APPLICANT'S RESPONSE TO INTERESTED PARTIES' DEADLINE 1 SUBMISSIONS NUMBER: 9.12

DECARBONISATION

Cory Decarbonisation Project

PINS Reference: EN010128

DECEMBER 2024

Volume 9

The Infrastructure Planning (Examination Procedure) Rules 2010 – Rule 8(1)c

TABLES

EXECUTIVE SUMMARY

A total of 42 submissions have been made by 22 Interested Parties at Deadline 1 of the Examination for the Cory Decarbonisation Project (the Proposed Scheme).

Cory Environmental Holdings Limited (the 'Applicant') has reviewed each of these submissions and responds to them in this document. The Representations Received from the Interested Parties focused on the following topics, and the Applicant has responded on a thematic basis accordingly:

- Marine Environment
- DCO Drafting and Land Matters
- Emissions
- Terrestrial Biodiversity
- Townscape and Visual and Historic
- Water and Flood Risk
- Socio economic
- Transport Matters
- Optioneering

1. INTRODUCTION

1.1. PURPOSE OF THIS DOCUMENT

1.1.1. This Report provides a response to the issues raised in the Written Representations received from Interested Parties at Deadline 1 (26 November 2024).

1.1.2. Below is a breakdown of the Written Representations and Local Impact Reports received:

- 3 submissions from Local Planning Authorities;
- 5 submissions from prescribed consultees;
- 4 submissions from affected parties, and members of the public or businesses; and
- 10 submissions from non-prescribed organisations.

1.2. STRUCTURE OF THE APPLICANT'S RESPONSE

1.2.1. Each section of this document presents the Applicant's response to the submissions received from Interested Parties at Deadline 1 (including the Local Impact Reports). Each response has been considered within one of the following themes:

- Marine Environment
- DCO Drafting and Land Matters
- Emissions
- Terrestrial Biodiversity
- Townscape and Visual and Historic
- Water and Flood Risk
- Socio economic
- Transport Matters
- Optioneering

1.2.2. Within each theme, the Applicant has responded to the submissions received by each individual Interested Party on that theme in separate tables. In the 'Emissions' theme, there is also a table dealing with the responses received by multiple members of the public.

1.2.3. The Applicant has not provided a direct response to the following representations as the points made by these parties have been addressed through the responses made to other parties' submissions:

- Calum F Kerr **(REP1-064).** This representation raised matters in relation to MOL (and very special circumstances) and loss of the Local Nature Reserve which are addressed in Section 2.9 and in relation to species and biodiversity net gain, which are addressed in Section 2.4.

- Lawrence Fairbairn **(REP1-066).** This representation raised matters in relation to transport issues which are addressed in section 2.8; emissions which are addressed in section 2.3, and alternative site locations which are addressed in section 2.9.
- Ralph Todd **(REP1-068).** This representation raised matters regarding impacts on the Local Nature Reserve addressed in Section 2.9 and concerns in relation to the interaction of the Proposed Scheme with existing consents which are addressed in Section 2.2.
- Bexley Civic Society **(REP1-071).** This representation raised matters in relation to Metropolitan Open Land and Alternatives addressed in Section 2.8.

1.2.4. Representations were also made by the Western Riverside Waste Authority **(REP1-043)** and Munster Joinery **(REP1-060)** and Landsul **(REP1-059).** These representations were specific to the interest of the party.

1.2.5. The Applicant's responses to **Written Summary of the Applicant's Oral Submissions at CAH1 (REP1-027)**, **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, and Response to Relevant Representation report **(AS-043)** cover the remainder of any comments made by Interested Parties.

