has been developed in conjunction with Essex Wildlife Trust as part of their Waterlife Recovery East project designed to increase the range of water voles across the East of England (secured via legal agreement). NC felt it important to note that no land within the Order Limits has been included purely for enhancement purposes.
- 3.1.6 In relation to the amount and location of mitigation, compensation and enhancement, NC explained that the extent of habitat creation proposed by the Applicant is detailed in Table 8.31 and Table 8.35 in [APP-146], and its location is reported and secured in the ES Figure 2.4: Environmental Masterplan Sections [REP2-014, REP3-098, REP2-018, APP-162, REP3-100, REP2-022 to REP2-031].
- 3.1.7 In response to the ExA's query relating to surveys, NC confirmed that the surveys proposed are pre-construction surveys, so they supplement the baseline that already exists. The baseline that the Applicant has collated, as reported in ES Chapter 8 [APP-146], is considered by the Applicant to be robust, against which the Applicant can make accurate assessments and design a proportionate mitigation strategy (covering both mitigation and compensation). NC explained that the pre-construction survey work is required to ensure that the data used, pre-dominantly for protected species licence applications, is as up-to-date as possible (within one to two seasons of the impact occurring).
- 3.1.8 In relation to item 3(a)(ii), NC noted that the Applicant is clear around the distinction between what constitutes mitigation, compensation and enhancement, and that there are no disparities which could have implications for the ExA's assessment. In order to ensure that the land required for the Project is minimised, the Applicant has proposed instances of multi-functional mitigation / compensation. In these cases, land has been proposed to address a specific function, for example woodland planting to improve connectivity, but this function may be compatible with open space provision, walker, cyclist and horse-rider (WCH) provision, or a false cutting which could provide mitigation for loss of open space, severance or noise and visual effects. NC confirmed that the Applicant does not believe that maximising the mitigating potential of

land should influence the ExAs assessment. In response to the ExA’s query, AT confirmed the Applicant’s position that there are no disparities.

- 3.1.9 AT commented in response to comments from Interested Parties (IPs), that the Applicant would be providing a Mitigation Route Map along the lines set out in question 16.1.4 of the ExA’s written questions [[PD-029](#)]. Secondly, AT noted that the Applicant does not anticipate that it will be in a position to have concluded by Deadline 5, the discussions with Natural England in relation to the EIA biodiversity assessment in terms of mitigation, compensation and enhancement areas proposed. AT clarified that the Applicant is seeking to continue to liaise with Natural England in respect of these issues.

Item 3(a)(ii)

Item 3(a)(ii): Are there any notable disparities in the application material around what constitutes mitigation, compensation or enhancement that could have implications for the ExA’s assessment?

- 3.1.10 The Applicant made its submissions in relation to this Agenda Item at Agenda Item 3(a)(i), as instructed by the ExA.

3.2 Item 3(b) Extent and Type of Landscaping

Item 3(b)(i)

Item 3(b)(i): There is a “landscape scale” strategy proposed for mitigating and compensation the loss of habitats, but the ExA would like to explore if this is the most appropriate method for mitigation and compensation for impact.

- 3.2.1 NC explained that the landscape scale strategy proposed by the Applicant is within the provisions of the Environment Act 2021. Section 8 of the Act requires the SoS to prepare an environmental improvement plan which was published earlier this year. This document promotes Nature Recovery Networks to support its apex goal of creating thriving plants and wildlife. This aims to create wildlife-rich habitats outside protected sites which expand the buffers on those sites and connect up these areas allowing populations to move and thrive. NC referenced paragraph 5.2.0 of the National Policy Statement for National Networks (NPSNN), which looks to provide Biodiversity Net Gain (BNG) through establishing more coherent ecological networks which are more resilient to future pressures.
- 3.2.2 NC explained that the Applicant’s approach to addressing impacts of habitat loss follows the mitigation hierarchy. This means that losses have been minimised as far as possible within the Project design to avoid impacts, and where habitats are lost, less biodiverse areas such as agricultural land have been impacted with losses of semi-natural habitats and designated sites minimised.
- 3.2.3 NC continued to explain that habitat creation to offset losses has looked to create more biodiverse habitats than currently exist, and to use this creation of new habitats to link to existing retained similar semi-natural habitats. The extent of the habitats created are reported in ES Chapter 8: Terrestrial Biodiversity [[APP-146](#)], Tables 8.31 and 8.35, and their locations shown in ES Figure 2.4:

Environmental Masterplan [[REP2-014](#), [REP3-098](#), [REP2-018](#), [APP-162](#), [REP3-100](#), [REP2-022](#) to [REP2-031](#)].

- 3.2.4 NC noted that it is a well-established good practice principle to create more, better habitat than that which is being lost (as per the Lawton Principles), addressing issues around time for habitats to establish, concerns around the viability of newly created habitats and how they will function when compared to those which are impacted. The Applicant's position is that the scale of the Project demands large-scale habitat creation proposals to adequately address its adverse effects. The design of this habitat creation provides both proportionality in terms of scale, with the objective of aligning with government policy and the NPSNN around building coherent ecological networks.
- 3.2.5 NC highlighted that the Applicant's approach not only considers the effects of habitat loss but also the impacts this has on the range of species the habitats support. The creation of high-quality habitats provides not only breeding, foraging and shelter opportunities for animals, but also green corridors to move more freely between fragmented habitats and populations. Examples of key species where this approach of strengthening network connections at a landscape-scale is beneficial are dormice, to the south of the river, and terrestrial invertebrate assemblages to the north of the river; the former a European Protected Species and the latter the focus of Natural England's SSSI scoping study.
- 3.2.6 NC explained that the landscape-scale approach to habitat creation has been integral to the Project design from early on, following advice received from the Defra family and continued discussions with Natural England, particularly around compensation for the loss of ancient woodlands and impacts from nitrogen deposition on designated sites (see [REP2-008](#)), item no. 2.1.64 and 2.1.98RRE. As detailed in the SoCG between the Applicant and Natural England, NC noted that "*Natural England considers the proposed compensation measures will be of particular benefit where they help build nature recovery, and Natural England supports the landscape-scale approach that has been taken to identifying the proposed compensation areas, with its aim of enhancing the resilience of the affected sites by strengthening the ecological connectivity between them.*" NC further added that Natural England agrees with the principles underpinning a nitrogen deposition habitat creation being provided as compensation, which include building resilience and improving connectivity at a landscape scale (see item no. 2.1.98RRE [REP2-008](#)).
- 3.2.7 NC explained that although the effects of nitrogen deposition on designated sites would not lead to habitat loss, it would lead to habitat degradation which the Project is proposing to offset through landscape-scale habitat creation. The justification for this approach is set out in the Project Air Quality Action Plan [APP-350](#) Section 7.3 Compensation. NC summarised that it is therefore the view of the Applicant that the approach proposed for landscape-scale habitat creation to offset habitat loss is the correct approach in terms of proportionately and appropriately addressing impacts, aligning with government policy, and efficiently using land within the Project's Order Limits.
- 3.2.8 In response to the ExA's query, NC explained that in the design of the Applicant's mitigation and compensation, which aligns with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidance

(CIEEM, 2018), the Applicant has sought to locate the provision of mitigation and compensation as close to the area of impact as possible. NC explained that this has led to differences between habitat types proposed north and south of the river, but that this is because they are proportionate to the impacts north and south of the river. In response to the ExA's query, NC confirmed that the Applicant's view is that the Order Limits are sufficient to address any adverse effects from the Project.

- 3.2.9 In response to the submission made by Kent County Council, AT confirmed that the outline Landscape Environmental Management Plan (oLEMP) [REP3-106] has been prepared on a project-wide basis, not on an internally disconnected basis, and that Requirement 5 of the draft Development Consent Order (draft DCO) [REP3-077] ties it into a number of other principles as well as the oLEMP, such as the Design Principles [REP3-110], the REAC within the CoCP [REP3-104] and ES Figure 2.4: Environmental Masterplan [REP2-014, REP3-098, REP2-018, APP-162, REP3-100, REP2-022 to REP2-031].
- 3.2.10 In response to CPRE Kent, NC confirmed that the Applicant's application fully assesses impacts on the baseline ecology, and that if habitats are taken and converted into other habitats, the Applicant would fully assess the potential impact of this. The Applicant has sought to focus habitat creation in areas of predominantly agricultural land or land which is less biodiverse than the type of habitat the Applicant is seeking to create. NC explained that less biodiverse land is likely to support fewer species and a lesser diversity of species. NC further explained that habitats that the Applicant creates would be more semi-natural habitat, and better quality, to support a greater diversity of species. NC also clarified that in using the phrase "better habitat", NC intended this to be "more diverse habitat", i.e. that which has a greater biodiversity value than what is lost.

Item 3(b)(ii)

Item 3(b)(ii): Whilst the type of species planting will be developed between all relevant parties during the development of the Landscape and Ecology Management Plan post consent, the Applicant will be asked to explain where it proposes to use non-native species and why this decision has been taken, especially if it includes designated/ protected areas?

- 3.2.11 AK explained that in relation to designated and protected areas, the Applicant is not proposing the use of non-native planting, which includes the area within the Kent Downs AONB. AK noted that planting type LE2.11 Woodland with non-native species, is proposed for new areas of woodland within the Project that are not contiguous with existing woodland areas and are mainly focused on the proposed road junctions at the M2/A2/A122 Lower Thames Crossing, A13 and M25. AK noted that this is in line with the wider design principle of creating wooded junctions. AK added that woodland typologies are displayed on ES Figure 2.4: Environmental Masterplan [REP2-014, REP3-098, REP2-018, APP-162, REP3-100, REP2-022 to REP2-031] to clearly show areas of woodland planting where the use of non-native species [LE2.11] has been proposed, which excludes areas of compensatory woodland planting proposed for ancient woodland or SSSI woodland loss.

- 3.2.12 AK explained that the reason why the decision has been taken by the Applicant to include a small proportion of non-native species is to ensure the proposed woodland planting areas are resilient against future disease and predicted climate change, further to Clause LSP.02 of the Design Principles [REP3-110]. AK quoted from the Design Principles: *“The planting species mix shall be as diverse as reasonably practicable to ensure resilience against potential future diseases. It will include native species of local provenance and will also consider the inclusion of a small percentage of non-native species, where appropriate, in response to forecasted impacts of climate change.”*

3.3 Item 3(c) Biodiversity Net Gain (BNG)

Item(c)(i)

Item 3(c)(i): The Applicant will be asked to explain why albeit not policy at present, it cannot commit to a minimum of 10% net gain.

- 3.3.1 AT agreed with the ExA in confirming that 10% BNG is not mandated for NSIPs at present. NC explained that the Project has focused on maximising biodiversity value through being ambitious in terms of the habitats proposed for essential mitigation requirements, and their long-term management, with a focus on the Lawton principles of more, bigger, better and joined up. It is recognised that the ambition demonstrated in the design does not necessarily maximise the value calculated by the Biodiversity Metric (v3.1), but it is the view of the Applicant that the Project delivers a design of high biodiversity value.
- 3.3.2 NC noted that the Applicant expects that the forecast Metric performance would improve during detailed design. Design refinements would seek to further reduce habitat loss during construction, minimise lags between habitat loss and creation and maximise the condition and distinctiveness of habitats created, and the Project would seek to maximise biodiversity performance over the full Project lifecycle. NC explained that the extent of any additional land required to achieve 10% net gain and/or the costs to the Project of purchasing any shortfall of biodiversity units against a commitment to 10% uplift, would depend on the availability and cost of suitable land to deliver BNG, and the availability and cost of purchasing the specific number and type of biodiversity units required on the open market. NC noted that, in the absence of BNG being a legal requirement, it is difficult to justify compulsory acquisition of land on these grounds alone i.e. it is not considered essential mitigation. Further, the addition of land to the Order Limits for BNG purpose, would correspondingly increase the number of biodiversity units needed to achieve an uplift of 10% by increasing the value of the BNG baseline.
- 3.3.3 NC explained that the Applicant has undertaken to provide an estimate of what would be required to meet the 10% uplift threshold, which are: area-based habitats, hedgerows, and rivers and streams. To meet the area-based habitats, NC noted that the Applicant estimates approximately 210 hectares of additional land in the form of existing habitat which could be improved in condition and therefore result in an increased value, from a hedgerow perspective; the Applicant estimates 16 kilometres of additional hedgerow; and from a rivers and streams perspective, an additional 23 kilometres of watercourse. In order to purchase the equivalent biodiversity credits, the Applicant considers the cost to be approximately £45 million.

- 3.3.4 NC added that in relation to the linear habitats (hedgerows, and rivers and streams), the Applicant has looked to consider whether provision of that within the existing Order Limits is possible. NC noted that the Applicant has spoken to a number of agricultural landowners in respect of initial designs, which included separating some of the larger agricultural fields to create the additional hedgerow length. The Applicant received strong resistance to this suggestion, due to likely difficulties with farm management. NC further noted that the additional 45 kilometres of watercourse Project-wide has been problematic in terms of hydrology and availability of land. As a result, the Applicant currently has two options: either to secure more land to create the habitat, or purchase credits on the open market.
- 3.3.5 In response to the ExA, NC highlighted the importance of making the distinction between the Applicant's Ecological Impact Assessment and the significance of impact on receptors, and the biodiversity metric calculations presented by the Applicant. NC explained that these processes are in parallel and that the output for area-based habitats, hedgerows and rivers and streams does not necessarily reflect the appropriateness or proportionality of the mitigation or compensation proposed for specific impacts.
- 3.3.6 In response to Natural England's submission, AT confirmed that the Applicant will liaise with them regarding the use of the BNG tool at detailed design stage. AT also clarified in response to the ExA's observations, that the Applicant is not seeking to justify compulsory acquisition by seeking to secure any particular level of BNG. Further, and in response to the submission made by the Port of London Authority (PLA), that the Applicant is not looking for further land requirements/extensions to the Order Limits (e.g. around the River Thames) to seek to achieve that.
- 3.3.7 NC, in response to Natural England's comment, clarified that any detailed design reduction the Applicant undertakes will result in a positive benefit and not serve to reduce the mitigation or compensation strategy.

Item (c)(ii)

Item 3(c)(ii): Following comments from IPs, can the Applicant provide an update on whether it is considering a greater percentage of BNG, and what the implications are for increasing the BNG, e.g. to the land requirements, to the scheme cost, etc?

- 3.3.8 The Applicant addressed this Agenda Item at Agenda Item 3(c)(i), as suggested by the ExA.

Item (c)(iii)

Item 3(c)(iii): Can the Applicant clarify if when calculating BNG it included in the metric any biodiversity mitigation proposed for this Project or that is currently in place for any other development (thus double counting)? Furthermore, do any of the change requests made by the Applicant so far impact the BNG calculations?

- 3.3.9 In response to the ExA's question, NC explained that the BNG metric calculates the value of the existing baseline and what would exist through Project intervention. The Project design, and the Applicant's compensation and mitigation design provides that project intervention setting and the BNG metric

calculates the value generated by that. NC noted that there are not areas of mitigation, compensation and BNG, rather that the metric calculates all habitats within the Order Limits (with some subtle exceptions) and provides the output, which is set out in ES Appendix 8.21: Biodiversity Metric Calculations [APP-417], giving the final score from the metric. NC highlighted that the process accounts for the design rather than provides a design which then accounts for BNG.

- 3.3.10 NC clarified that net gain is not in addition to anything, rather that it is calculated based on the habitats that are created by the Project, against the baseline position.
- 3.3.11 NC explained that the assessment does, as stated, include those units generated in protected species mitigation/compensation areas provided for this Project. The Defra February 2023 consultation response on the BNG regulations and implementation clarified that “*mitigation and compensation for protected species and protected sites can be counted within a development’s BNG calculation*”, and it is clarified that this can be up to the point of no-net-loss in biodiversity. The Applicant considers that the Project aligns with the guidance for protected species mitigation/compensation additionality.
- 3.3.12 As per the Metric User Guide (Panks et al, 2022), the Applicant’s assessment excludes the unit value of all bespoke compensation provided for irreplaceable habitat loss, in this case woodland proposed to compensate for the loss of ancient woodland. The Applicant’s assessment also excludes consideration of nitrogen deposition compensation sites, which form part of the Order Limits, for the reasons discussed in Section 3.3 of ES Appendix 8.21: Biodiversity Metric Calculations [APP-417], which include additionality. The assessment does not include any mitigation / compensation provided for ‘other developments’.
- 3.3.13 NC explained that three change requests have been made by the Applicant. These are considered likely to have a very minor impact on the Metric calculations given the limited nature and extent of the changes proposed. These change requests include a proposed reduction in the Order Limits of c.19ha (see MRC03 and EA05) and some minor changes in the designation of temporary and permanent acquisition. NC noted that an initial qualitative assessment of the impacts of these change requests on the Metric assessment, suggests that a reduction in the Order Limits would likely improve the BNG forecast unit outcomes, primarily by reducing the baseline unit value of the Order Limits.
- 3.3.14 In relation to the Metric versions used, NC explained that the current BNG assessment for the Project has been run using the Natural England Metric 3.1 tool and associated guidance which was the latest version of the Metric available at the time of submission. A newer 4.0 version of the Metric has been released by Natural England in March 2023. The Applicant understands that Natural England advises to continue to use the previous version unless requested to do otherwise. Natural England state that users may find that those values generated in Metric 4.0 will be different than those generated by an earlier version. NC highlighted that Defra has advised that projects in an advanced stage of consenting are not required to update metrics. Therefore, the Applicant does not intend switching to Metric 4.0. and NC explained the

Applicant's view that this would not have any impact on the value of outcomes for biodiversity.