2. RESPONSES TO MATTERS RAISED IN INTERESTED PARTIES DEADLINE 1 SUBMISSIONS

2.1 MARINE ENVIRONMENT

Table 2-1-1 – Port of London Authority

Doc ref	Summary of issue raised	Applicant's response
REP1-039	"6.2 The evidence provided that the increased capital dredging required a part of the change application scheme (now the Order Scheme) has no material effect from a coastal processes perspective is limited to a few tables of model statistics extracted from pre-determined locations on the model. The PLA would have expected to see maps showing the spatial variation as the locations extracted may not have been wholly representative of the full magnitude of change."	Point extraction locations were used to assess the temporal variation in coastal processes between the original and change application schemes and are presented within **Appendix A** of the **Change Request and Consultation Report Appendices (AS-049)**. The Applicant considers that these points provide robust coverage across the area that would be affected by the Change. The point extraction statistics demonstrate that the magnitude of changes throughout the model duration are very small; a map of spatial variation would demonstrate the same information and is not considered to add value beyond the data that has been presented.
REP1-039	"6.3 Notwithstanding that the increase in the dredged depth of the berth pocket is only an additional 0.5 metres and the greatest change will be a further decrease of current speed and bed shear stress within the berth pocket; this will generally lead to a slightly higher amount of infill and hence maintenance dredging. Despite this, the PLA does not conclude that the significance of impacts arising from the increase in depths resulting from the Order Scheme will be materially greater than currently assessed within the ES."	The Applicant acknowledges this comment.
REP1-039	"7.2 The PLA considers that there is a general omission from Chapter 8 of the ES - Marine Biodiversity [APP-057] of the importance of the River Thames for migratory fish. Whilst paragraph 8.8.92 states that the proposals will have a negligible effect on fish because of the background illumination levels, high turbidity and proposed mitigation, the PLA is not convinced that the ES sufficiently considers the effects of the proposals in relation to the habituation of fish species to these factors and that any effects from the proposals are additional to the baseline. The PLA would normally restrict certain activities, such as carrying out water injection dredging on the ebb tide or when dissolved oxygen is above a certain level, or during certain periods of the year."	The Applicant considers the assessment of the importance of the River Thames for migratory fish within **Chapter 8: Marine Biodiversity** of the **Environmental Statement (Volume 1) (APP-057)** to be appropriate. In addition, proposed mitigation described in Section 8.7 and 8.9 of the chapter, such as the use of directional lighting that avoids overspill on to the River Thames and lighting to be on timers and include motion sensors, will reduce potential effects on migratory fish. The Applicant has committed to a number of restrictions to works in the river, including tidal restrictions, as set out in **Chapter 6** and **Chapter 9** of the **Outline Code of Construction Practice (Outline CoCP) (as updated alongside this submission)**. These include the use of backhoe dredging for both capital and maintenance dredging and the avoidance of water injection dredging, as described in **Chapter 2: Site and Proposed Scheme Description of the Environmental Statement (Volume 1) (APP-051)** at **Paragraphs 2.4.61 to 2.4.62**, in order to reduce potential impacts on fish species through release of contaminants and impacts to dissolved oxygen. **Chapter 8: Marine Biodiversity** of the **Environmental Statement (Volume 1) (APP-057)** considers the effects from increased turbidity due to the short-term nature of the works, proposed mitigation and existing conditions at the Site. It also assesses the impact from illumination levels, based upon the proposed mitigation; including the use of directional lighting and the lighting regime (lighting will not be in operation when the Proposed Jetty is vacant) and the existing illumination on this section of the River

Doc ref	Summary of issue raised	Applicant's response
		Thames. The Proposed Scheme will result in minimal light spill on to the River Thames, and thus result in a negligible (Not Significant) effect.
REP1-039	7.3 A Biodiversity Net Gain ("BNG") Report [APP-088] has been completed which focuses predominantly on the terrestrial environment. Whilst there is some consideration of the intertidal environment, the PLA requires clarification regarding some of the assumptions that have been made. For example, at paragraph 3.3.5 there are references to the former Belvedere Power Station Jetty and Middleton Jetty being classified as developed land. It is not clear from the BNG report whether only the jetties themselves have been considered and that the habitat underneath the jetties have been omitted. Developed land significantly reduces the baseline biodiversity value and would affect the BNG calculations. Given that intertidal sediments are a high distinctiveness habitat, this could be significant.	The area of intertidal habitat below Middleton Jetty is recorded in the baseline and is stated in **Paragraph 3.3.5** of **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**. The paragraph describes that the area of the piers has been considered as developed land (20 piers with a $1m^2$ profile) and the remaining area (including that beneath the Jetty) has been classed as littoral mud in moderate condition, as stated in **Table 3-1**. Therefore, there is no reduction in the biodiversity value of the intertidal habitats present. As described in **Paragraph 3.3.5** of **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**, due to the age of the Belvedere Power Station Jetty (disused), there were no as-built drawings available to inform the assessment. Therefore, the assessment assigned an informed estimate of the pier structure (developed land) and intertidal sediment to the area below the structure. The assessment assumed supporting piers covered approximately a quarter of the area of the Belvedere Power Station Jetty (disused) as a whole.
REP1-039	"7.4 In addition, Chapter 7 of the ES – Terrestrial Biodiversity [APP- 056] classifies the former Belvedere Power Station Jetty as being a high tide roost for wintering birds (para 7.6.53). This is not reflected in the BNG report. Notwithstanding this, the Outline Landscape Biodiversity Access and Recreation Delivery Strategy ("LaBaRDS") [APP-129] identifies the former Belvedere Power Station Jetty as a bird nesting feature and proposes creating a new breeding bird habitat. Whether the jetty is a high tide roost or a bird nesting feature would result in different requirements for compensation and the proposed breeding bird habitat would not be a replacement for a high tide roost, particularly for wintering birds."	Impacts on important birds, both breeding and wintering, are assessed in **Section 7.8** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. This includes an assessment of the potential effects on these ecological features from the Proposed Scheme, mitigation and compensation measures are described in **Section 7.7** and **Section 7.9** of the chapter. Please also see item 3.2 of the **Written Summary of the Applicant's Oral Submissions at Issue Specific Hearing 1 (ISH1)** (REP1-025) which addresses this point. **Appendix 7-1: Biodiversity Net Gain Report** of the **Environmental Statement (Volume 3) (APP-088)** describes the habitats that comprise the Belvedere Power Station Jetty (disused). Biodiversity Net Gain as a process, mediated through the UK Government's Statutory Metric, does not assess impacts on protected species and for this reason the high tide roosts and bird breeding habitat found to be present at the Belvedere Power Station Jetty are appropriately not reflected in **Appendix 7-1: Biodiversity Net Gain Report** of the **Environmental Statement (Volume 3) (APP-088)**. The differing requirements for the high tide roost and bird breeding site found on the Belvedere Power Station Jetty (disused) are discussed within **Section 7.8** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**.
REP1-039	"7.5 It is noted that the Water Framework Directive ("WFD") Assessment [APP-106] accepts that there will be a loss of / reduction in intertidal and subtidal habitat; see for example table 6-6 where it is stated that the operation of the proposed scheme will lead to the reduction of intertidal and subtidal habitat available due to the presence of the proposed jetty and if the Belvedere Power Station jetty is retained it will result in an	The loss of intertidal mudflat as a result of the construction of the supporting piers for the Proposed Jetty is included in **Table 4-1** of **Appendix 7-1: Biodiversity Net Gain Report** of the **Environmental Statement (Volume 3) (APP-088)**, where it states that there will be a loss of littoral mud of approximately 0.001ha. This is detailed further in **Paragraph 4.1.3** of this report where it is explained that the loss is due to the construction of approximately 16 pier supports, each being 0.9m in diameter. The pier supports are recorded as developed land in the post development metric. It should be noted that much

Doc ref	Summary of issue raised	Applicant's response
	overall net loss of subtidal and intertidal habitat. However, this does not appear to be reflected in the BNG calculations and the BNG Report states that there will be no loss."	of the Proposed Jetty sits within the subtidal environment, which is not the subject of the Statutory Metric.
REP1-039	"7.6 The PLA would assert that both the BNG Report and WFD Assessment need to be consistent with one another and with the other application documents. The PLA would request sight of the BNG calculations (preferably in submission of the completed metric in spreadsheet format) to be able to accurately interrogate the Applicant's conclusions."	Acknowledged. **Appendix 7-1: Biodiversity Net Gain Report** of the **Environmental Statement (Volume 3) (APP-088)** provides PDF copies of each metric spreadsheet as well as a discussion of in its wider text of the calculations within **Annex C**. The spreadsheet has also separately been provided to the PLA for their information.