- 3.3.15 NC confirmed the ExA's understanding that Metric 4.0 now takes account of rural and urban individual trees, contrary to Metric 3.1. The Applicant's position is that the outcome of that would be to slightly increase the baseline value, but not to significantly affect the output from the Metric.
- 3.3.16 In response to the ExA, NC confirmed that reinstatement would involve reinstating the habitat back to its previous condition, through a commitment to do so in the draft DCO [\[REP3-077\]](#). The loss of habitat and its reinstatement is incorporated into the BNG metric, and is picked up as an adverse effect, due to the time it takes to re-establish the habitat.
- 3.3.17 In response to Natural England's submission, NC confirmed that the Applicant would look at the implications of running the new Metric 4.0 against 3.1. The Applicant understands that this could be run through a desk-based assessment. The Applicant had considered this previously and considered that additional fieldwork could be required, but NC noted that it is something that can be further explored and discussed with Natural England. These considerations and discussions could be reflected in the SoCG between the two parties, as suggested by the ExA.
- 3.3.18 In response to the submission by the Thames Crossing Action Group (TCAG), NC explained that Hole Farm provides compensation for a loss of ancient woodland and for the effects of nitrogen deposition on designated sites and habitats. Both of these aspects are omitted from the Applicant's BNG calculations, so Hole Farm does not generate any BNG uplift in its Metric. NC confirmed that it is therefore not possible to double-count with any other development that is proposed, as suggested by TCAG.
- 3.3.19 AT responded to the ExA's query with respect to double counting, by confirming that the Applicant's position was submitted at ISH1 [\[REP1-184\]](#) but confirmed that the Applicant would clarify this further in writing, as requested.
- 3.3.20 Post-hearing note: The Applicant refers the Examining Authority to Examination document 9.103 [ISH 6 Action 6 Hole Farm] which responds to ISH6 action point 6 and 7.

Item (c)(iv)

Item 3(c)(iv): The Applicant will be requested to discuss whether the metric used for BNG could be re-run using the latest metric (4.0) as requested by Natural England.

- 3.3.21 The Applicant addressed this Agenda Item under Agenda Item 3(c)(iii), as suggested by the ExA.
- 3.3.22 **Post-hearing written submissions:** These are contained within Annex A and include:
- a. Section A.2 – Summary on distinctions between mitigation, compensation and enhancement
 - b. Section A.3 – Response to Action Point 3: Biodiversity Net Gain

- c. Section A.4 – Response to comments made by Kent County Council
- d. Section A.5 – Response to comments made by Gravesham Borough Council
- e. Section A.6 – Response to comments made by Thurrock Council
- f. Section A.7 – Response to comments made by Campaign to Protect Rural England Kent
- g. Section A.8 – Response to comments made by Kent Downs AONB
- h. Section A.9 – Response to comments made by Thames Crossing Action Group
- i. Section A.10 – Response to comments made by Natural England
- j. Section A.11 – Response to comments made by the Port of London Authority
- k. Section A.12 – Response to comments made by Mr Lawson representing Joan Carver
- l. Section A.13 – Response to comments made by London Borough of Havering

4 ExA Questions on: Green Bridges

4.1 Item 4(a) Purpose of Green Bridges

Item 4.1(a)(i)

Item 4.1(a)(i): What is the overall purpose of the Green Bridges in this Project and what determined their location?

- 4.1.1 The Applicant proposed to deal with 4(a)(i) and (ii) together.
- 4.1.2 EL explained that the overall purpose of the Green Bridges is to mitigate for the impacts of fragmentation on terrestrial biodiversity receptors from both construction and operation of the Project. The Applicant recognises that major roads can be a barrier to wildlife and there are a number of locations along the Project route and on existing road corridors where Green Bridges have been used to promote connectivity of sensitive landscapes and habitats for animals as well as mitigating landscape severance and providing an improved experience for WCH.
- 4.1.3 EL explained that there are seven Green Bridges proposed across the Project as follows: Brewers Road, Thong Lane north and Thong Lane south in the south, and Muckingford Road, Hoford Road, Green Lane and North Road in the north. EL noted that these are not the only crossing locations that can be used by wildlife across the Project via other structures, underpasses, culverts with mammal ledges and viaducts, for example, that provide further permeability to the route. AT noted that this is contained at Project Design Report Part C [APP-508], Part F [APP-513] and Design Principles STR.08 [REP3-110], as well as in the oLEMP [REP3-106], where there are specific sections on the groups of Green Bridges with their various functions set out.
- 4.1.4 EL explained that the Green Bridge strategy was also informed by the Applicant's stakeholders, the Defra Family (NE, EA, FE and MMO) who provided guidance at Statutory Consultation in 2018 (NE SoCG [REP2-008] page 84):
"Habitat connectivity along the route will be maintained wherever possible recognising the significant ecological impacts that a linear scheme has in severing the ecological networks. Living bridges and wildlife corridors should be installed a key locations to facilitate movement of wildlife and people helping to future proof the scheme."
- 4.1.5 EL continued to explain that as the Project road is in cutting in a number of locations, both underpasses and culverts were not suitable mitigation, which has led to the Green Bridge design. The locations of the Green Bridges were primarily chosen by the Applicant due to the concentration of notable terrestrial receptors in the surrounding habitats, or the significance of a confirmed commuting route. However, EL noted that landscape character was also a factor in the use of Green Bridges, for example, within the Kent Downs AONB for the replacement of Thong Lane south and Brewers Road bridges, to maintain landscape connectivity across the widened A2 corridor and reduce severance, as well as for WCH experience.

- 4.1.6 EL noted the example of Hoford Road Green Bridge. This existing track was found to be a key bat commuting route from the woodland north of the Project, to the open habitats south of the Project. In addition, a number of badger paths were located in this area. As such, the Applicant identified this as a prime area where a Green Bridge would need to be located, particularly with the Project making an underpass or culvert unfeasible. EL explained that the Green Bridges also provide landscape mitigation to help maintain landscape connectivity across the Project route, integrate the Project into the landscape and reduce the visual impact of the Project on sensitive receptors, whilst supporting the landscape scale approach to mitigation planting for the Project as shown in ES Figure 2.4: Environmental Masterplan [[REP2-014](#), [REP3-098](#), [REP2-018](#), [APP-162](#), [REP3-100](#), [REP2-022](#) to [REP2-031](#)]. In addition, EL noted that the Green Bridges support the provision of new or reinstated / realigned WCH routes – e.g. at Thong Lane north, Muckingford Road etc. EL added that the majority of the Applicant’s Green Bridges are multifunctional, so they can also incorporate biodiversity, habitat provision and landscape planting.
- 4.1.7 EL noted that the Green Bridges have been individually designed by the Applicant to respond to site-specific conditions, in order to provide the greatest benefit at each particular crossing location with reference to the Landscape Institute Technical Note for Green Bridges (Landscape Institute (LI), 2015), as detailed in Section 8.5.8 of ES Chapter 8: Terrestrial Biodiversity [[APP-146](#)].
- 4.1.8 EL continued to explain that the LI guidance says for mixed-use Green Bridges that in order to determine the appropriate bridge width, “*the minimum width of the natural zone should be calculated, based on the project aims in terms of target species.*” The Applicant’s position is that all of its Green Bridges are multi-functional and EL clarified that the Applicant has based their sizing on the habitat it is seeking to connect to. and the habitat it is seeking to provide. For example Thong Lane north (the largest Green Bridge) is serving to provide habitat connectivity between areas of woodland, and so is required to support nature woodland planting on it. EL explained that this bridge also serves to provide reinstated road crossings and WCH provisions. The bridge is approximately 84 metres wide.
- 4.1.9 In terms of design, EL noted that in relation to soil depth, the LI guidance advises for a “*variation in soil depths can be used to create a mosaic of vegetation...and creating a varied topography.*” EL explained that this has been reflected in the design of the Green Bridges and for example is supported by Clause S1.04 which states for Brewers Road and Thong Lane South Green Bridges that “*Variations in soil depth on the bridge can provide diversity in planting species and heights*”. Furthermore, EL noted that the planting on the Green Bridges has been designed to provide ‘green corridors’ to provide a degree of separation between the wildlife corridor and WCH corridor.
- 4.1.10 In terms of functionality, EL noted that function is site-specific. In addition to connecting landscapes and habitats, the Applicant’s Green Bridges also provide high quality provision for WCH and local road connectivity. EL highlighted that LI Guidance had been effectively deployed in informing the shape of Green Bridges, so they are an hour-glass shape to enable animals to use the bridges, guided by additional planting, suitable vegetation to be in keeping with local

landscape and habitats, and the design for other users such as pedestrians, equestrian users and cyclists.

- 4.1.11 In respect of the southern group of Green Bridges, AK explained that as part of one of the wider landscape strategies, the Applicant looked to create large wooded loops around the M2/A2/A122 Lower Thames Crossing junction. AK explained that the Green Bridges would form the central components of this mitigation and overall landscape strategy. To the north, where there is significant woodland connectivity between Claylane Wood and Shorne Wood, the Applicant is proposing significant woodland planting to enable the direct connection of woodland between the two areas and over the Green Bridge. AK noted that the design of the Green Bridges over the A2 feed into the wider wooded loop that the Applicant is wanting to create, but also creates a visual connection across the A2.
- 4.1.12 AK referenced the Thong Lane north Green Bridge and highlighted the woodland planting to the west of it, along the edge of Gravesend and connecting into Claylane Wood. This woodland planting extends into the east to connect to Brummelhill Wood, and onto Shorne Woods Country Park. AK also referenced two connections to the south: one along the realigned Thong Lane connecting woodland planting and landscape visual mitigation from the village of Thong, and connects directly over the A2 to woodland planting around Jeskyns Community Park; and the other by Brewers Wood, providing woodland connection across the bridge, from Shorne Woods to woodland planting around Cobham Hall. In relation to Brewers Road Green Bridge, AK explained that woodland planting has been focused to the east, so as to provide visual connectivity when approaching along the A2 corridor westbound. Similarly, on Thong Lane Green Bridge, the Applicant has provided a 20-metre-wide woodland planting on the west, thereby bookending the boundary to Kent Downs AONB and providing visual screening for users of the WCH route. See Section 5.6 of the oLEMP [\[REP3-106\]](#).
- 4.1.13 In respect of the northern group of Green Bridges, AK explained that the strategy involves focusing on Hoford Road Green Bridge and Muckingford Road Green Bridge. The Applicant is proposing to extend the use of the bridge on Muckingford Road and provide habitat connectivity, and to adjust the alignment of Hoford Road to allow the earthworks to be more cut-in when crossing the bridge, to retain a sense of enclosure and provide the habitat connection for the target species. See Section 6.7 of the oLEMP [\[REP3-106\]](#).
- 4.1.14 In response to the ExA's question regarding widening the bridges further, EL explained that the reason for not doing so is due to a number of constraints. If the Applicant were to widen them to the extent that it would require closing the A2, that would be untenable. The Applicant is therefore bound by the maximum width, bearing in mind issues such as contraflow whilst the works for the Project are ongoing. EL added that this would also potentially lengthen the amount of time those bridges are unusable and the severance caused for communities trying to commute along Thong Lane.
- 4.1.15 In relation to Brewers Road bridge, EL explained that widening this further east would potentially affect a landing outside of the Order Limits, and further west would impinge on SSSI woodland, thereby requiring the removal of SSSI

woodland in order to install a Green Bridge, which the Applicant did not feel was appropriate.

- 4.1.16 In relation to Thong Lane south, EL explained that the Applicant has already widened this bridge by a further 10m following concerns raised by stakeholders but noted that the Applicant is limited by slip roads for the M2/A2/A122 Lower Thames Crossing junction, as well as constraints tying in via the local connector road to provide meaningful connection. EL explained that merely making the bridge wider is not necessarily going to solve these issues.
- 4.1.17 SR explained that in relation to the connector road below Thong Lane south, one of the difficulties at this location crossing the A2, is its multifunctional nature previously described. In trying to close the gap between the southern end of the Green Bridge and the barrier of the local two-way connector road, the Applicant would need to create a vertical separation between the two, which would in turn make it difficult to tie the local road back in to the Thong Lane connection, which would itself have further impacts such as vegetation loss and associated construction works. The Applicant would also be concerned about greater visual impacts in these circumstances, hence it has proposed an “at grade” (i.e. same level) connection of Thong Lane to the local connector road.
- 4.1.18 EL added that there is currently no connection at all for wildlife across the A2 at Thong Lane, and so the Applicant’s intention is to significantly reduce the barrier to wildlife movement in this area. The existing High Speed 1 bridges do not provide connectivity to land north of the A2 corridor, which the Applicant is proposing to address through its proposed Green Bridge in this location.
- 4.1.19 In relation to the Park Pale bridge, EL explained that this provides sole access to the golf course south of High Speed 1 and is a key access for Harlex Haulage, in respect of which the Applicant does not wish to create further hardship and loss of revenue by modifying this bridge. Replacing or modifying this structure to create a Green Bridge would provide relatively limited benefit in the Applicant’s view, and the existing bridge does not need to be modified as part of the Applicant’s design. The Applicant’s position is the mitigation measures are already adequate, without the need to modify this bridge.
- 4.1.20 AT clarified that the proposed Green Bridges which would only be for WCH routes, would be Hoford Road and Green Lane. Following Kent CPRE’s submission, AT submitted that relative to other major infrastructure projects in the United Kingdom, the Applicant considers its Green Bridges proposal to compare very favourably. AT confirmed that the Applicant would address Kent CPRE’s point in relation to European examples.
- 4.1.21 It was noted by the Applicant that Green Bridges serve multiple functions, and stakeholders had diverging view on which functions should take priority, (e.g.WCH access versus ecological connectivity). AT explained that there is flexibility in the design principles to consider such matters at detail design, and the Applicant could provide further detail about this in writing.
- 4.1.22 Post hearing note: The references within the Design Principles [REP3-110] document are as follows: STR.08 lists all the green bridges; S1.17 Brewers Rd Green Bridge (defines green strips east & west); S2.12 Thong Lane Green Bridge South (defines green strips east & west) similar clauses are provided for other Green Bridges along the Project (S10.10 Muckingford Rd Green Bridge;

S10.11 Hoford Rd Green Bridge; S12.16 Green Lane Green Bridge; S12.18 North Road Green Bridge).

Item 4.1(a)(ii)

Item 4.1(a)(ii): The ExA wants to understand what best practice design guidance has been used to inform the size, design and functionality of the green bridges and whether that guidance has been effectively deployed to this Project.

- 4.1.23 The Applicant addressed this Agenda Item at Agenda Item 4.1(a)(i), as suggested by the ExA.

Item 4.1(a)(iii)

Item 4.1(a)(iii): What is the target species for each of the green bridges and how are they specifically provided for?

- 4.1.24 EL noted that the primary source of information for the target species is included in the oLEMP [\[REP3-106\]](#) and is also provided for in ES Chapter 8: Terrestrial Biodiversity [\[APP-146\]](#) and associated technical appendices [APP-390 to APP-419].
- 4.1.25 EL confirmed that in relation to Brewers Road bridge, the target species are dormice and bats. For Thong Lane south, it is primarily dormice and bats also; for Thong Lane north, the design is primarily to link together woodland planting and to serve a large number of protected species such as badgers, bats and dormice. For Muckingford Road, the design is primarily for bats and badgers that use an existing similar alignment via a hedgerow that is being lost as a result of the construction of the Project. Hoford Road and Green Lane are designed for the same species as Muckingford Road. North Road is primarily designed to target bats and would also facilitate movement by badgers through linking hedgerow planting.

4.2 Item 4(b) Maintenance and Monitoring

Item 4(b)(i)

Item 4(b)(i): The ExA needs to understand how realistic the longevity/robustness of the planting is on the green bridges for biodiversity purposes given the restriction on landscaping growth and the proximity of vehicles.

- 4.2.1 AK noted that the Design Principles [\[REP3-110\]](#) refers to securing planting zones on each bridge. This has been determined by the targeted species as previously explained, so the width of the green zone has been determined based on this and in consideration of the LI guidance in terms of appropriate soil depths, with the A21 Scotney Bridge having been used as an example and width. The Applicant's view is that the structural design of these bridges would accommodate up to a metre or so of soil depth, but still allow some flexibility for soil variations in depth to achieve intermittent tree species as reflected in planting typologies as shown on ES Figure 2.4: Environmental Masterplan [\[REP2-014, REP3-098, REP2-018, APP-162, REP3-100, REP2-022 to REP2-031\]](#). AK explained that the Applicant felt there is sufficient soil depth and with a

continuous connection across the bridges, there should be sufficient water capacity.