Table 2-1-2 – Marine Management Orgainsation

Doc ref	Summary of issue raised	Applicant's response
REP1-036	Dredging "3.2.2. The Applicant has confirmed within the Change Request and Consultation Report Appendices (page 57) "As set out in Chapter 2: Site and Proposed Scheme Description of the Environmental Statement (ES) Volume 1) (APP-051) at Paragraphs 2.4.61 to 2.4.62, dredging activities will be carried out using a backhoe dredger. WID and TSHD dredging will not be undertaken as part of capital or maintenance dredging for the Proposed Scheme". The MMO, in consultation with the Centre for Environment, Fisheries and Aquaculture Science (Cefas), therefore considers that the Applicant has addressed the original comments. 3.2.3. The original comment seeking to clarify which Marine Licence the maintenance dredging will be permitted under remains outstanding and the MMO requests further information is provided on this.	3.2.2. The Applicant notes this response. 3.2.3. Maintenance dredging for the Proposed Scheme is proposed to be covered under the **Deemed Marine Licence** at **Schedule 11** of the **Draft DCO (updated alongside this submission)** for the Proposed Scheme, see condition 3(2)(d)**.**
REP1-036	Sampling 3.2.4. The MMO notes from the Change Request and Consultation Report that the Applicant made a commitment to complete additional sediment sampling at 8 depth across the proposed dredging profile, as per SAM/2024/00042. We further note that a disposal site will be selected upon review of the sample results. The MMO therefore considers the provision of the results is likely to address some of the previous concerns raised in our Relevant Representation, pending completion of the sample plan consultation.	3.2.4. Acknowledged. As described within the **Applicant's Response to Relevant Representations (AS-043)**, the sample plan consultation was completed with the MMO and PLA with the number of sample stations increased to 10. Once the sediment sampling has been completed, the results and assessment will be shared with the MMO and an update on this matter will be provided to the Examination. This expected to be in March 2025.
REP1-036	Validity of Environmental Statement Conclusions 3.2.5. The Applicant has still not provided evidence as to why they categorise the magnitude of impact as 'medium' for most receptors, 'low' for marine plants and macroalgae, and 'negligible' for plankton and marine mammals. The evidence to assess these conclusions is likely to be the sample results, so the MMO considers that this can be revisited once the samples results are provided. 3.2.6. Evidence should be provided to support the Applicant's conclusions regarding magnitude of impact. Until then, the original comment remains outstanding. The evidence	3.2.5. The medium magnitude for fish has been derived by taking a precautionary approach and assuming any sediment contaminants released during activities will be harmful to fish species in conjunction with the transient nature of fish within this section of the River Thames. The transient nature of fish will reduce the potential exposure to sediment bound contaminants and thus reduce the magnitude of the impact. The low magnitude for marine plants and macroalgae was derived from the distribution within the study area (i.e. colonising marginal areas and hard substrates) and the limited interactions with construction activities such as dredging and piling. In addition, the

Doc ref	Summary of issue raised	Applicant's response
	for this will likely be the sample results so the MMO requests that the Applicant review and update the Environmental Statement as appropriate alongside the sample results when available. 3.2.7. In addition, it does not appear that the Applicant has sufficiently assessed the impacts of changes in water quality and the release of contaminants resulting from the proposed maintenance dredging. The Applicant should assess impacts from maintenance dredging separately and provide this assessment for review. 3.2.8. The MMO notes from the Change Request and Consultation Report Appendices (page 59) the Applicant has "described, with evidence, that the Change is not likely to result in changes to the conclusions within the Environmental Statement. This is presented at Table 4-1 of the main report". However, it is not clear which document the 'main report' is referring to, thus, the MMO is unable to confirm at this time that the Change has been assessed in an appropriate and proportionate manner. The MMO, in consultation with Cefas, would be happy to review the evidence if the Applicant could provide the report for review. Until then, this conclusion of the Environmental Statement remains outstanding.	coastal process modelling predicted that the majority of suspended sediments would be retained within the main channel and not be deposited on marginal areas. Therefore, the anticipated magnitude of change is expected to be low. The negligible magnitude for plankton was derived from the high tidal flows within this section of the River Thames resulting in high mixing and low residence times for plankton within the study area and subsequent exposure to any released contaminants. The negligible magnitude for marine mammals was derived from their transient nature and low numbers reported within the study area. The negligible magnitude for Marine habitats and Associated Intertidal and Subtidal Benthic Communities was derived from the background levels of suspended sediments and waterborne contaminants within the Thames and took into consideration existing activities such as maintenance dredging occurring within the study area. The scale of the proposed works in comparison to the intertidal and subtidal habitats present within the River Thames also reduces the magnitude. Therefore, the Applicant considers the existing conclusions of the assessment presented within **Chapter 8: Marine Biodiversity of the Environmental Statement (Volume 1) (APP-057)** to be valid. It is anticipated that the results of the sampling analysis will validate the findings of the assessment and further impact assessment will not be required. 3.2.6. Please see responses 3.2.4 and 3.2.5 above. 3.2.7. The Applicant considers that the potential effects from maintenance dredging have been suitably assessed within **Paragraphs 8.8.139** to **8.8.142** of **Chapter 8: Marine Biodiversity of the Environmental Statement (Volume 1) (APP-057)** and within **Appendix 11-4: Coastal Modelling Studies of the Environmental Statement (Volume 3) (APP-109)** (and throughout the rest of the Operational Phase assessments presented in the chapter). 3.2.8. The 'main report' is the **Change Request and Consultation Report (AS-048)**, the evidence provided is presented within **Table 4-1** of the report.
REP1-036	Fisheries and Fish Ecology "The Applicant has not addressed all the previous comments and concerns raised by the MMO. The outstanding concerns mainly relate to the appropriateness of the suggested mitigation measures along with the Applicant's justification for these. It should be noted however, that some appropriate changes to the mitigation measures have now been made, including the commitment to a nighttime restriction on piling works to reduce the impacts to species such as European eel (Anguilla anguilla) which undertake nocturnal migrations. 3.5.2. The Applicant has still not presented the sensitive migratory periods for diadromous Thames fish, apart from eel. It was previously requested, that the upstream/downstream migrations of the relevant sensitive species must be clearly	3.5.2. The Applicant considers that appropriate information regarding fish migration has been included within **Section 8.6 and 8.8** of **Chapter 8: Marine Biodiversity of the Environmental Statement (Volume 1) (APP-057)**. Following consultation with the MMO and Environment Agency regarding sensitive periods for migratory fish, appropriate mitigation measures will be employed, which were included within the updated **Outline CoCP (AS-029)** submitted on 25 September 2024. In addition to the above, the Applicant will provide the MMO with a table detailing the migration periods of fish utilising the Tidal Thames in a separate technical note in January 2025. 3.5.3. The Applicant has updated the **Outline CoCP (as updated alongside this submission)** whereby *"any pilling and construction activities occurring in the month of March will only occur at low tide and within a dry environment"*, in order to reduce

Doc ref	Summary of issue raised	Applicant's response
	presented (e.g. in a table). The Applicant has justified the lack of inclusion of such information by stating that the "suggested mitigation period (April to September) is based upon the migration of European smelt" (Osmerus eperlanus). Also stating that "this period also overlaps with the main European eel migration period (March to October) therefore it is deemed sufficient". Whilst it is true that this mitigation period suggested by the Applicant overlaps some of the sensitive migratory periods of smelt, along with other species, not presenting the migration period(s) for each species does not allow easy interrogation of the proposed dates. If a table of the migratory periods was clearly presented it would be clear that the suggested mitigation period does not provide appropriate protection for smelt. The MMO considers that this must be provided for review. 3.5.3. The temporal restriction on piling activities suggested by the Applicant between the months of April – September has not been adjusted, so it still doesn't provide adequate protection for migrating smelt. Again, it would have helped the assessment and the justification of the chosen mitigation period if the Applicant had clearly presented the sensitive migratory periods for the key fish receptors. As previously raised by the MMO in our Relevant Representation, the month of March can be considered a key period of smelt migration as they migrate upstream to reach their spawning grounds (sites near Wansworth Bridge and Greenwich). Smelt are expected to migrate upstream past the project site in late February/ early March, which is supported by several studies showing that; smelt spawning occurs in early March in the Thames (Maitland, 2003), smelt spawn over an elongated period of five weeks during March and the beginning of April with a one-to-three week peak spawning period within that window (ZSL, 2016), and that high abundances of several-weeks-old smelt were found at Greenwich in 2018 (10km upstream from the proposed development) (ZSL, 2019). Therefore, the MMO, in consultation with Cefas, has a high level of confidence that piling works undertaken below the water line during March will overlap with the upstream migration of adult smelt from February onwards. We do note that the Applicant has now stated that activities occurring in the month of March will focus on, and be limited as much as practicable, to low tide and within a dry environment. Nevertheless, this still allows the potential for piling activities to occur during a key period for smelt migration and fall short of a full restriction. If the Applicant could commit to no piling operations occurring below the water during March, then this would largely eliminate the potential for significant adverse impact to smelt from underwater noise from piling. For this reason, and in line with other developments of a similar nature in this part of the Thames, the MMO requests the following temporal mitigation measure to be included within the DML to reduce the potential impacts on migratory species: Between 1 March and 30 June (inclusive), in any given year, no piling of any type must take place in the water. Reason: to protect adult European smelt during their upstream migration to their spawning grounds. Additionally, a restriction until end of June will afford protection to juvenile/larvae migration downstream of the site for both smelt and Atlantic salmon.	impacts on the sensitive periods for smelt, including upstream migration of adults and downstream migration of juveniles. 3.5.4. This comment has been acknowledged by the Applicant.

Doc ref	Summary of issue raised	Applicant's response
	3.5.4. The Applicant has now also responded to the concerns raised in the previous consultation, relating to the material changes to the project design envelope. It is stated that these changes will not result in any increases in piling operations, and despite the dredge volume increasing, the duration of the dredging works will remain the same at six months. Based on this clarification by the Applicant, the MMO is content that, with the appropriate mitigation, the changes to the project design will not significantly increase the potential impacts to fish receptors."	
REP1-036	The Change Request "Regarding the proposed Change to the original application submitted: "As described within Table 4-1 of the main report, there are no anticipated changes to the vibro-piling and impact piling", the MMO is not clear what the 'main report' is, and no reference is provided for this. Thus, we are unable to confirm at this time that the Change has been assessed in an appropriate and proportionate manner. As above, the MMO is not clear what the 'main report' is, and no reference is provided for this. Thus, we are unable to confirm at this time that the Change as been assessed in an appropriate and proportionate manner."	The main report that is being referred to is the **Change Request and Consultation Report (AS-048)** which has assessed the impacts of vibro-piling and percussive piling on marine receptors within **Table 4-1**. The **Change Request and Consultation Report (AS-048)** concluded no anticipated changes to the assessment based on the small increase in the length of the sheet piled wall and the embedded mitigation including seasonal restrictions and limiting percussive piling to 30 minutes a day.