- 4.2.2 In response to the ExA's query, AK clarified that the Applicant has some cross-sections that cut through the Green Bridges with adequate maintenance edges to reach the far ends of the bridges, allowing access for maintenance (2.13 Structures Plans Volume A and B [[APP-043](#) and [APP-044](#)]). The oLEMP [[REP3-106](#)] includes commitments to ensure Green Bridges are managed and function as intended, including principles to ensure that species do not overhang the edge of the bridge. AT added that in relation to damage and the risk of trees affecting the carriageway beneath, Appendix A of the Design Principles [[REP3-110](#)] addresses this.
- 4.2.3 EL noted that the primary issue is road safety. EL explained that the Applicant is proposing a vehicle restraint system. The Applicant has, through detailed design discussions, considered how this could be modified to be more in keeping with the habitat types proposed. EL further explained that the Applicant is considering a wooden clad version of a vehicle restraint system, which meets all the Design Manual for Roads and Bridges standards. EL explained that the impact from the traffic itself is an indirect effect of nitrogen deposition, but that the proposed planting typologies on the bridges are not species that are particularly sensitive to nitrogen deposition.
- 4.2.4 Furthermore, the Applicant has the ability to manage and maintain the planting on the Green Bridges, such as control of weed growth, excessive bramble and vegetation management. EL explained that this is due to the fact that the bridge structures will be owned by the Applicant, and although the maintenance of the highway surface on Green Bridges will fall within the responsibility of the local highways authority, it would ultimately be the responsibility of the Applicant to ensure maintenance of the vegetation occurs, as required by Requirement 5 of the draft DCO [[REP3-077](#)].

Item 4(b)(ii)

Item 4(b)(ii): What monitoring is expected to occur / be required and by whom to determine the effectiveness of the Green Bridges for biodiversity enhancement purposes and how is this secured in the DCO?

- 4.2.5 AK explained that monitoring of the Green Bridges is secured in the oLEMP [[REP3-106](#)]. The oLEMP has broken down the Project into broader management areas that perform similar landscape and ecological functions. For example in the south, Chapter 5.6 of the oLEMP has grouped together the green bridges at Brewers Road, Thong Lane over A2 and Thong Lane over Lower Thames Crossing as one management area.
- 4.2.6 AK continued, Chapter 5.6 goes on to provide a brief description of the bridges, provide the outline management requirements for Green Bridges, and also provides a list of the specific landscape typologies present on the Green Bridge. As an example, AK referred to Chapter 8.11: LE2.5 Shrubs with Intermittent Trees, which contains the management requirements, outline prescription to establish the planting, outline measures of success and monitoring method and frequency. In this example the suggested monitoring programme would be after the five-year establishment period. Monitoring visits every five years would be undertaken in the summer to ensure that the measures of success are being

met and maintained. AK explained that the Applicant's appointed monitoring party would carry out the monitoring visits and the aim of the suggested monitoring programme is to ascertain whether the outline measures of success listed above have been achieved, and whether maintenance operations or remedial actions are required.

- 4.2.7 AK explained that the monitoring party would feed back to the advisory group as part of the monitoring report. The advisory group can agree changes to the oLEMP (and/or its prescribed management activities) when they are required, or when successful achievements of targets have been met. AK noted that further details on the roles of the monitoring party can be found in Chapter 4.1.8 of the oLEMP [REP3-106], and further details on the role of the advisory group can be found in Chapter 4.1.13. These provisions tie into Requirement 5 of the draft DCO [REP3-077].
- 4.2.8 In response to the ExA's query, AK confirmed that Chapter 4 of the oLEMP sets out the roles and responsibilities of all parties involved, and this includes a suitably qualified ecologist and landscape architect to perform the monitoring requirements.
- 4.2.9 In response to Natural England, AT confirmed that the Applicant intends continuing its dialogue with them with respect to monitoring species and whether this needs to be made more explicit in the oLEMP [REP3-106]. AT confirmed that the oLEMP does refer to target habitat and a number of outlined measures of success, against which the monitoring is undertaken, but this can be further clarified if necessary.
- 4.2.10 In relation to funding and responsibility for carrying out the management and monitoring of Green Bridges, AT confirmed that this does fall upon the Applicant and the commitments pursuant to Requirement 5 [REP3-077] are matters that would fall upon the Applicant to perform, since the LEMP must be substantially in accordance with the oLEMP [REP3-106].
- 4.2.11 **Post-hearing written submissions:** These are contained within Annex B and include:
- a. Section B.2 – Green Bridge Ecological Matters
 - b. Section B.3 – Clarity on the purpose of the Green Bridges in this Project
 - c. Section B.4 – Clarity on commitments and funding for maintenance and management of green bridges
 - d. Section B.5 – Response to Natural England regarding the monitoring of success for species
 - e. Section B.6 – Comparison of green bridges in the UK
 - f. Section B.7 – Response to comments made by Kent County Council
 - g. Section B.8 – Response to comments made by Gravesham Borough Council
 - h. Section B9 – Response to comments made by Natural England

- i. Section B.10 – Response to comments made by Kent Downs AONB
- j. Section B.11 – Response to comments made by Campaign to Protect Rural England Kent
- k. Section B.12 – Response to comments made by Thames Crossing Action Group
- l. Section B.13 – Consideration of Park Pale Bridge
- m. Section B.14 – Provide detail on proximity of vehicles/maintenance safety on green bridges

5 ExA Questions on: Ancient Woodland Impact

5.1 Item 5(a) Methodology

Item 5(a)(i)

Item 5(a)(i): What criteria is used to determine whether a tree is classed as veteran or ancient and are the criteria used robust?

- 5.1.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 5(a)(ii)

Item 5(a)(ii): The ExA would like clarity on whether physical surveys of woodland have been completed to show the full extent of affected habitat or has the level of importance assigned to trees been based on an agreed methodology with Natural England.

- 5.1.2 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 5(a)(iii)

Item 5(a)(iii): The ExA will ask the Applicant to explain how it intends to create the replacement for lost ancient woodland, noting issues such as the benefits of translocating soils, and whether it has considered how success would be monitored and any deficiencies addressed.

- 5.1.3 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

5.2 Item 5(b) 'The Wilderness'

Item 5(b)(i)

Item 5(b)(i): There is some conflict over whether The Wilderness should be regarded as ancient woodland. The ExA would like to hear from the Applicant and relevant IPs who have a view on this and what evidence they have to support their case either way.

- 5.2.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 5(b)(ii)

Item 5(b)(ii): Clarity is to be provided by the Applicant on the decision process to introduce a retaining wall to the south of this area and its potential impact to the area during construction and during the operation period?

- 5.2.2 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

5.3 Item 5(c) Calculation of Replacement Woodland

Item 5(c)(i)

Item 5(c)(i): What guidance was/should be followed in relation to the quality, form and location of ancient woodland replacement?

- 5.3.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

6 ExA Questions on: Nitrogen Deposition Compensation

6.1 Item 6(a) Mitigation Hierarchy and Site Selection

Item 6(a)(i)

Item 6(a)(i): The ExA needs to understand how the Nitrogen Deposition compensation approach aligns with the mitigation hierarchy?

- 6.1.1 As set out in the Project Air Quality Action Plan [[APP-350](#)], RC explained that Section 4 addresses the Applicant's alignment with the mitigation hierarchy for nitrogen deposition compensation. RC added that Section 5 addresses consideration of avoidance, Section 6 addresses consideration of mitigation and Section 7 is consideration of compensation. RC provided the example of paragraph 7.1.1, which states "*Mitigation has been proposed where feasible, but where there are no appropriate mitigation measures, the Applicant has identified how best to respond to the residual effects of nitrogen deposition by proposing compensation measures*". RC explained that within the mitigation section for example, the Applicant looks at all options for mitigation and then assesses the possibility of implementing each of them, what the likelihood is that they would reduce or avoid impact if implemented, and their viability as a mitigation option.
- 6.1.2 Natural England has indicated its support for the approach to the assessment and mitigation and compensation of significant effects in SoCG items 2.1.96, 2.1.97 and 2.1.98 [[REP2-008](#)].
- 6.1.3 RC explained that the assessment confirmed that speed enforcement management measures are the only feasible mitigation for effects on sites adjacent to the M2 between junctions 3 and 4. This measure would be technically feasible, have negligible traffic impacts and reduce the level of nitrogen deposition for sites identified. This mitigation measure is secured through REAC commitment TB025 in the CoCP [[REP3-104](#)], which states that appropriate technology and infrastructure would be provided to enable the enforcement of the current speed limit by the relevant enforcement authority.
- 6.1.4 RC provided the example of enforcing lower speed limits. For example, low speed limits only work on reducing emissions significantly if the reduction is from 70 to 60 miles per hour. If the speed limit is already 60mph, then lowering speed limits is not a feasible measure due to no significant change in emissions, as set out in section 6 of the Project Air Quality Action Plan [[APP-350](#)].
- 6.1.5 RC explained that the next step was to consider compensation which is considered by looking at consistency with available guidance, setting of success criteria, development of a strategic approach, and consideration of options against the success criteria.
- 6.1.6 RC continued to explain that the scale of compensation required is reported in paragraphs 7.4.1 to 7.4.2 of the Project Air Quality Action Plan [[APP-350](#)]. To fully compensate for the significant effects, it was determined in consultation and agreement with Natural England that dual and parallel objectives must be

achieved with a comparable area of habitat creation to affected habitat across the Project; and with sites selected to provide additional ecological connectivity created within the four ecological networks identified. The scale and approach would enable landscape scale benefits. RC confirmed that the Applicant was looking at the *functionality* of that compensation, rather than just a ratio, but the approach could be described as “seeking like for like” as this is similar terminology to “achieving a comparable area”.

- 6.1.7 RC referenced the guidance (CIEEM, 2018) which states that if compensation is being provided for loss of habitat, the maturity rate and functionality needs to be considered and more than a comparable area might be appropriate. There is however no guidance on the scale of compensation for *degradation*, as opposed to loss. RC explained that compensation is trying to achieve additional resilience of the ecological network to compensate for the loss of resilience that degradation of affected areas of habitat would cause. RC explained that the purpose of the compensation is to provide resilience to the ecological networks as those networks support the affected sites and so increased resilience of the network would in turn increase resilience of the affected sites that are sat within the networks.
- 6.1.8 RC explained that, as part of the site selection process, the Applicant identified four key ecological networks across the affected road network by proximity analysis of the affected sites. The process then involved selecting areas of land within those networks that would provide new connectivity between existing and retained woodlands and semi-natural areas. The site-specific characteristics were then carefully considered to identify plots of land that were within the Applicant’s search areas that did not have significant constraints and that were relatively high in ecological preference. RC explained that this combination of considerations provides the scale overall and the scale in each individual site.

Item 6(a)(ii)

Item 6(a)(ii): The Applicant will be asked to clarify how the size of the Nitrogen Deposition compensation area(s) has been determined and what their criteria were for selecting sites? Also considered which sites provided most connectivity.

The Applicant addressed this Agenda Item at Agenda Item 6(a)(i), as requested by the ExA.

Item 6(a)(iii)

Item 6(a)(iii): What site surveys have been carried out on the proposed Nitrogen Deposition compensation sites to determine their suitability?

- 6.1.9 This Agenda Item was not addressed at ISH6, as directed by the ExA.

Item 6(a)(iv)

Item 6(a)(iv): The Applicant will be asked to set out where and why areas of land for Nitrogen Deposition have been reduced.

- 6.1.10 RC explained that the initial proposals for nitrogen deposition compensation were made in the Local Refinement Consultation. Eight sites were identified in the LRC with a total area of 279ha identified as “potential sites”, with an

expectation that the DCO application would refine proposals to approximately 250Ha, which was based on the preliminary assessment of nitrogen deposition which had identified 250ha of potentially significantly affected habitat. RC noted that within the DCO application, eight sites were proposed totalling 245.7ha after considering the final area of significantly affected habitat (which was 174.6ha) and responses to the consultation.

- 6.1.11 The Burham site was included in the DCO application, despite it not being in the Local Refinement Consultation, as it was part of the proposed alternative from the landowner (following consultation) and had not been discounted in the site selection process. The inclusion for the Burham site therefore allowed a reduced area at Blue Bell Hill to try and find common ground with the landowner and to reduce the business extinguishment risks.
- 6.1.12 The post-application change has reduced the total area of compensation by a further 40ha (to 205.8ha) in the Blue Bell Hill / Burham area after further information became available through ongoing engagement with the landowner, and business extinguishment risks were higher than initially expected. After review, RC explained that the Applicant concluded that such a change would still allow both the ecological objectives to be achieved.
- 6.1.13 In response to the ExA's query, RC confirmed that the Applicant does not have more compensation land than required. RC clarified that the Applicant has a higher hectareage overall than the hectareage of significantly affected habitats, but that this related to only one of two of the Applicant's objectives. RC explained that the other objective is connectivity, and that if the selected sites were smaller, they might not achieve the same level of connectivity.
- 6.1.14 In response to the ExA's further query, RC explained that the operational impact on habitats and damage caused by nitrogen deposition is gradual, so it is necessary to consider long-term compensation. RC clarified that as the impact will only start to occur (at a small scale) at the start of the operational phase and then increase over time and continue for a long period of time, the functionality of the compensation only needs to develop over time and does not need to be fully mature at the beginning. This is in contrast to some impacts, e.g. loss of a habitat where the full impact is caused at a point in time and fully functional compensation is ideally available at the time of loss.

Item 6(a)(v)

Item 6(a)(v): The ExA would like to hear from Stakeholders about whether the Applicant's approach to Nitrogen Deposition is robust.

- 6.1.15 In response to Kent County Council, AT confirmed that the Applicant is not relying on the Stewardship Scheme to perform any function in relation to nitrogen deposition. AT clarified that the reduction in land has occurred by looking further at the extent to which the residual land (i.e., the area of compensatory habitat, as reduced) would perform the function of sufficient ecological connectivity, which the Applicant believes is an appropriate approach when considering any compulsory acquisition required.
- 6.1.16 RC confirmed that at application stage, the Applicant included the Burham and Blue Bell Hill sites, at which point, the additional connectivity and additional ecological value were considered to be significant and therefore necessary for

inclusion. RC explained that following review of new information the Applicant received from the landowner, no significant additional connectivity would be achieved at the Burham site or Reservoir Field at the Blue Bell Hill site and these areas were therefore no longer suitable to propose as ecological compensation. RC continued to explain that the Applicant's original assessment on the Burham site and the part of Reservoir Field was on arable field with very poor diversity boundaries, so any habitat creation would create a large increase in biodiversity. The additional information the Applicant received was that the landowner had recently gone into a Stewardship Agreement with Natural England to enhance the boundaries on that farm, and so the northern boundary is now going to be enhanced with planting and strips of semi-natural habitat, which, in part, is what the Applicant would have intended doing in this area. The case for acquisition was no longer there.

- 6.1.17 RC reiterated the dual objectives and explained that the Applicant is trying to increase the amount of semi-natural habitat and the success criteria of that increase is to have the comparable area across the Project. RC noted that even with the latest change post-application, the Applicant is still proposing a greater area of habitat creation than there is significantly affected habitat, and therefore, the objective of creating new habitats on a comparable area across the project is still achieved following the reduction of the Blue Bell Hill compensation site. RC added that the connectivity within the Blue Bell Hill network is still achieved because Cossington Field connects several woodlands together that are currently disconnected or severed in the landscape.
- 6.1.18 RC noted that as part of the site selection process, the Applicant considered the ecological networks in which the affected sites lie. RC explained that government administrative boundaries and areas of outstanding natural beauty (and whether sites are north or south of the river) are not relevant to this analysis, rather the relevance is the actual ecological networks that those affected sites lie within. RC clarified that the Applicant looked at the opportunities and constraints within each network, so for example, south of the river, there is a lot more woodland and a lot better connectivity of those woodlands already in place and so opportunities to reconnect woodland can be achieved with relatively smaller interventions, whereas north of the river, woodlands are far more sparse. In addition to this, RC noted that one of the criteria considered by the Applicant was that it was necessary to consider use of suitable land that did not require compulsory acquisition – for example, Hole Farm was already owned by the Applicant and so compulsory acquisition was not required.
- 6.1.19 In response to the ExA, RC noted that whether a site was within the 'nitrogen shadow' was something the Applicant considered in its workshops, so if sites could be found that were outside of that nitrogen shadow, then this was preferable to creating habitat that already had significant nitrogen input from a road. RC explained that the south-east is heavily polluted by nitrogen from many sources, so the 'nitrogen shadow' was only a preference, rather than a hard constraint. RC noted that if a site has very low biological interest such as an arable field, and some semi-natural habitat is created on that, it will be far more wildlife-rich. The situation may not be the same if there was more nitrogen present, but it would still be more diverse than an arable field.

- 6.1.20 RC confirmed that no archaeological surveys had yet been carried out on these sites but noted that they will be. If archaeological sites are identified, this can be dealt with through detailed design flexibility. RC confirmed that the same applies with utilities, as the Applicant uses the mosaic approach, as explained in Agenda Item 6(b)(i) below.

Item 6(b)(i)

Item 6(b)(i): It is reported that the mosaic of habitats for nitrogen deposition sites is expected to achieve a ratio of approximately 70% woodland to 30% other associated habitats. Is this approach well founded?

- 6.1.21 RC noted that this mosaic approach was developed with Natural England to achieve the management requirements for each area including: to provide permanent wildlife-rich habitat; primarily woodland at a landscape scale; to provide similar or more diverse habitats in recognition of habitats significantly affected by the Project operational N-Deposition effects; to provide most ecologically appropriate mosaics of habitats / features for the site; and to integrate objectives with local nature conservation plans and emerging local nature recovery strategy.
- 6.1.22 RC explained that mosaics of habitats are more wildlife-rich due to the additional niches afforded by edge habitats and transitional zones. The highest proportion of affected habitat is woodland and so the mosaics should be predominately woodland to reflect this. Other habitats such as grasslands are also affected and so should be reflected in the mosaics. A mosaic approach allows for greater flexibility to be appropriate to the ecological context of the site and integrate the objectives with local nature conservation plans. See ES Appendix 8.22: Terrestrial Ecology Surveys at Nitrogen Deposition Compensation Sites [[APP-418](#)].
- 6.1.23 RC noted that the Applicant is aware of the Buckingham Hill issues referenced by Thurrock Council and noted that his expectation is that during detailed design, it is unlikely to be one of the most wooded of the sites, and therefore there will need to be some other sites that are more than 70% wooded. RC reiterated that it is part of the detailed design process to ensure this happens and the overall objective is met.
- 6.1.24 **Post-hearing written submissions:** These are contained within Annex D and include:
- a. Section D.2 – Alignment with the mitigation hierarchy
 - b. Section D.3 – Determination of the size and location of Nitrogen Deposition compensation sites
 - c. Section D.4 – Surveys on proposed Nitrogen Deposition compensation sites to determine their suitability.
 - d. Section D.5 – Where and why areas of land for Nitrogen Deposition have been reduced.
 - e. Section D.6 – Habitat Make-Up of Nitrogen Deposition compensation

- f. Section D.7 – Response to comments made by Kent County Council
- g. Section D.8 – Response to comments made by Kent Downs AONB
- h. Section D.9 – Response to comments made by Thames Crossing Action Group
- i. Section D.10 – Response to comments made by Ken Pratt (Examining Authority)
- j. Section D.11 – Response to comments made by Gravesham Borough Council
- k. Section D.12 – Response to comments made by Thurrock Council

7 ExA Questions on: Shorne Woods SSSI

7.1 Item 7(a) Shorne Woods SSSI

Item 7(a)(i)

Item 7(a)(i): The ExA notes the concerns raised in representations that recreational facilities proposed at the Shorne Woods Country Park could have a negative effect on the SSSI. Have the effects of the proposed facilities been assessed?

- 7.1.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 7(a)(ii)

Item 7(a)(ii): What can be done to further minimise the effect on the SSSI during the detailed design period?

- 7.1.2 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 7(a)(iii)

Item 7(a)(iii): Can the Applicant explain its understanding in relation to the boundary of the SSSI and any implications for the assessment should the boundary not be where the Applicant has assumed it to be in the assessment?

- 7.1.3 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

8 ExA Questions on: Habitats Regulations Assessment

8.1 Item 8(a) Update on the Position

Item 8(a)(i)

Item 8(a)(i): The ExA is aware of the current views of IPs on the HRA conclusions for Internationally Protected Sites but would like the Applicant and any other IP to provide a succinct update for each site as to where progress may have been made in agreeing conclusions and mitigation and compensation.

8.1.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing, or in writing, to be determined by the ExA.

8.1.2 **Post-hearing written submission:** These are contained with Annex F and include:

- a. Section F.2 – Update on positions

9 ExA Questions on: Delivery

9.1 Item 9(a) Delivery, Maintenance, Management and Monitoring

Item 9(a)(i): How will/should mitigation, compensation and enhancements be secured in the DCO?

- 9.1.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 9(a)(ii)

Item 9(a)(ii): Who will be responsible for implementing maintenance, monitoring and management (short or long term) of the range of measures along the length of the Proposed Development and how will associated funding for the responsible authority be secured? The ExA is of a view that the person or people involved should be suitably qualified in maintenance of species.

- 9.1.2 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

9.2 Item 9(b) Post Consent Surveys

Item 9(b)(i)

Item 9(b)(i): The EIA sets out a number of surveys which are to be undertaken post consent but prior to construction, to inform the level and design of biodiversity mitigation. There are concerns raised about the time delay between surveys being undertaken, construction commencing, mitigation being delivered and in some cases mitigation maturing to a level of being effective. The ExA wants to explore the implications of this with the Applicant and relevant IPs.

- 9.2.1 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Item 9(b)(ii)

Item 9(b)(ii): The ExA also wants to explore the potential risks of a harmful effect being discovered in post consent surveys that cannot be mitigated or there is a requirement for mitigation which would be beyond the worst-case scenario assessment in the EIA or even beyond the order limits.

- 9.2.2 As directed by the ExA, this Agenda Item was not addressed in ISH6 and will instead be addressed in a further Issue Specific Hearing to be determined by the ExA.

Annex A Post-hearing submissions on Agenda Item 3: Mitigation, Compensation and Enhancement

A.1 Introduction

A.1.1 This section provides the post-hearing submissions for agenda item 3 Mitigation, Compensation and Enhancement, from Issue Specific Hearing 6 (ISH6) on 8 September 2023 for the A122 Lower Thames Crossing (The Project).

A.2 Summary on distinctions between mitigation, compensation and enhancement

A.2.1 In the Environmental Statement (ES) Chapter 8: Terrestrial Biodiversity [[APP-146](#)], Section 8.5 Project Design & Mitigation details the embedded, good practice and essential measures proposed to offset adverse effects from the Project on terrestrial biodiversity. Here the term mitigation is used in relation to the mitigation hierarchy to cover measures which avoid, lessen and compensate adverse effects.

A.2.2 Within Section 8.6 Assessment of Likely Significant Effects, the Applicant details where measures avoid or mitigate adverse effects through measures secured in the Code of Construction Practice (CoCP) [[REP3-104](#)] such as those to avoid disturbance and incidental mortality to breeding birds, and the provision and management of land to provide suitable habitat for foraging and roosting birds. Specific REAC item examples (found in Chapter 7 of the CoCP) are given below:

- a. TB004: Disturbance, and incidental mortality, of breeding birds would be avoided by timing vegetation clearance and structure removal outside of the bird nesting season (March to August inclusive) wherever possible. Where this is not possible, appropriate measures would be taken to avoid harming birds or their nests (such as temporary fencing around nesting sites where they are immediately adjacent to construction works), under supervision by a suitably experienced Environmental Clerk of Works.
- b. HR010: The habitat creation at the land adjacent to Coalhouse Point, indicated on the Environmental Masterplan (Figure 2.4, Application Document 6.2) and described in Clause S9.13 of the Design Principles [[REP3-110](#)] will be carried out prior to the commencement of works at the Northern tunnel entrance compound. The water required to maintain a range of depths within the habitat consistent with the guidance in “Manage lowland wet grassland for birds” (Defra, 2021) will be secured prior to completion of the habitat creation works and will, unless otherwise agreed

with the Secretary of State, be sourced from the River Thames by means of a water inlet with self-regulating valve or equivalent structure, passable by eels, constructed (in accordance with HR011) in the sea wall, at approximately TQ686761, to allow regulated tidal exchange, unless a formal agreement with Thurrock Council to release water on request from the Coalhouse Fort moat system is secured.

- c. HR007: To provide enhanced functionality of functionally linked land associated with the Thames Estuary and Marshes SPA/Ramsar during the construction period, the management of the three fields in the plot south of the Metropolitan Police firing range and adjacent to the SPA/Ramsar (Land Registry ref. K794941) will consist of either a standing ripe crop ready to be harvested, winter stubbles or grass ley from 1 October to 1 March each year throughout the construction and operation of the A226 Gravesend Road and Milton compounds.

- A.2.3 Regarding compensation, much of the habitat creation proposed by the Applicant compensates for the loss of habitats impacted by the construction and operation of the Project. The details of these habitat losses and gains are reported in Table 8.31 and Table 8.35 of ES Chapter 8: Terrestrial Biodiversity [APP-146]. The Works Plans [REP3-033; REP3-037; REP3-039] detail where ecological habitat creation and receptor sites for protected species are located within the Project Order Limits.
- A.2.4 The Applicant has been clear throughout its application in recognising that the loss of irreplaceable habitats cannot be mitigated and has therefore used the term compensation when describing any planting proposals designed to address such habitat loss. Similar terminology has been used for impacts from nitrogen deposition on designated sites, and in relation to habitat loss from Shorne and Ashenbank Woods Site of Special Scientific Interest (SSSI).
- A.2.5 The approach to ancient woodland compensation planting is reported in paragraphs 8.5.31 – 8.5.34 of ES Chapter 8: Terrestrial Biodiversity [APP-146]. Detail of the mitigation and compensation proposed to address the effects of nitrogen deposition on designated sites is reported in the ES - Appendix 5.6 - Project Air Quality Action Plan [APP-350]. A technical note has been provided to Natural England, and is appended to the Statement of Common Ground the Applicant has with Natural England [REP2-008] at Annex C.9, which details the location and extent of habitat creation proposed to offset habitat loss within Shorne and Ashenbank Woods SSSI.
- A.2.6 The Project design has also sought to make efficient use of land within the Order Limits, so certain parcels have multiple functions which can be both mitigation and compensation. For example the land at Coalhouse Point provides mitigation for effects on the Thames Estuary and Marshes Special

Protection Area/Ramsar, and also compensation for the loss of saline ditch habitat at the North Portal.

- A.2.7 With respect to enhancement, ES Chapter 8: Terrestrial Biodiversity [[APP-146](#)], Section 8.5 – Project design and mitigation includes information on enhancement measures which the Applicant commits to (paragraphs 8.5.59 – 8.5.62). These include habitat enhancements south of the River Thames, which has been designed in conjunction with the RSPB. These enhancement measures involve the creation of ditch and pond habitats as well as grassland and scrub to support water vole, great crested newts, and foraging and nesting birds (secured via REAC TB022 CoCP [[REP3-104](#)]). The Applicant is also supporting water vole conservation work across Essex which has been developed in conjunction with Essex Wildlife Trust as part of their Waterlife Recovery East project, designed to increase the range of water voles across the East of England (to be secured via legal agreement).
- A.2.8 It is important to note that no land within the Order Limits has been included purely for enhancement purposes.
- A.2.9 Regarding the amount and location of mitigation, compensation and enhancement, the extent of habitat creation proposed by the Applicant is detailed in Table 8.31 and Table 8.35 in [APP-146](#). Its location is reported in and secured by ES Figure 2.4: Environmental Masterplan Sections [[REP2-014](#); [REP3-098](#); [REP2-018](#); [APP-162](#); [REP3-100](#); [REP2-022](#); [REP2-024](#); [REP2-026](#); [REP2-028](#); [REP2-031](#)].
- A.2.10 The Applicant is providing a mitigation route map at Deadline 4 in response to the Examining Authority's first written questions, which sets out this level of information in a clear and concise format. The Applicant recognises the separate request to provide a spatial explanation of how mitigation, compensation and enhancement applies to different areas of land within the Order Limits. In line with action point 1 from the ISH6 post-hearing actions, the Applicant awaits examples of this from Natural England to inform the structure and format of this document which it will develop for a later deadline.

A.3 Response to Action Point 3: Biodiversity Net Gain

- A.3.1 The majority of changes in Metric 4.0 are focused on providing an enhanced user experience and are unlikely to have significant impact on the range of outputs presented in ES Appendix 8.21: Biodiversity Metric Calculations [[APP-417](#)]. Metric 4.0, compared to Metric 3.1, only includes one significant change in the metric formula which relates to the spatial risk multiplier and relates to the calculation of biodiversity units off-site. The change will therefore not impact the Project assessment in which there are no off-site units claimed. Minor errors found in Metric 3.1 have also been fixed, but as these errors have

not been listed, it is not possible to know if these fixes will impact the Project assessment.

- A.3.2 It is the way that data is applied in Metric 4.0, rather than any changes in the Metric formula, which would require time to implement and which would make the outcomes of using Metric 4.0 different and unique to the assessment in Metric 3.1. A review of the Metric 4.0 Tool and User Guidance suggests the following key actions would need to be taken to adapt the data to apply to Metric 4.0.
- A.3.3 A number of new habitat classifications are included within Metric 4.0 including rural trees. These changes would require a review of habitat classifications applied in Metric 3.1, and the need to include individual rural trees (which were not previously specified as included in the assessment). This would add more data to the assessment, likely increase the baseline value and therefore likely reduce performance for area-based habitats.
- A.3.4 Natural England has conducted a review of metric condition assessment sheets, resulting in notable changes to the following condition sheets that are relevant to the Project:
- a. Grassland – low distinctiveness
 - b. Grassland – medium and higher distinctiveness
 - c. Hedgerows
 - d. Line of trees
 - e. Traditional orchards
 - f. Ponds
 - g. Urban
 - h. Woodland
 - i. Wood-pasture and parkland
- A.3.5 The condition assessments for these habitat types, both in the baseline and post-intervention would need to be reviewed and updated where necessary to meet the new Metric 4.0 criteria. Although this could be undertaken as a desk-based exercise, assumptions around condition would need to be made and detailed with the assessment, thus further adding to the assumptions the Metric 3.1 assessment has needed to make. It is considered that the condition score would not change but there is potential for some reduced condition scores in grassland habitats and some increased condition scores in urban habitats.

- A.3.6 Ditches outside of the Order Limits, but within a 5m buffer of it, would need to be scoped into the assessment for Metric 4.0, which was not the case for Metric 3.1. This will bring more ditches into the baseline that would require new condition assessments, based on assumptions. This would increase the baseline assessment score without changing the post-intervention score and would therefore reduce the performance of the watercourse metric.
- A.3.7 The ‘riparian encroachment’ element of the assessment would need to be re-run for each line in the watercourse metric (baseline and post-intervention). In Metric 3.1, riparian encroachment was based on both banks and the highest encroachment values were used. Metric 4.0 requires that each bank is assessed separately.
- A.3.8 To address Natural England’s suggestion that the BNG calculation utilising Metric 3.1 can be upgrade to Metric 4.0 through primarily a desktop exercise, the Applicant agrees that this would be possible. However, it would increase the number of assumptions required to inform the data used in the Metric 4.0 calculation and it would require a significant amount of time to revise these data so that they were compatible with Metric 4.0. It is not possible to take the current data used in Metric 3.1 and transfer that into Metric 4.0 without significant review and revision.
- A.3.9 Given that Defra has advised that, “*Projects in an advanced stage of the consenting process are not required to update their calculations with the latest major update of the metric*” (taken from the Consultation on the Biodiversity Metric, Government response and summary of responses, March 2023), the Applicant does not consider re-running the calculations in Metric 4.0 to compare or supersede those presented within the application in Metric 3.1 [[APP-417](#)] as a necessary or proportionate response to the release of Metric 4.0.

A.4 Response to comments made by Kent County Council

- A.4.1 With regard to ensuring that the Landscape and Ecology Management Plans are consistent and coherent, dDCO requirement 5 states *each part of the authorised development must be landscaped in accordance with a LEMP which sets out details of all proposed hard and soft landscaping works for that part and which has been submitted to and approved in writing by the Secretary of State prior to the opening of that part, following consultation by the undertaker with [the bodies listed in [] of the outline LEMP] on matters related to their respective functions. (2) A LEMP prepared under sub-paragraph (1) must be substantially in accordance with the outline LEMP and must— (a) reflect the design principles document and the mitigation measures set out in the REAC; (b) be based on the environmental masterplan annexed to the environmental statement; and (c) include details of— (i) location, number, species mix, size and planting density of any proposed planting; (ii) cultivation, importing of*

materials and other operations to ensure plant establishment; (iii) existing trees and vegetation to be retained, with measures for their protection during the construction period; (iv) proposed finished ground levels; (v) implementation timetables for landscaping works; (vi) commitments to aftercare, monitoring and maintenance activities relating to the landscaping and ecological features; and (vii) measures for the replacement, in the first available planting season, of any tree or shrub planted as part of the LEMP that, within a period of 5 years or such period as may be specified in the LEMP after the completion of the part of the authorised development to which the relevant LEMP relates, dies, becomes seriously diseased or is seriously damaged in the construction of the authorised development. (3) All landscaping works must be carried out to a reasonable standard in accordance with the relevant recommendations of appropriate British Standards or other recognised codes of good practice.