Table 2-1-3 – Environment Agency

Doc ref	Summary of issue raised	Applicant's response
REP1-035	Coastal Process Modelling "We have questioned the soundness of the applicant's coastal process assessment modelling including results appearing to be counterintuitive relative to the change being assessed. The development team have acknowledged our challenge questions by e-mail, and we are waiting for their response. Changes to sediment transport could impact surface water outfalls and the sustainability of vessel berths. The Applicant's response to our challenge over whether the new jetty has been represented well enough in the modelling does not answer the point about the design of the jetty only refereeing to its location. None of this can be resolved before a sound modelling approach has been substantiated. 5.1. 19 The coastal process modelling evidence remains in doubt and the Environment Agency disagree over the need to address the risk of sediment build up at the Great Breach pumping station outfall."	The Applicant shared a Technical Note on 12th December 2024 with the Environment Agency in response to queries received from the Environment Agency on the 30th October 2024, which is also provided as **Appendix A** of this report. The findings indicate negligible change to bed shear stresses (and therefore sediment deposition) at the location of the Great Breach Pumping Station when compared to the baseline scenarios.
REP1-035	Water Directive Framework Assessment "The Water Framework Directive (WFD) Assessment currently submitted fails to use the baseline data available for some failing chemicals and therefore cannot predict concentrations after factoring in any uplifts. There is therefore no justification within the supplied WFD assessment that the uplift in suspended solids that might be predicted (by modelling) has sufficiently limited effects on contaminant concentrations to be able to conclude compliance.	As described within the **Applicant's Responses to Relevant Representations (AS-043)**, the Applicant has made a commitment to complete additional sediment sampling at depth across the proposed dredging profile, in line with the controls in the Deemed Marine Licence, at Schedule 11 of the **Draft DCO (updated alongside this submission)**, to corroborate the conclusions of **Appendix 11-1: Water Framework Assessment** of the **Environmental Statement (Volume 3) (APP-106)**. The proposed sampling methodology and scope has been discussed and agreed in principle with the relevant stakeholders (MMO, CEFAS, PLA and Environment Agency). A further

Doc ref	Summary of issue raised	Applicant's response
	However, we are aware through discussion with the applicant's consultants that a revised WFD assessment is being undertaken including baseline concentrations and predictions of uplifts through which the applicant intends to demonstrate that the activities will be WFD complaint. Initial predictions do not yet indicate the activity is compliant and further works in being undertaken. We are awaiting the results of this revised assessment."	commitment has been made to develop a Technical Note, once the sediment sampling has been completed, which will present the data findings and assessment to validate these against the recommendations of the submitted **Appendix 11-1: Water Framework Assessment of the Environmental Statement (Volume 3) (APP-106)**. Should the results of the sediment sampling necessitate additional mitigation measures these will be developed in discussion with relevant stakeholders, including the MMO, the PLA, and the Environment Agency and be included within the relevant application documentation (such as the **Outline CoCP (as updated alongside this submission)**) if relevant.
REP1-035	"In the latest meeting between a member of our marine team and the applicants consultants HR Wallingford the consultants provided a presentation working through modelling the contaminant loadings, and although most contaminants were demonstrated to comply, a small number of chemicals appeared to still be likely to cause more than a 3% uplift on existing (failing) annual average concentrations; i.e. currently they would not meet our criteria for "no deterioration" under the dredge scenarios proposed by the applicant. The substance fluoranthene (a failing priority hazardous substance) appeared to "fail worse" by a little under 5% vs the existing annual average concentration. Several of the other substances were more marginal differences vs our 3% working threshold. Both parties agreed that some of the implicit assumptions used may be conservative and that there was merit in revisiting these and re-evaluating calculations where there may be reasonable grounds for justifying the use of a modified value for calculations. We expect further discussions HR Wallingford on this once this process has been undertaken. If the new calculations can demonstrate the proposal is WFD compliant then we will recommend that the dredge be permitted, if not then other alternative options may need to be considered. Options may include using the dredge to provide a monitoring programme that may demonstrate current models are over conservative and provide better understanding of sediment behaviour in water under a water injection dredge scenario, or the worst case scenario might involve using a different removal dredge method (or a combination of dredge methods) to remove either all the material, or if practical to do so, the most contaminated parts of the material) and to dispose of it to appropriate locations for the level of contamination. Due to the high levels of contamination of total PAH compounds it is thought unlikely that the material will be suitable for disposal within a marine environment, and it may require specialist hazardous waste landfill (regulated under EA waste permits). This would massively elevate the costs of the project, so is understood to be a last resort. The berths are used for transportation of materials involved in the waste management business of the applicant, and as such perform an important role in the wider recycling industry. Failure to maintain the berths at the correct depth could lead to vessel safety	HR Wallingford are not involved in the modelling of contaminant loadings for the Proposed Scheme or in any matters relating to the WFD assessment. The assessment and re-calculations described in the comment have not yet been undertaken as the Applicant is awaiting the results of sediment sampling, as explained within the above row. Therefore, it appears that these comments may relate to another project. The Applicant is therefore unable to respond to this comment.