A.4.2 The OLEMP and design principles provide the consistency of approach required across different LEMP areas and so any LEMP being substantially in accordance with these documents will require them to be consistent and coherent with other LEMPs.

A.4.3 The roles and responsibilities Implementation of the Landscape and Ecology Management Plan are set out in section 4.1 of the OLEMP. Regarding the long-term management of landscaped areas and environmental mitigation, this will remain the responsibility of the Applicant. However, the Applicant may choose to engage suitably experienced third parties, such as local authorities to manage these areas on their behalf and in line with the provisions of the relevant LEMP, but the responsibility for its delivery will still remain with the Applicant.

A.5 Response to comments made by Gravesham Borough Council

A.5.1 Regarding the landscape-scale approach to mitigation adopted by the Project, the Applicant's position is that this is holistic, joined up approach to the landscape with the oLEMP providing detail of the long-term strategy to its delivery. The Applicant's position is also that the Project's Order Limits are sufficient for the efficient use of land to provide multiple mitigation requirements, where mitigation covers embedded design measures to avoid impacts, as well as measures to lessen and compensate for adverse effects from the Project.

A.5.2 With respect to designing the Project to maximise its biodiversity value, it is the Applicant's view that this has been a key focus during the design process and the Project aligns with the Environment Act 2021 and the National Networks National Policy Statement regarding the creation and strengthening of coherent ecological networks. Providing the most appropriate habitat in the strongest

location is fundamental to the design, above choosing habitat types to maximise the biodiversity metric output.

A.6 Response to comments made by Thurrock Council

A.6.1 The Applicant welcomes the support shown by Thurrock Borough Council with respect to the application of a landscape scale strategy for mitigation and compensation for the loss of habitats. The Applicant is also grateful to Thurrock for the statement that the Order Limits provide an acceptable and appropriate mechanism to mitigate and compensate for the loss of habitat. The following points of support were noted:

- a. Support of the Applicants approach of seeking to provide connectivity between habitats north of the river
- b. The approach to linking compensation to other emerging habitats in the wider area.
- c. The area provided for mitigation.

A.6.2 We note that Thurrock have identified opportunities to provide an area of greater habitat gain around the Tilbury Viaduct. The Applicant will review the area and engage with Thurrock to explore opportunities for further habitat creation. This will need to be balanced against the flood compensation provision and the requirement to hand much of the land in this area back to the landowner following construction.

A.7 Response to comments made by Campaign to Protect Rural England Kent

A.7.1 CPRE Kent raised two points. The first was a question around whether the Applicant's mitigation or compensation would push out species in existing habitats to replace them with other species. The second point was around what constitutes "better" habitat.

- a. The application fully assesses impacts on the baseline ecology, that is, the ecology that is there at the present. If the Applicant were taking habitats and converting them to other habitats, the potential impact on the existing habitat would be fully assessed. The biodiversity baseline, against which the proposed project has been assessed, can be found in Section 8.4 of ES Chapter 8: Terrestrial Biodiversity [[APP-146](#)]. In developing areas of habitat creation, the Applicant has focused on areas of predominantly agricultural land, which is less biodiverse than the type of habitat that would be created. Less biodiverse land is likely to support fewer species and a lesser diversity of species. Habitats that proposed as part of the Project would be more semi-natural habitat, better quality to support a greater diversity of species.

The Applicant would assert that CPRE Kent's first concern has been fully assessed within the application.

- b. The Applicant would like to correct the term 'better habitat' to read 'more diverse habitat'.

A.8 Response to comments made by Kent Downs AONB

- A.8.1 The Applicant responded to Kent Downs AONB's representation in relation to the provision of compensation for the effects of nitrogen deposition on Agenda item six of ISH6.

A.9 Response to comments made by Thames Crossing Action Group

- A.9.1 In response to Thames Crossing Action Group comments on Agenda item 3bi, the Applicant would like to highlight the following chapters of the Environmental Statement, which address the impacts of the Project on soil and on agricultural businesses.

- a. Chapter 10: Geology and Soils [[APP-148](#)]
- b. Chapter 13: Population and Human Health [[APP-151](#)]

- A.9.2 In relation to the Hole Farm project and the application made by Forestry England, more information on the relationship between the Hole Farm community woodland planning application and the DCO Application for the Project can be found under the 'Relationship to Lower Thames Crossing Proposal' section of the Planning Statement submitted in support of application reference 23/00862/FUL. Please refer to 'ISH6 Action Point 6 Hole Farm' [document reference 9.103] for a full response to comments at ISH6 about the Hole Farm community woodland and the Project.

A.10 Response to comments made by Natural England

- A.10.1 Please refer to section A.3 for a full response to Natural England's comments on Biodiversity Net Gain.

A.11 Response to comments made by the Port of London Authority

- A.11.1 The Applicant welcomes the PLA's point in relation to the non-statutory nature of Biodiversity Net Gain targets and in particular the point in relation to the foreshore. As the target is non-statutory the Applicant will not be seeking to identify further land to provide Biodiversity Net Gain.

A.12 Response to comments made by Mr Lawson representing Joan Carver

- A.12.1 The Applicant welcomes Mr Lawson’s comments regarding his client’s property and anticipate further discussion through the CA hearings.

A.13 Response to comments made by London Borough of Havering

- A.13.1 The Applicant refers the London Borough of Havering to Section A.3 of this document in relation to Biodiversity Net Gain. In relation to the long term management of habitats the Applicant would refer the London Borough of Havering to the outline Landscape and Ecology Management Plan [\[REP3-106\]](#) which includes a section on the implementation of the Landscape and Ecology Management Plan with details on roles and responsibilities, habitat establishment as well as securing mechanisms.

Annex B Post-hearing submissions on Agenda Item 4: Green Bridges

B.1 Introduction

- B.1.1 This section provides the post-hearing submissions for agenda item 4 Green Bridges, from Issue Specific Hearing 6 (ISH6) on September 2023 for the A122 Lower Thames Crossing (The Project).

B.2 Green Bridge Ecological Matters

- B.2.1 *Provide comments as to whether the proposed Thong Lane and Brewers Road A2 green bridges could cause a detriment to wildlife (through potential for additional roadkill incidents) given the narrow landscaped area and the at grade exit onto the proposed Darnley Lodge Lane 2-way local connection.*
- B.2.2 The two green bridges over the A2/HS1 transport corridor are designed to reconnect habitats to the north and south of the road via linkages to existing green bridges over the HS1 rail infrastructure. This is a historic severance which the project is seeking to address through a holistic approach to mitigation by improving woodland connectivity across the A2 to help lessen the existing landscape severance with planting that supports the movement of seeds and spores between woodlands. The Applicant's planting proposals have been designed to help connect wildlife populations currently segregated by the A2 and to reinstate the existing connectivity for humans via both vehicular and non-motorised transport which is currently delivered via a narrow grey structure (no planting) with minimal segregation for motorised and non-motorised users. As described below in B.3, the habitat provision on these two green bridges is to primarily address the current severance of habitats affecting bats and dormice, but more generally the planting would benefit other species groups such as amphibians, common reptiles, (small) terrestrial mammals such as hedgehogs and invertebrates where typically their range extent and territories would not normally be constrained by a wide transport corridor.
- B.2.3 For Brewers Road green bridge, the Project's Design Principles [\[REP3-110\]](#) confirm the planting provision as follows: *'the following minimum widths shall apply in accordance with STR.08 and STR.16:*
- a. *A 10m planting zone on the east.*
 - b. *A 1.5m planting zone on the west.*
 - c. *WCH provision, comprising a 3m shared pedestrian/ cycle route and a 3.5m horse riding route.'*

- B.2.4 For Thong Lane South green bridge, the Project's Design Principles [REP3-110] confirm the planting provision as follows: *'The following minimum widths shall apply in accordance with STR.08 and STR.16:*
- a. *A 20m planting zone on the west*
 - b. *A 1.5m planting zone on the east*
 - c. *WCH provision, comprising a 3m shared pedestrian/cycle route and a 3.5m horse riding route.'*
- B.2.5 In both cases this ties into areas of retained trees and woodland habitats to the north of the A2 and links via green bridge connections over HS1 to woodland habitats to the south.
- B.2.6 The design of the green bridges is in line with other green bridges that have been proven effective elsewhere in the UK, such as the A487 Porthmadog, Minffordd and Tremadog Bypass installed to provide a safe road crossing for Lesser horseshoe bats associated with a large maternity roost at Bron-y-Garth, which was located close to the proposed bypass. The green bridge comprises a *'7m wide vegetated bridge with a 1.8m high solid parapets. The Welsh Government would not accept a green bridge with soil over the deck, so large planting boxes, planted with native shrubs were used to provide bats with a surrogate hedge flightline'*¹
- B.2.7 The landscape design which considers the width and use of planting such as hedgerow/woodland edge for the Thong Lane South and Brewers Road green bridges also aligns with other National Highways projects that are providing multi-functional green bridges, such as the A556 Knutsford to Bowden Scheme's green bridge which opened in 2017 comprising an *'11m green bridge with a farm track and a 7m green verge'*² and the A417 Missing Link³ (currently under construction) which includes two multi-functional green bridges: Cowley Overbridge that supports a 3m wide grass verge with a native species rich hedgerow and Stockwell Overbridge that provides two 3m wide verges each with a native species rich hedgerow as well as the more substantial 'landscape scale' Gloucestershire Way green bridge which includes a 25m wide area of calcareous grassland and two native species-rich hedgerows three metres wide and at least 2m high (which is more akin to the 84m wide Thong Lane North green bridge over the A122 Lower Thames Crossing). Also currently in construction is the A30 Chiverton to Carland Cross project which is delivering a

¹ Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

² <https://publications.naturalengland.org.uk/file/6296975990325248>

³ [https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010056/TR010056-001595-National%20Highways%20-%206.4%20Environmental%20Management%20Plan%20\(EMP\)%20\(Clean\)%20-%20Rev%203.pdf](https://infrastructure.planninginspectorate.gov.uk/wp-content/ipc/uploads/projects/TR010056/TR010056-001595-National%20Highways%20-%206.4%20Environmental%20Management%20Plan%20(EMP)%20(Clean)%20-%20Rev%203.pdf)

'20m wide green bridge to serve as both habitat crossing for a huge variety of species whilst also enabling greater connectivity and biodiversity across the area'⁴.

- B.2.8 Based on the examples above, the Applicant is satisfied that the green bridge provision over the A2 corridor accords with current best practice and technical design.
- B.2.9 In terms of connectivity, for the Brewers Road and Thong Lane South green bridges over the A2, where planting is split across the width of the bridges, to accommodate the road access and WCH provision, the outline Landscape and Ecology Management Plan, Section 5.6.6 [REP3-106] includes the management requirement: '*j. To provide a closed canopy over the highway crossing the green bridge at Brewers Road and Thong Lane South as far as reasonably practicable.*' This would help provide a sheltered link between the eastern and western planting areas on the green bridges which maximise the opportunities for bats and arboreal species such as dormice to connect into suitable habitats at either side of the A2. The Applicant acknowledges that habitat connections to the south of the A2 are not as robust as those to the north due to the need to tie into existing HS1 infrastructure and, for Thong Lane South, the severance caused by the Darnley Lodge Lane 2-way local connection road which would require small terrestrial mammals to cross the road to reach habitats on the far side. For Brewers Road green bridge the connection over the HS1 green tunnel and into the woodland edge of the Cobham Hall Parkland is direct for the wider, eastern areas of planting, but is also partially obstructed by Brewers Road as it bears west towards the junction with Halfpence Lane and the Darnley Lodge Lane 2-way local connection road.
- B.2.10 This impact is lessened somewhat when considering the seasonal and temporal separation between the use of these structures (and roads) by humans and wildlife. The animals and species groups identified above are crepuscular and/or nocturnal in their behaviours meaning they are most active between the hours of darkness (in the hours after sunset and prior to sunrise). Their activity is also seasonally confined to the spring-early autumn with many hibernating or significantly reducing their activity over the winter months (typically November-March/April – depending on weather conditions) when food availability is significantly reduced. The longer hours of daylight over the summer mean that when food is most abundant the hours of darkness, when animals will be active, are the shortest and typically fall outside of peak traffic flows on the roads and timing of non-motorised recreational and/or active travel by people.

4

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf

- B.2.11 The Applicant acknowledges the concerns that have been raised about the restricted connectivity south of the A2 corridor and is continuing to engage with stakeholders over the mitigation proposals and will explore further opportunities within the Project's limits of deviation to provide more direct connectivity to habitats south of the A2 and HS1.

B.3 Clarity on the purpose of the Green Bridges in this Project

- B.3.1 *To address the comment: "What is the target species for each of the green bridges and how are they specifically provided for", having regard to Natural England's advice that a green bridge below 20m will not function appropriately as an ecological corridor.*
- B.3.2 As evidenced above in response to B2, the scale and type of multi-functional green bridge structures proposed for the Lower Thames Crossing project align with current industry best practice and technical feasibility for green bridges within the UK. The use of green bridges is complimented by the implementation of mammal (badger) fencing into the highways boundary fencing, which is designed to prevent access to the strategic road network and wider mitigation planting including the use of hedgerows to 'guide' animals to the safe crossing points on the green bridges. With regards to the target species that each bridge is providing for, this is detailed in ES Chapter 8: Terrestrial Biodiversity [APP-146] Section 8.5 and the Project's Design Principles [REP3-110] and is summarised below for ease.
- a. **Brewers Road green bridge** has been designed with a green verge to the east and west of a two-lane road (see Figure 2.4: Environmental Masterplan Section 1 sheet 3 [REP2-014]). The western green verge has been designed to have a double hedgerow character with grassland planting in between the hedgerows. The eastern verge would consist of a WCH route and an area of grassland planting with a single hedge line. This green bridge would allow species to cross from the woodland to the north of the A2/M2 to the parkland to the south of the A2/M2, particularly dormouse, which are known to be present in the habitats on either side of the A2/M2 (see Design Principles [REP3-110] Clause no. PLA.05, STR.01, STR.06, STR.08, S1.04).
 - b. **Thong Lane South green bridge** has been designed with a green verge to the west, and a smaller green verge to the east of a two-lane road (see Figure 2.4: Environmental Masterplan Section 2 sheet 1 [REP3-098]). This western green verge would be planted with a double hedgerow character with grassland planting in between the hedgerows. The eastern green verge would be a single hedge line. This green bridge would allow species to cross over the A2/M2 and link the north and south sides of Shorne and

Ashenbank Woods SSSI. Although this green bridge is designed for multiple species, the hedgerows will be designed to connect the dormouse populations present either side of the A2/M2 (see Design Principles [[REP3-110](#)] Clause no. PLA.05, STR.01, STR.06, STR.08, S1.04, S1.14).

- c. **Thong Lane North green bridge** is a mixed-use green bridge, consisting of a two-lane road with large southern and northern green verges (that range in width from 7m at the narrowest pinch points to in excess of 30m wide) (see Figure 2.4: Environmental Masterplan sheet 6 [[REP3-098](#)]). Both these green verges would include a WCH route, grassland areas, hedgerow, woodland edge and woodland planting. The planting would connect to woodland planting located either side of the route alignment to enhance the landscape for nature, particularly for connecting up the fragmented pocket of ancient woodland at Claylane Wood with the woodland within Shorne Woods Country Park. This will have a benefit for a number of species, but particularly for bats and dormouse commuting across the Project at this location (see Design Principles Clause no. PLA.05, STR.01, STR.06, STR.08, S2.04).
- d. **Muckingford Road green bridge** has been designed to accommodate terrestrial mammals and bats and has been designed with 7m wide green verges to the north and south of a two-lane road and WCH route (see Figure 2.4: Environmental Masterplan Section 10 sheet 2 [[REP2-022](#)]). These green verges have been designed to have a strong hedgerow character with open grassland planting, allowing a sheltered corridor across the Project. These sheltered crossings would allow mammals and bats to commute across the bridge, with bats in particular encouraged to use these features by improving the existing hedgerows within the Order Limits leading to the green bridges (see the Design Principles [[REP3-110](#)] Clause no. PLA.05, STR.01, STR. 06, STR.08, S10.01, S12.13).
- e. **Hoford Road green bridge** has been designed to accommodate terrestrial mammals and bats. The green bridge re-establishes a single lane access track with a hedgerow on either side (see Figure 2.4: Environmental Masterplan Section 10 sheet 4 [[REP2-022](#)]). It has been designed to reconnect and replicate existing key bat commuting route along a protected sunken lane and would provide a suitable crossing location for other species, such as badgers (see the Design Principles [[REP3-110](#)] Clause no. PLA.05, STR.01, STR. 06, STR.08, S10.03, S11.11)
- f. **Green Lane green bridge** has been designed to accommodate terrestrial mammals and bats. This green bridge re-establishes a single farm track with a hedgerow on either side 9 see Figure 2.4: Environmental Masterplan Section 11 sheet 8 [[REP2-024](#)]). It has been designed to replicate an existing key bat commuting route and would provide a suitable crossing

location for other species, such as badgers (see the Design Principles [\[REP3-110\]](#) Clause no. PLA.05, STR.01, STR. 06, STR.08, S10.03, S11.11)

- g. **North Road green bridge** has been designed with 7m green verges to the east and west of a two-lane road and WCH route (see Figure 2.4: Environmental Masterplan Section 12 sheet 6 [\[REP2-026\]](#)). These green verges have been designed to have a strong hedgerow character with open grassland planting, allowing a sheltered corridor across the Project. These sheltered crossings would allow mammals and bats to commute across the bridge, with bats in particular encouraged to use these features by improving the existing hedgerows within the Order Limits leading to the green bridges (see the Design Principles [\[REP3-110\]](#) Clause no. PLA.05, STR.01, STR. 06, STR.08, S10.01, S12.13).