Doc ref	Summary of issue raised	Applicant's response
	issues which may result in the inability to use the berths. This could have knock-on effects for wider society. We therefore await further details from HR Wallingford once they have had the chance to explore the implications of revising the values used in assumptions used in the calculation methods. If ultimately it was found that there was no way any dredge could be achieved without causing deterioration, we would recommend that the dredge is not approved. Our view is that technically a removal dredge (and associated landfill disposal) probably would be WFD compliant (even if much more expensive), so the application to dredge (by dispersive means) would not satisfy the criterion that there was no other technical method of achieving the dredge that could be applied that wouldn't deteriorate the waterbody. This, however, would be a matter for the Secretary of State to consider. So far, no dredge in the Thames has been referred to the Secretary of State due to an inability to comply with WFD and an overriding public interest in carrying out a dredge regardless of the impact on the waterbody. We are hopeful that further detailed consideration of the revised impact assessment may indicate the proposed dredge option finally put forward (which itself may be modified in the light of revised calculations) may still comply with WFD and avoid the need for removal of dredgings to a hazardous waste landfill site."	

2.2 DCO DRAFTING AND LAND MATTERS

Table 2-2-1 – Port of London Authority

Doc ref	Summary of issue raised	Applicant's response
CoCP Matters		
REP1-039	6.5 The Outline Code of Construction Practiced ("oCoCP") [APP-124] notes that: "the full CoCP(s) will provide that, in respect of capital dredging: it will be undertaken using backhoe dredging, unless otherwise agreed with the Environment Agency and the MMO (and that it has been demonstrated that any alternative method would not lead to materially worse effects than those reported in the Environmental Statement (Document Reference 6.1))". 6.6 In view of the PLA's role as consenting authority of both capital and maintenance dredging under the provisions of the dDCO, the PLA also needs to be involved in such approvals and the Outline CoCP should be amended accordingly. 6.7 Additionally, there are other instances within the oCoCP which relate to dredging where there is no reference to the PLA such as paragraphs 6.2.5, 6.3.1 and 6.4.1 and, as above, the role of the PLA as consenting authority should be reflected and included within them.	The Applicant has updated the Outline CoCP at Deadline 2 to account for these comments, reflecting that the PLA's role in considering dredging matters ultimately comes from the Protective Provisions.
REP1-039	"8.2 The PLA raised concern regarding the oCoCP in its Relevant Representation [RR–162] including the need to maximise the use of the River Thames and the need for the PLA to be consulted on and approve documents which it has an interest in, including the CoCP. Good progress has been made in relation to the latter point and the PLA welcomes the updates that occurred in relation to the Schedule 2 Requirements and in particular Requirement 7 which now provides for consultation with the PLA where the CoCP relates to construction activities in the River Thames. The wording in the CoCP should be amended for completeness that the PLA is a consultee, in conjunction with the London Borough of Bexley on the full CoCP when this is produced by the appointed contractor."	Paragraph 1.2.3 of the Outline CoCP has been updated at Deadline 2 to provide for this.
Land		
REP1-039	9.5 As also noted during CAH1 and in the PLA's Relevant Representation [RR-162] the land over which full compulsory acquisition powers are sought in respect of the PLA's freehold interest include areas of the riverbed of the river and the foreshore. The PLA objects to the compulsory acquisition of its freehold interest and supports the inclusion of paragraph 61 of the PLA's protective provisions. Paragraph 61 specifically disapplies the compulsory acquisition or temporary possession of any interest in any Order Land which is vested in the PLA. Paragraph 61 also excludes the acquisition or extinguishment of any right in, on, or over, any Order land if the interest or right is at the time of the proposed acquisition vested in the PLA.	Agreed. With the Protective Provisions as written, the PLA's interests in respect of land matters are fully protected.