B.3.3 *Please also provide a response to document what monitoring is proposed, by whom and at what timeframes to determine success of the green bridges from both planting and target species perspectives?*

B.3.4 As detailed in the outline Landscape and Ecology Management Plan [\[REP3-106\]](#) Section 4 Roles and Responsibilities, ‘*National Highways maintains the responsibility to ensure that the landscape and ecological mitigation as described in the outline LEMP can be successfully delivered, managed and maintained and that the necessary monitoring is undertaken. Establishment of the mitigation and compensation would be undertaken on behalf of National Highways by the Contractor. Ongoing (long-term) management, maintenance and monitoring, beyond initial establishment periods, would be delivered by National Highways’ Operational and Maintenance teams or through agreement with third parties (to be confirmed). These details will be discussed with all stakeholders in the development of the detailed LEMP in accordance with DCO Requirement 5.*

The LEMP would be secured through Schedule 2 Requirement 5 of the draft DCO (Application Document 3.1). The LEMP must be prepared substantially in accordance with this outline LEMP, submitted as part of the application.

The LEMP would be submitted for approval by the SoS, following consultation by National Highways with the relevant planning authority and Natural England. Commitments in the LEMP that apply during operation of the Project (such as long-term management and maintenance of landscape/ecology typologies specified in the LEMP) would be retained by National Highways once the contractor has fulfilled their contractual obligations.’

B.3.5 Section 2 of the OLEMP confirms the approach used for confirming the successful establishment of the desired landscape and mitigation planting which will inform the approach to habitat monitoring and feedback on progress to achieving this via the LEMP Advisory Group and which is based on the UK Habitat metric code for each landscape element; ‘*Taking into consideration the*

purpose of each landscape element and the feasible potential in terms of habitat quality, a target condition value was assigned to each habitat type. The monitoring targets within the oLEMP reflect the condition criteria requirement for each habitat type, ensuring that the habitat is managed appropriately and providing a measure of success to make certain that the biodiversity units are delivered.

Within Section 8 of the oLEMP each Landscape Element is clearly aligned to the associated UK Habitat Metric code and includes time to target condition.’ This time to target condition has been used in conjunction with the BNG requirement time to target condition following habitat creation of 30yrs.

B.3.6 Protected species monitoring is proposed in relation to both bats and dormice as part of the draft European Protected Species (EPS) licence applications submitted in support of the DCO. This information can be found in the Method Statement Sections E4.1 and E4.2 for the Bat EPS Licence [APP-408] and Method Statement Section E4.2 for the Dormouse EPS Licence [APP-414], and is summarised for ease below:

B.3.7 In relation to bats the draft licence application makes the following commitments ‘*Habitat management and maintenance will be the responsibility of National Highways as part of their operational commitments. The period of management is in perpetuity.*

An annual inspection of the green bridges will record any issues relevant to the bats usage of these structures. As above the general suitability of the habitats for bats on and linked to the green bridges will be recorded during the maintenance visits but the management of these areas will be covered under the Outline Landscape and Ecology Management Plan [REP3-106]. The green bridges will be subject to monitoring using filming surveys (infra-red or Thermal Imaging) with paired detectors situated on either side of the bridge collecting data simultaneously. This methodology will allow determination of the number and species of bats which are using the green bridges and successfully crossing the proposed development. An appropriate monitoring regime will be determined in order to provide robust information that is required to inform any necessary remediation or enhancement should the monitoring find the green bridges are not providing effective mitigation as designed.

Activity surveys will be undertaken at the green bridges in the first full year post-construction, and at alternate years following this: 2028, 2030, 2032, 2034, and 2036. Monitoring will employ the most effective methodology available at this time. The current approach would be using filming surveys (infra-red or Thermal Imaging) with paired detectors situated on either side of the bridge collecting data simultaneously. Detailed crossing point monitoring design will consider the methodology described in Defra Bats and Roads Guidance (Altringham and Berthinussen, 2015).’

B.3.8 In relation to dormice the draft licence application makes the following commitments ‘*the green bridges will be monitored for use of the hedgerows by dormice. These green bridges will be monitored using nest boxes / tubes*

concurrently with the nest boxes in the receptor sites as described in the work schedule.

Monitoring using camera traps at each of the green bridge location will also be employed. Locations planted to link existing habitat including the green bridges will also be monitored for five years after planting. Dormouse nest tubes will be placed within the hedgerows leading to the green bridges, and the hedgerows present on the green bridges themselves. Where appropriate features are located, nest boxes will be erected (e.g., on poles within hedgerows). Camera traps will be used where appropriate pinch points are located, for example gates in hedges or fence lines between hedges.

B.3.9 *A five-year aftercare period will be established for all mitigation planting and reinstatement. A 10-year monitoring period of dormice populations will also be implemented (see the CoCP [\[REP1-157\]](#) REAC commitment TB015).'*

B.3.10 *The responsibility for ensuring the monitoring associated with the Protected Species licensing is undertaken lies with the licence holder, but the licence requires that they have named a suitably qualified and experienced ecologist on the licence who is responsible for undertaking the works and submitting the necessary licence returns to Natural England. This is a legal requirement of the protected species licences.*

B.4 Clarity on commitments and funding for maintenance and management of green bridges

B.4.1 This item was addressed further in ISH 7 where the Applicant clarified that all planting and habitat monitoring and maintenance would be the responsibility of the undertaker. This can be found in 'Post-event submission of oral comments, for ISH7' [Document Reference 9.87].

B.5 Response to Natural England regarding monitoring of success for species

B.5.1 Monitoring of the planting on the green bridges is secured in the outline Landscape and Ecology Management Plan (oLEMP) [\[REP3-106\]](#). The oLEMP has broken down the project into broader management areas that perform similar landscape and ecological functions. For example in the south, Chapter 5.6 of the oLEMP has grouped together the green bridges at Brewers Road, Thong Lane over A2 and Thong Lane over Lower Thames Crossing as one management area. Chapter 5.6 goes on to provide a brief description of the bridges, provide the outline management requirements for green bridges, and also provides a list of the specific landscape typologies present on the green bridge.

B.5.2 The green bridges will be monitored for their use by protected species, specifically bats and dormice (Appendix 8.16: Draft EPS mitigation licence

application – bats [APP-408]; and Appendix 8.18: Draft EPS mitigation licence application – dormouse [APP-414]). This is secured in the Register of Environmental Actions and Commitments (REAC) in Deadline 1 Submission - ES Appendix 2.2: Code of Construction Practice [REP3-104].

- a. REAC Ref. TB015: Monitoring of protected species during and post-construction would be in line with the requirements of the protected species mitigation licences.

B.5.3 The monitoring requirements for bats and dormice will include the use of camera traps which would pick up the presence of other species including badgers and hedgehogs giving a broader understanding of the use of the bridges by faunal species. Together with the outline measures of success detailed for each habitat typology proposed for each green bridge, reported in [REP3-106], Section 8 Habitat typologies, the species monitoring proposals secured in the application will offer a clear understanding of the use of the green bridges by their target species. The opportunity to amend any management prescriptions is then secured through the provisions of [REP3-106] Section 4 Implementation of the Landscape and Ecology Management Plan.

B.6 Comparison of green bridges in the UK

B.6.1 A high level literature and asset review has identified approximately six existing green bridges on National Highways network at present⁵ with a further example on Mile End Green Bridge in London. In addition to the six existing green bridges on National Highways network there are four consented green bridges, three on the A417 and one on the M25 Junction 10 which are currently under construction. These are all presented in the table below:

Scheme	Description	Reference / location
A21 Scotney Castle	Bridge is 92m long, 29m at its narrowest point and 55m at its widest. Constructed in 2005.	Near Lamberhurst village, Kent
Mile End Green Bridge	25m width of landscaped parkland.	Mile End, London
A566 Knutsford to Bowden Scheme	11m green bridge comprising a farm track and 7m green verge. Consent granted August 2014	West of Mere, Chesire
Weymouth Relief Road (x3 Lorton Lane bridge, Ridgeway	Adapted road and farm access. Greened for	North of Weymouth, Dorset

⁵ <https://www.newcivilengineer.com/latest/uks-seventh-green-bridge-set-to-be-constructed-as-part-of-a30-upgrade-in-cornwall-04-09-2023/#:~:text=%E2%80%9COur%20green%20bridge%20will%20be,for%20various%20species%20of%20wildlife.>

Scheme	Description	Reference / location
bridge and South Down bridge)	enhancement rather than for specific habitat mitigation	
A30 Chiverton to Carland Cross Scheme	Features planting and hedgerows designed to help badgers, voles and other creatures cross the road as well as a footpath and bridleway. Consent granted February 2020.	Over Marazanvose section of A30, Cornwall
A417 Missing Link	Three green bridges proposed as part of the scheme. Consent granted November 2022.	Between Brockworth bypass and Cowley roundabout in Gloucestershire
M25 junction 10/A3 Wisley interchange improvement	Cockcrow heathland Bridge. Proposed heathland green bridge with WCH provision. Consent granted May 2022.	M25 Junction 10, near Wisley, Surrey and A3 between Cobham/Byfleet and Ripley/Ockham.

B.6.2 The provision of seven new green bridges on the Lower Thames Crossing would represent almost a doubling of green bridges on National Highway’s network.

B.7 Response to comments made by Kent County Council

B.7.1 In response to Kent County Council’s (KCC) representation relating to the upkeep and maintenance of the non-highway elements of green bridges, the Applicant refers KCC to further discussion and clarification at ISH7. At ISH 7 the Applicant clarified that all planting and habitat monitoring and maintenance would be the responsibility of the undertaker.

B.7.2 In response to Mr Bell, the Applicant will seek to maximise the benefit of the green bridges over the A2. Further detail with respect to this point is provided in Section B.2.

B.8 Response to comments made by Gravesham Borough Council

B.8.1 A response to Gravesham Borough Council is covered in section B.3 above.

B.9 Response to comments made by Natural England

B.9.1 The applicant recognises the Natural England publication Green Bridges: A literature review (NECR181) and notes that this is referenced within the Landscape Institute Guidance.

- B.9.2 The Applicant welcomes the collaborative approach which Natural England have entered into the development of scheme design. Details of the ongoing exploration of options prior to detailed design is presented in Section B.3. The applicant would note that the greening of the bridges presents an opportunity to provide connectivity over an existing barrier to movement.
- B.9.3 The Applicant notes the reference to the target species raised by Natural England and confirms that monitoring of the use of the green bridge following construction is secured via the protected species licensing as described in sections B.3 and B.5 above.
- B.9.4 In relation to the scale of the proposed green bridges. The Application has developed the green bridges over the A2 following advice from the Defra family at Statutory consultation: *‘Opportunities to remove the ‘barrier’ of the widened A2 for non-motorised users between Shorne and Cobham/Jeskyns (ideally with a living bridge) to help reconnect the landscape for people and wildlife along with the health and wellbeing benefits that it will deliver.’* (Natural England SoCG Appendix C [\[REP2008\]](#)). The location of the green bridges seeks to maximise the benefit of existing bridges and the Applicant has developed the design of these bridges, including increasing the width of the Thong Lane South bridge to respond to stakeholder comments on the width. The location of the bridges is constrained such that increasing the scale of the green passing would start to impact on habitat on either side of the A2 corridor.

B.10 Response to comments made by Kent Downs AONB

- B.10.1 The Applicant welcomes the Kent Downs AONB representations. The applicant believes that the green bridges seek to address existing severance issues relating to both human severance and wildlife severance. Further detail on the suitability of Park Pale as a green bridge is provided in Section B.11.
- B.10.2 In relation to policy compliance with the National Policy Statement for National Networks and a need to ensure high environmental standards, the Applicant believes that the proposed bridges do meet high environmental standards and have sought to maximise environmental benefit while minimising harm to the receiving environment on both the south and north of the A2.

B.11 Response to comments made by Campaign to Protect Rural England Kent

- B.11.1 The applicant would direct Kent CPRE to the responses provided in the proceeding sections and highlight that the green bridges (on the A2) seek to provide ecological connectivity in an area where there is currently no existing habitat link.

- B.11.2 Further details on the management of the green bridges can be found in the Design Principles [\[REP3-110\]](#) and outline Landscape and Ecology Management Plan [\[REP3-106\]](#).

B.12 Response to comments made by Thames Crossing Action Group

- B.12.1 Details of all of the green Bridges can be found in Section B.3 above.

B.13 Consideration of Park Pale bridge

- B.13.1 A green bridge was not progressed at Park Pale for several reasons. These are: the bridge provides sole access to the Rochester and Cobham Park Golf Course, the area is a key access for Harlex Haulage, the link to the habitat on the south would not cross HS1 and would therefore provide limited connectivity. The bridge also does not require replacement as a result of the Project.

B.14 Provide detail on proximity of vehicles/maintenance safety on green bridges

- B.14.1 In accordance with the Design Manual for Roads and Bridges (DMRB), suitable edge restraint (parapets) will be provided for all green bridges. This will ensure that maintenance of 'green' areas can be undertaken safely. In addition, where appropriate and necessary, and in agreement with the local highway authority, vehicle restraint systems will be provided to prevent errant vehicles from leaving the carriageway. These will be considered on a site-by-site basis.

Annex C Post-hearing submissions on Agenda Item 5: Ancient Woodland Impact

C.1 Introduction

- C.1.1 Agenda Item 5 Ancient Woodland Impact, was not discussed at Issue Specific Hearing 6 (ISH6) on 8 September 2023 for the A122 Lower Thames Crossing (The Project). There are no further submissions on this agenda item.

Annex D Post-hearing submission on Agenda Item 6: Nitrogen Deposition Compensation

D.1 Introduction

- D.1.1 This section provides the post-hearing submissions for agenda item 6 Nitrogen Deposition Compensation, from Issue Specific Hearing 6 (ISH6) on 8 September 2023 for the A122 Lower Thames Crossing (The Project).
- D.1.2 Agenda Item 6 Nitrogen Deposition Compensation was discussed at ISH6, but it was requested that the Applicant provide its responses to the following agenda items in writing at Deadline 4.
- a. Mitigation Hierarchy and Site Selection: The ExA needs to understand how the Nitrogen Deposition compensation approach aligns with the mitigation hierarchy?
 - b. The Applicant will be asked to clarify how the size of the Nitrogen Deposition compensation area(s) has been determined and what their criteria were for selecting sites?
 - c. What site surveys have been carried out on the proposed Nitrogen Deposition compensation sites to determine their suitability?
 - d. The Applicant will be asked to set out where and why areas of land for Nitrogen Deposition have been reduced.
 - e. Habitat Make-Up: It is reported that the mosaic of habitats for nitrogen deposition sites is expected to achieve a ratio of approximately 70% woodland to 30% other associated habitats. Is this approach well founded?
- D.1.3 These are provided in D.2 to D.6 below.

D.2 Alignment with the mitigation hierarchy

- D.2.1 Alignment with the mitigation hierarchy for the nitrogen deposition compensation is reported in section 4 Compliance with the mitigation hierarchy of ES Appendix 5.6: Project Air Quality Action Plan [[APP-350](#)]. Subsequent sections of the Project Air Quality Action Plan consider each element of the hierarchy in turn: Section 5 Consideration of avoidance; Section 6 Consideration of mitigation; and Section 7 Consideration of compensation.
- D.2.2 Natural England has been consulted extensively on the development of the approach to the assessment and mitigation and compensation of significant effects from nitrogen deposition and has indicated its support for the approach in the Deadline 2 Submission Statement of Common Ground between (1)

National Highways and (2) Natural England Version 2.0 (Clean Version)
[\[REP2-008\]](#) at items 2.1.96, 2.1.97 and 2.1.98.

- D.2.3 Potential mitigation measures are listed and then considered in turn for their potential to implement, likelihood of measure mitigating significant effect, and viability of the measure.
- D.2.4 Questions were raised at the Issue Specific Hearing 6 regarding the level of detail that had been provided on, for example, why lower speed limits had been dismissed. In response, the Applicant refers to paragraphs 6.2.5 to 6.2.33 and Annex A of the Project Air Quality Action Plan [\[APP-350\]](#) that provides a detailed consideration of speed limit reduction and speed enforcement potential mitigation options.
- D.2.5 The assessment confirmed that speed enforcement management measures are feasible mitigation for effects on sites adjacent to the M2 between junctions 3 and 4. This measure would be technically feasible, have negligible traffic impacts and reduce the level of N deposition for sites identified. This mitigation measure is secured through REAC commitment TB025 in ES Appendix 2.2: Code of Construction Practice [\[REP3-104\]](#), which states that appropriate technology and infrastructure would be provided to enable the enforcement of the current speed limit by the relevant Enforcement Authority.
- D.2.6 Paragraph 7.1.1 states “Mitigation has been proposed where feasible, but where there are no appropriate mitigation measures, the Applicant has identified how best to respond to the residual effects of nitrogen deposition by proposing compensation measures”.
- D.2.7 Potential compensation measures are considered through consistency with available guidance, setting of success criteria, development of a strategic approach, and consideration of options against the success criteria. Proposed compensation measures are reported in Section 7.6 of the Project Air Quality Action Plan [\[APP-350\]](#), comprising eight sites of landscape scale habitat creation.

D.3 Determination of the size and location of Nitrogen Deposition compensation sites

- D.3.1 The scale of compensation required is reported in paragraphs 7.4.1 to 7.4.2 of the Project Air Quality Action Plan [\[APP-350\]](#). To fully compensate for the significant effects, it was determined in consultation and agreement with Natural England that dual and parallel objectives must be achieved with a comparable area of habitat creation to significantly affected habitat across the Project; and additional ecological connectivity created within the four ecological networks identified.

- D.3.2 A comparable area of compensation would be required set against the area of significantly affected habitat. This provided an overall measure of success for the combined scale of compensation sites. The area of each compensation site was identified through the site selection process reported in paragraphs 7.4.3 to 7.4.78 of the Project Air Quality Action Plan [APP-350]. The key consideration for each site was the additional ecological connectivity achieved within the local ecological network, with the scale of each site determined by the opportunities and constraints in the area as well as its contribution to the overall requirement of a comparable area to that significantly affected at a Project scale.
- D.3.3 The site selection criteria are set out in Section 7.4 of the Project Air Quality Action Plan [APP-350], including identifying the search area within the ecological networks that affected sites lie within, analysis of constraints and ecological suitability, subsequent refinement and consideration of consultation responses.

D.4 Hole Farm

- D.4.1 Information regarding Hole Farm can be found in ISH6 Action 6 Hole Farm [document reference 9.103]

Surveys on proposed Nitrogen Deposition compensation sites to determine their suitability

- D.4.2 All proposed Nitrogen Deposition compensation sites were surveyed by ecologists between April and June 2022. The surveys carried out on the proposed Nitrogen Deposition compensation sites are reported in 6.3 the Environment Statement - Appendix 8.22: Terrestrial Ecology Surveys at Nitrogen Deposition Compensation Sites [APP-418]. The surveys consisted of UK Habitat Classification (UKhab) to understand the existing habitats as well as protected species surveys (such as great crested newts and badgers) to identify whether any constraints were present from ecological perspective.
- D.4.3 Concern was raised at the Issue Specific Hearing 6 that the methodology for selecting the nitrogen deposition compensation sites had inadequate assumptions on wider environmental impacts, potentially leading to insufficient attention to environmental constraints that may limit the ability to deliver the proposed habitat creation or lead to unassessed environmental impacts.
- D.4.4 The suitability of sites was assessed during the site selection process reported in the Project Air Quality Action Plan [APP-350] in paragraphs 7.4.32 to 7.4.33. Desk study data was used to screen unacceptable constraints and multidisciplinary workshops considered potential wider environmental constraints in the allocation of potentially suitable plots as 'acceptable', 'unacceptable' or 'acceptable with caveats' (where a constraint was potentially present but the competent experts advising the Applicant, including heritage,

landscape, utilities, land referencing and planning advised that any such risk could be managed as part of the detailed design of the proposals at that site). The opinions of the competent experts were based on desktop information as well as consultation with stakeholders.

- D.4.5 The habitat mosaic approach to the design of suitable compensation measures allows flexibility in managing potential risks of unexpected environmental effects. Different elements of habitat creation can be designed and managed according to constraints identified for each site e.g. trees could be avoided where they might have unacceptable effects on heritage assets, utilities, etc. The approach to this is detailed in LSP.27 within the Design Principles [[REP3-110](#)] and further within the outline Landscape and Ecology Management Plan [[REP3-106](#)].
- D.4.6 The Applicant is confident that the likelihood of discovering significant unacceptable effects (e.g. on heritage assets) is inconsequential and that the mosaic approach to detailed design and management are sufficiently flexible to incorporate any such discoveries.
- D.4.7 Concern was raised at the Issue Specific Hearing 6 that the proposed Buckingham Hill nitrogen deposition compensation site (which was proposed by Thurrock Council as a suitable site) may not have been adequately assessed for its suitability as the soil depths on this landfill site may not be sufficient to establish many trees, and combined with other constraints this might lead to the objective of achieving the 70% woodland and 30% grassland overall being unachievable. The Applicant is confident that the habitat mosaic that will be designed in detail at the Buckingham Hill site will be suitable to meet the objectives of the nitrogen deposition compensation by providing wildlife-rich habitat that will add ecological connectivity to the ecological network. While it is likely that the cover of trees is likely to be more limited on this site, it is expected that significant areas of scrub (a type of woodland) will develop and provide suitable connectivity of semi-natural habitats. The Applicant is also confident that even if the cover of woodland on the Buckingham Hill is limited, it will still be possible to achieve the 70% cover of woodland across all nitrogen deposition compensation sites as the other constraints that will necessitate grasslands to be established rather than woodland on other sites will be much less than the 30% target percentage area.
- D.4.8 In paragraph 8.28.10 of the outline Landscape and Ecology Management [[REP3-106](#)] the outline prescriptions for the typology of nitrogen deposition compensation (which is applicable to all nitrogen deposition compensation sites) include:
- a. At bullet a. Carry out pre-construction surveys to produce a baseline for the habitat creation including ecological and environmental information to ensure detailed design can avoid significant effects and breaches of

environmental legislation, as well as build on existing features to provide additional benefits wherever possible.

- b. At bullet c. Produce a detailed specification for the creation of the desired mosaic of habitats in consultation with stakeholders on the desired outcomes in terms of habitat mosaic and long-term management
- c. At bullet d. Undertake any remedial action required to provide best possible site for habitat creation, including potentially soil remediation and management of invasive non-native species.

D.4.9 Taken together, these commitments will ensure sufficient survey information is available at the appropriate time to consider and avoid wider environmental effects and provide suitable habitats for site conditions on each site.

D.5 Where and why areas of land for Nitrogen Deposition have been reduced

Position at Local Refinement Consultation

D.5.1 The initial proposals for nitrogen deposition compensation were made in the Local Refinement Consultation (“LRC”) in 5.1 Consultation Report - Appendix T - Local refinement consultation material [[APP-088](#)]. The Applicant proposed potential nitrogen deposition compensation sites based on a preliminary assessment and stated the proposals would be refined for the DCO application based on final assessments and the responses to the LRC.

D.5.2 Eight sites were identified in the Local Refinement Consultation with a total area of 279Ha, identified as “potential sites”, with an expectation that the DCO application would refine proposals to approximately 250Ha, which was based on the preliminary assessment of nitrogen deposition which had identified 250Ha of potentially significantly affected habitat.

Position at DCO Application

D.5.3 Within the DCO application the Applicant proposed eight nitrogen deposition compensation sites totalling 245.7ha in the Project Air Quality Action Plan [[APP-350](#)].

D.5.4 The reduction in sites and areas from the Local Refinement Consultation was due to consideration of the final assessment (which identified 174.6Ha of significantly affected habitat) and responses to the Local Refinement Consultation. The reductions are reported in the Project Air Quality Action Plan [[APP-350](#)] at paragraphs 7.4.74 to 7.4.78.

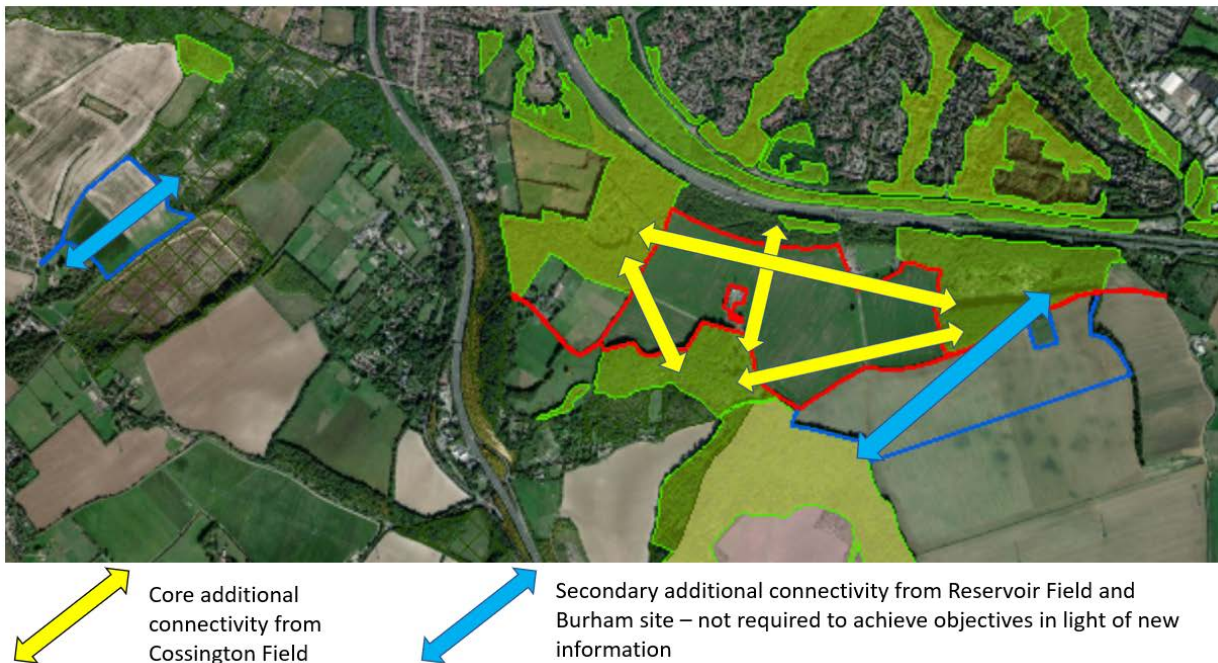
D.5.5 Site C was removed from proposals because of unacceptable environmental implications and risk of business extinguishment.

- D.5.6 The Blue Bell Hill site was reduced in area to minimise the risk of business extinguishment and the Burham site was added, which was part of the alternative site proposed by the landowner that had not been discounted during the site selection methodology.
- D.5.7 The changes were considered in response to the feedback from consultation and then checked against achievement of the ecological objectives in light of the final assessment. It was concluded the changes from Local Refinement Consultation would achieve the objectives of a comparable area to significantly affected habitat across the whole project and sufficient additional ecological connectivity at each site.
- D.5.8 No other sites were removed or reduced as no business extinguishment risks or unacceptable environmental impacts were identified through the consultation process.

Position post DCO application (MRC01 change)

- D.5.9 The Applicant proposed further reductions (accepted by the Examining Authority in Procedural decision 33) within the Additional Submission - Notification of Proposed Changes - Accepted at the discretion of the Examining Authority [[AS-083](#)]. Paragraphs 2.2.1 to 2.2.7 report the need for and description of proposed changes in relation to MRC01 - Blue Bell Hill and Burham nitrogen deposition compensation sites. These were proposed after ongoing landowner engagement, which brought forward further information that facilitated a review of the proposals in the DCO application.
- D.5.10 In response to questions under agenda item f) of ISH 1, the Applicant's Deadline 1 submission (9.10 Post-event submissions, including written submission of oral comments) for ISH1 [[REP1-183](#)] reports information on the change in nitrogen deposition compensation in Annex F.
- D.5.11 The removal of the Burham site and reduction of the Blue Bell Hill site would not materially affect the achievement of the ecological objectives. There still remains more compensation land proposed than the area of significantly affected habitat across the Project (and so the comparable area objective is still achieved). The reduction in the Reservoir field only marginally reduces the ecological benefit associated with the Project's increased connectivity as the core ecological connectivity is provided by Cossington Field and the secondary additional connectivity expected at application to be provided by Reservoir field is now unlikely to be achievable (see Plate D.1).

Plate D.1 Core and secondary additional connectivity



- D.5.12 Given the marginal effect of the reduced area on the achievement of the ecological effects, it is considered appropriate to take the opportunity to reduce the business risks associated with the proposals at application.
- D.5.13 The post-application change reduced the total area of compensation by a further 40Ha (to 205.8Ha) in the Blue Bell Hill / Burham area after information became available through engagement with the landowner. After review, it was concluded that the change would still allow ecological objectives to be achieved.

Table D.1 Summary of proposed nitrogen deposition compensation sites, areas and significantly affected areas reported at different Project timescales

Proposal at	Affected habitat (Ha)	Compensation area proposed (Ha)	Number of compensation sites
LRC	250 (Preliminary expectation)	279 (Potential) 250 (Expected)	8
Application	174.6 (Final assessed)	245.7	8
Post application change	174.6 (Final assessed)	205.8	7

- D.5.14 With regard to action 8 from Issue Specific Hearing 6 regarding the potential double counting of mitigation at the Kent nitrogen sites (arising from Blue Bell Hill and Burham), the Applicant places no reliance on Countryside Stewardship agreement actions of third parties (namely CS Scheme 1230934 at Harp Farm, which is a 'Higher Tier' scheme running for ten years from 01 January 2022 until 31 December 2031) and therefore there is no double counting occurring, as the benefits of this CS Scheme are pursuant only to its own project requirements. They have been specifically and intentionally excluded from the Applicant's calculations and assessments as part of the proposed change to the compensation areas.
- D.5.15 The land at Blue Bell Hill and Burham was originally justified on the basis of the information available at the time of the application. At the time of application, it was expected that the land in Reservoir field and the Burham site would add significant additional connectivity to the network from conversion of arable farmland into semi-natural habitats that increased the interface between existing and retained habitats with the proposed habitat creation areas than that achieved in Cossington Field. However, through ongoing engagement with the landowner new information came to light that the farm was newly accepted into a Countryside Stewardship scheme. On review of this new information (and in the context of new information on the risk of business extinguishment) it was concluded that the additional connectivity achievable in Reservoir Field and the Burham site were no longer significant enough to justify inclusion of the proposals, because the measures being undertaken for the Stewardship Scheme would reduce the potential for the areas to be enhanced.
- D.5.16 The Stewardship measures agreed by the landowner would not provide an equivalent management outcome as compared to the habitat creation within Reservoir Field and the Burham site that the Applicant had initially proposed at the point of the DCO application. However, the Stewardship measures would provide sufficient ecological enhancement in those areas to mean the proposals from the Applicant would not provide sufficient additional outcomes to the outcomes achieved by Cossington Field alone to justify acquisition. The Applicant's review also demonstrated that the objectives of a comparable area of habitat creation across the project, and additional connectivity within each ecological network, would still be achieved even with the reduced areas.
- D.5.17 Because the objectives would still be achieved with the reduced area, it is not proposed to 'replace' the reduced area elsewhere.
- D.5.18 Concern was raised at ISH6 that the reduction in scale of the compensation areas was inconsistent with the case made in the application that all the land sought was required. In this respect it is important to recognise:
- a. The response to issues of potential ecological mitigation through nitrogen deposition is an emerging issue in the development industry, not an

established one. The approach taken in the application is therefore unique and pioneering, and is strongly supported by Natural England, the statutory adviser to Government on such matters.

- b. As the Project Air Quality Action Plan [[APP-350](#)] demonstrates, the approach has been the subject of detailed survey, research and engagement informed by best-in-class ecological advice and a multi-disciplinary approach to site selection.
- c. There is no ratio for compensating for “degradation” of habitats over time due to nitrogen deposition. The twin objectives of “connectivity” and “comparable area” were developed as a response to that. “Comparable area” doesn’t mean precisely the same area. It is not a calculation – it requires professional judgement, to be made by competent ecological experts.
- d. The Applicant is aware that seeking powers of compulsory acquisition for these purposes imposes an obligation on the Applicant to engage closely with affected landowners and to respond to any new information. Following submission of the application in autumn 2022, the Applicant continued to engage with affected landowners, obtain more evidence, and to keep its acquisition proposals under review. Following reassessment of the Blue Bell Hill site, in spring 2023 the Applicant concluded it could reduce the land take at that site, while still meeting the twin compensatory objectives. In other words, it could meet its objectives with a reduced area of total compensation land and so no alternative site was required. It should be noted that the area proposed following further engagement still exceeds the area affected.
- e. The fact that the Applicant made a post-application change of this nature should not be seen as unusual or remarkable in the context of the compulsory acquisition guidance and DCO practice. The CA guidance encourages this, and the ability to make project changes post-application is provided for just this type of purpose.
- f. The Applicant is confident that the quantum of remaining nitrogen deposition compensation is sufficient, and that there is a compelling case in the public interest for acquisition of that land.
- g. Whether the approach taken – to identify a broadly comparable area of land for habitat creation to that potentially affected by nitrogen deposition and to select sites on a landscape scale which are suited to that purpose, through building resilience of the ecological networks that affected sites lie within through habitat connectivity – is the right approach, is ultimately a matter for the Examining Authority and the Secretary of State. The Applicant recognises that it is open to affected parties to make their case if they

consider the Applicant has taken the wrong approach or struck the wrong balance.

- h. If the total area of compensatory land is considered to be excessive, the draft Order and associated plans can be amended and the DCO can still be made. If it had been insufficient, a decision would have been more difficult.
- i. While participants at the examination drew attention to project changes which had reduced the area, no party advanced evidence at the hearing that the area now proposed is insufficient to meet its purpose.

D.5.19 It should be noted that the Countryside Stewardship Scheme covers the wider extents of Harp farm at Blue Bell Hill, including the area relating to the Cossington fields (i.e. the area of the farm that is still proposed as compensation land within the Order Limits). However, the focus of the Stewardship Scheme in that area is only on the field margins and hedgerows etc. As such, the majority of the internal area of the field can still deliver the required ecological benefit sought by the Project, via its inclusion within the Project compensation proposals.

D.5.20 With regard to action 9 from Issue Specific Hearing 6, the Applicant does not rely on any land outside of the Order Limits to achieve a sufficient quantity of nitrogen deposition compensation. The fact that such land might be in Stewardship is simply a factor affecting its suitability for compensation as part of the LTC DCO application. It does not imply the Stewardship measures contribute to the Applicant's compensation. As described above, the connectivity in Reservoir Field and the Burham site are now not necessary because the secondary additional connectivity expected to be achievable at the time of application is now known not to be achievable in full due to the new information received relating to the Countryside Stewardship Scheme.

D.5.21 Concern was raised at ISH6 that there is a need to provide compensation 'as near as possible' to affected sites, and that impacts north and south of river were inconsistently compensated for within the proposals. The Applicant considers that the comparison of affected area and compensation area within government administrative boundaries or the boundary of the AONB (which is designated on a landscape basis) are not relevant. The assessment as set out within the Project Air Quality Action Plan identifies the geographical boundaries of ecological networks that the affected sites lie within and therefore compensation needs to be provided to add resilience to the networks and therefore add resilience to the affected sites.

D.5.22 The guidance on compensation advises that measures closer to the site are generally preferred, unless measures further away will benefit the network of sites as a whole. There is no hierarchy or preference within the guidance as

between measures in close proximity to affected sites or measures that will benefit networks and so both criteria were considered equally.

- D.5.23 The site selection criteria considered ecological preference and environmental and other constraints on potential sites within the ecological networks. There were differences between networks on the availability of suitable sites and the area within networks that could add significant connectivity. On the south side of the river, there are relatively large areas of semi-natural habitats that are relatively well connected already, whereas on the north side of the river the semi-natural sites are smaller and more fragmented. It is therefore considered that the area required to provide significant additional connectivity in the north will be larger than in the south to bridge the larger gaps between existing and retained habitats. It is also the case that suitable land identified that did not require compulsory acquisition was all on the north side of the river and therefore, as there was a preference to use such land, there was a preference towards more land being proposed in the north than in the south.

D.6 Habitat Make-Up of Nitrogen Deposition compensation

- D.6.1 The overarching aims of the Nitrogen deposition compensation habitat typology include at paragraph 8.28.1 of the outline Landscape and Ecology Management Plan [REP3-106], that the mosaic of habitats is expected to achieve a ratio of approximately 70% woodland to 30% other associated habitats at a landscape scale. Each site may have a different ratio of habitats that is appropriate to that site, but the expectation across all N-Deposition compensation sites would be to provide a 70/30 split overall.
- D.6.2 The approach was developed in consultation with Natural England to fully compensate for the significant effects from nitrogen deposition. The outline Landscape and Ecology Management Plan [REP3-106] sets out management requirements for each nitrogen deposition compensation site to achieve the function of compensation. The management requirements for each site include:
- a. Provide permanent wildlife-rich habitat
 - b. Primarily woodland at a landscape scale
 - c. Providing similar or more diverse habitats in recognition of habitats significantly affected by the Project operational N-Deposition effects
 - d. Providing most ecologically appropriate mosaics of habitats / features for the site
 - e. Integrating objectives with local nature conservation plans and emerging local nature recovery strategy

D.6.3 Mosaics of habitats are more wildlife-rich than uniform stands of single habitats due to the additional ecological niches afforded by edge habitats and transitional zones. The highest proportion of affected habitat is woodland and so the mosaics should be predominately woodland to reflect this. Other habitats such as grasslands are also affected and so should be reflected in the mosaics. A mosaic approach allows for greater flexibility to be more appropriate to the ecological context of the site and to integrate the objectives with local nature conservation plans.

D.7 Response to comments made by Kent County Council

D.7.1 The Applicant refers to paragraph D.6.9 to D.6.23 above.

D.8 Response to comments made by Kent Downs AONB

D.8.1 The Applicant refers to paragraph D.6.20 to D.6.23 above.

D.9 Response to comments made by Thames Crossing Action Group

D.9.1 The Applicant refers to paragraph D.6.6 above in regard to when and why the Burham site was included in the proposals and to paragraphs D.6.9 to D.6.13 above in regard to when and why the Burham site was subsequently removed from the proposals.

D.10 Response to comment made by Ken Pratt (Examining Authority)

D.10.1 The Applicant refers to paragraph D.6.14 to D.6.17 above.

D.11 Response to comments made by Gravesham Borough Council

D.11.1 The Applicant refers to paragraph D.5.2 to D.5.5 above.

D.12 Response to comments made by Thurrock Council

D.12.1 The Applicant refers to paragraph D.5.6 above.

Annex E Post-hearing submission on Agenda Item 7: Shorne Woods SSSI Impact

E.1 Introduction

- E.1.1 Agenda Item 7 Shorne Woods SSSI Impact was not discussed at Issue Specific Hearing 6 (ISH6) on 8 September 2023 for the A122 Lower Thames Crossing (The Project). There are no further submissions on this agenda item.

Annex F Post-hearing submission on Agenda Item 8: Habitats Regulations Assessment

F.1 Introduction

- F.1.1 This section provides the post-hearing submissions for agenda item 8 Habitats Regulations Assessment, from Issue Specific Hearing 6 (ISH6) on 8 September 2023 for the A122 Lower Thames Crossing (The Project).
- F.1.2 Agenda Item 8 Habitats Regulations Assessment was not discussed at ISH6. It was requested that the Applicant provide its response to agenda item a(i): *Update on the Position: the ExA is aware of the current views of the IPs on the HRA conclusions for Internationally Protected Sites but would like the Applicant to provide any other IP to provide a succinct update for each site as to where progress may have been made in agreeing conclusions and mitigation and compensation in writing at Deadline 4. This is provided in F.2 below.*

F.2 Update on positions

- F.2.1 Within the HRA, two screening conclusions and three appropriate assessment conclusions are still matters not yet agreed with Natural England. Only one conclusion is a matter not agreed, which remains the case. The other four conclusions are still matters under discussion.
- F.2.2 All screening and Appropriate Assessment conclusion other than these 5 exceptions are agreed matters in Deadline 2 Submission Statement of Common Ground between (1) National Highways and (2) Natural England Version 2.0 (Clean Version) (The SoCG) [REP2-008] in items 2.1.88 RRE for screening conclusions and 2.1.92 RRE for Appropriate Assessment conclusions.
- F.2.3 For context, out of 562 Screening conclusions on potential impact pathways on qualifying interests, only two Screening conclusions are still matters not yet agreed; and out of 105 Appropriate Assessment conclusions on potential impact pathways on qualifying interests, only three Appropriate Assessment conclusions are still matters not yet agreed. See Table F.2 Planning Inspectorate Advice Note 10 Summary Table for Effects of the Project Alone within the Habitats Regulations Assessment - Screening Report and Statement to Inform an Appropriate Assessment [APP-487] for the screening and appropriate assessment conclusions on potential impact pathways on qualifying interests.
- F.2.4 The Applicant has responded to all advice from Natural England on the HRA conclusions that are not yet agreed, and the Applicant is awaiting responses from Natural England on these points. Further progress is being made through

regular SoCG consultation calls, but no changes in the agreement status on any of these conclusions is possible at this point.

F.2.5

The SoCG [REP2-008] currently identifies unresolved discussions on the following HRA conclusions. The relevant SoCG item reference and latest position are provided for each:

- a. Screening conclusion of no Likely Significant Effects from underwater noise effects on the Thames Estuary and Marshes SPA / Ramsar (the subject of SoCG item 2.1.89 RRE). The Applicant has issued a technical note on the underwater noise assessment in Annex C.8 to the SoCG [REP2-008]. Natural England are considering their response to the technical note. This remains an issue under discussion.
- b. Screening conclusion of no Likely Significant Effects from operational air quality effects on the North Downs Woodlands SAC regarding NO_x and NH₃ assessment methods (the subject of SoCG items 2.1.91 RRE and 2.1.95). Natural England's advice in regard to the use of inconsequential NO_x as a threshold for modelling nitrogen deposition and the assessment of NO_x and NH₃ as individual pollutants has been responded to on a without prejudice basis in the Deadline 2 Submission - 9.57 Without prejudice assessment of the air quality effects on European sites following Natural England advice [REP2-068]. Natural England are considering their response to this submission. This remains an issue under discussion.
- c. Appropriate Assessment conclusion of no Adverse Effects on Integrity from habitat loss and disturbance effects on the Thames Estuary and Marshes SPA / Ramsar regarding the feasibility of the Coalhouse Point wetland creation mitigation measures (the subject of SoCG item 2.1.93 RRE). The Applicant has issued a technical note on the feasibility of the mitigation measures at Coalhouse Point regarding the water supply and management for the habitat creation proposals in Annex C.13 Coalhouse Point Mitigation Progress Update to The SoCG [REP2-008]. Natural England are considering their response to the technical note. This remains an issue under discussion.
- d. Appropriate Assessment conclusion of no AEoI from operational air quality effects on Epping Forest SAC regarding the necessity of mitigation (the subject of SoCG item 2.1.94 RRE). The SoCG with Natural England records this as a matter that is not agreed, and this remains the case. The Applicant remains of the view that mitigation is not required due to the inconsequential nature of the identified effect. A without prejudice mitigation measure has been submitted to the Examination in Annex C.7 to The SoCG [REP2-008]. There is, however, agreement with Natural England that the without prejudice measures would avoid adverse effects on the integrity of the SAC, as stated in the Status column of the SoCG.

- e. Appropriate Assessment conclusions of no AEoI from operational air quality effects on Epping Forest and North Downs Woodlands SACs regarding the methodology used for in-combination assessment of traffic (the subject of SoCG item 2.1.90 RRE). The Applicant has responded to Natural England's advice regarding methodologies for traffic modelling and in-combination assessment on Epping Forest and North Downs Woodlands SACs in Annex C.12 of Natural England's Deadline 1 Submission - Written Representation (WR) [\[REP1-262\]](#). Natural England is considering their response to this submission. This remains an issue under discussion.

Annex G Post-hearing submission on Agenda Item 9: Delivery

G.1 Introduction

- G.1.1 Agenda Item 9 Delivery was not discussed at Issue Specific Hearing 6 (ISH6) on 8 September 2023 for the A122 Lower Thames Crossing (The Project). There are no further submissions on this agenda item.

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Glossary

Term	Abbreviation	Explanation
A122		The new A122 trunk road to be constructed as part of the Lower Thames Crossing project, including links, as defined in Part 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1)
A122 Lower Thames Crossing	Project	A proposed new crossing of the Thames Estuary linking the county of Kent with the county of Essex, at or east of the existing Dartford Crossing.
A122 Lower Thames Crossing/M25 junction		New junction with north-facing slip roads on the M25 between M25 junctions 29 and 30, near North Ockendon.
A13/A1089/A122 Lower Thames Crossing junction		Alteration of the existing junction between the A13 and the A1089, and construction of a new junction between the A122 Lower Thames Crossing and the A13 and A1089, comprising the following link roads: <ul style="list-style-type: none"> • Improved A13 westbound to A122 Lower Thames Crossing southbound • Improved A13 westbound to A122 Lower Thames Crossing northbound • Improved A13 westbound to A1089 southbound • A122 Lower Thames Crossing southbound to improved A13 eastbound and Orsett Cock roundabout • A122 Lower Thames Crossing northbound to improved A13 eastbound and Orsett Cock roundabout • Orsett Cock roundabout to the improved A13 westbound • Improved A13 eastbound to Orsett Cock roundabout • Improved A1089 northbound to A122 Lower Thames Crossing northbound • Improved A1089 northbound to A122 Lower Thames Crossing southbound
A2		A major road in south-east England, connecting London with the English Channel port of Dover in Kent.
Application Document		In the context of the Project, a document submitted to the Planning Inspectorate as part of the application for development consent.
Construction		Activity on and/or offsite required to implement the Project. The construction phase is considered to commence with the first activity on site (e.g. creation of site access), and ends with demobilisation.
Design Manual for Roads and Bridges	DMRB	A comprehensive manual containing requirements, advice and other published documents relating to works on motorway and all-purpose trunk roads for which one of the Overseeing Organisations (National Highways, Transport Scotland, the Welsh Government or the Department for Regional Development (Northern Ireland)) is highway authority. For the A122 Lower Thames Crossing the Overseeing Organisation is National Highways.
Development Consent Order	DCO	Means of obtaining permission for developments categorised as Nationally Significant Infrastructure Projects (NSIP) under the Planning Act 2008.

Term	Abbreviation	Explanation
Development Consent Order application	DCO application	The Project Application Documents, collectively known as the 'DCO application'.
Environmental Statement	ES	A document produced to support an application for development consent that is subject to Environmental Impact Assessment (EIA), which sets out the likely impacts on the environment arising from the proposed development.
M2 junction 1		The M2 will be widened from three lanes to four in both directions through M2 junction 1.
M2/A2/Lower Thames Crossing junction		New junction proposed as part of the Project to the east of Gravesend between the A2 and the new A122 Lower Thames Crossing with connections to the M2.
M25 junction 29		Improvement works to M25 junction 29 and to the M25 north of junction 29. The M25 through junction 29 will be widened from three lanes to four in both directions with hard shoulders.
National Highways		A UK government-owned company with responsibility for managing the motorways and major roads in England. Formerly known as Highways England.
National Policy Statement	NPS	Set out UK government policy on different types of national infrastructure development, including energy, transport, water and waste. There are 12 NPS, providing the framework within which Examining Authorities make their recommendations to the Secretary of State.
National Policy Statement for National Networks	NPSNN	Sets out the need for, and Government's policies to deliver, development of Nationally Significant Infrastructure Projects (NSIPs) on the national road and rail networks in England. It provides planning guidance for promoters of NSIPs on the road and rail networks, and the basis for the examination by the Examining Authority and decisions by the Secretary of State.
Nationally Significant Infrastructure Project	NSIP	Major infrastructure developments in England and Wales, such as proposals for power plants, large renewable energy projects, new airports and airport extensions, major road projects etc that require a development consent under the Planning Act 2008.
North Portal		The North Portal (northern tunnel entrance) would be located to the west of East Tilbury. Emergency access and vehicle turn-around facilities would be provided at the tunnel portal. The tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations.
Operation		Describes the operational phase of a completed development and is considered to commence at the end of the construction phase, after demobilisation.
Order Limits		The outermost extent of the Project, indicated on the Plans by a red line. This is the Limit of Land to be Acquired or Used (LLAU) by the Project. This is the area in which the DCO would apply.
Planning Act 2008		The primary legislation that establishes the legal framework for applying for, examining and determining Development Consent Order applications for Nationally Significant Infrastructure Projects.

Term	Abbreviation	Explanation
Project road		The new A122 trunk road, the improved A2 trunk road, and the improved M25 and M2 special roads, as defined in Parts 1 and 2, Schedule 5 (Classification of Roads) in the draft DCO (Application Document 3.1).
Project route		The horizontal and vertical alignment taken by the Project road.
South Portal		The South Portal of the Project (southern tunnel entrance) would be located to the south-east of the village of Chalk. Emergency access and vehicle turn-around facilities would be provided at the tunnel portal. The tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations.
The tunnel		Proposed 4.25km (2.5 miles) road tunnel beneath the River Thames, comprising two bores, one for northbound traffic and one for southbound traffic. Cross-passages connecting each bore would be provided for emergency incident response and tunnel user evacuation. Tunnel portal structures would accommodate service buildings for control operations, mechanical and electrical equipment, drainage and maintenance operations. Emergency access and vehicle turn-around facilities would also be provided at the tunnel portals.

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