Doc ref	Summary of issue raised	Applicant's response
REP1-039	9.6 Discussions have commenced with the Applicant in relation to the lease arrangements for the permanent works. The PLA is awaiting a plan from the Applicant in order to progress matters further but notwithstanding this, the PLA would expect agreement to be reached by the close of the examination. Discussions have not yet started on arrangements for the temporary possession required by the Applicant and as set out in section 4 above, the PLA are unclear as to what works are envisaged to be undertaken within the area required for temporary possession within plot 2-006 and temporary works located within the authorised channel do not appear to have been assessed within the pNRA [AS-060].	The Applicant agrees with this and is working closely with the PLA to achieve it. However, as noted above, even if an Agreement is not reached by the end of Examination, the PLA's interests are protected within the draft DCO. Please see the response below in respect of the extent of temporary possession powers shown on the Land Plans.
REP1-039	10.9 (b) Paragraph 61 sub-paragraph a) requires minors change as shown in bold: "(a) nothing contained in Part 3 of this Order nor article 38 (statutory undertakers) authorises the acquisition of any interest in, or the acquisition, appropriation, interference, overriding or extinguishment of any right in, on or over, or the imposing of restrictive covenants in any Order land (including airspace and subsoil) if the interest or right or the land to be affected by the restrictive covenant is (at the time of the proposed acquisition, appropriation, interference, overriding, or extinguishment or the imposition of the restrictive covenant) the land, airspace, subsoil or a right which is vested in the PLA;"	These changes were captured in the **draft DCO (REP1-007)** submitted at Deadline 1.
REP1-039	"9.1 As noted during CAH1, there are a number of errors in the Book of Reference ("BoR") [AS-058]. These errors mistakenly identify the PLA as the freehold owner and/or occupier of land which is located above MHW and outside of the PLA registered title. The plots in question are 1-095; 1-101, 1-103, 1-113A, 1-117A and 2-002." "9.2 There are also plots within the BoR where the PLA is identified as a freehold owner and occupier. For the avoidance of doubt the PLA is not the owner of the works that are located within these plots: 1-110, 1-111, 1-116, 1-118, 2-003 and 2-005." "9.3 At plot 1-107 the PLA is the freehold owner of the riverbed at that location but not of the works mentioned."	Some of these changes have already been captured following feedback during CAH1 and submitted at Deadline 1. Following further discussions with the PLA, further updates have been made in the updated Book of Reference submitted at Deadline 2.
Navigation		
REP1-039	"5.3 Discussions are progressing with the Applicant on the pNRA. Whilst the PLA is broadly content with the main risk categories, scoring and the associated proposed mitigation measures, the PLA does not agree with the range of vessel passing speeds within the pNRA and the resulting effects of this on the conclusions reached within the pNRA. The PLA understands that the range of assumed vessel passing speeds included in the pNRA is based on the professional judgement of 'the proposed scheme mariner'. The speeds stated within the pNRA are not substantiated by any evidence and the PLA questions whether the assumptions and claims made in the pNRA in relation to this are therefore appropriate."	Two very senior PLA pilots with whom the project navigation adviser, Nash, has engaged during vessel simulations, have discussed that once a jetty is built and a ship is moored alongside, the passing speed adopted on a passing vessel should be appropriate to the passing vessel's size, draft and distance off, plus the nature (vulnerability) of the moored vessel and, to a lesser extent, the state of tide. This is no different to the action the passing vessels would take when passing any other vessel on the river, or in any other port, and is a common-sense reaction with due regard to professional levels of seamanship and judgement based on experience. The PLA pilots mentioned that, historically, a speed limit for passing moored gas tankers of 8 knots was applied at LNG tankers alongside at Canvey Island; a trade which has now ceased and the passing speed regulation is no longer required.

Doc ref	Summary of issue raised	Applicant's response
		As per the PLA bylaws, it is the duty of pilots/captains in passing vessels to control their speeds such that damage will not occur. Subsequently, pilots are expected to adapt their speed and position in the river according to the risks they perceive. Modifying the channel will inevitably lead to a change in pilot perception, reaction and decision making according to the new environment. The applicant has mitigated the impacts through design as detailed in the pNRA. It is a practical view from the two PLA pilots consulted and the Master Mariner advising the Applicant that, once a jetty is built with a LCO2 ship moored alongside, captain/pilots of passing vessels would naturally adopt an appropriate 'safe' speed estimated to be around 8 knots in line with the new environment they will perceive.
REP1-039	"5.4 In the absence of evidence of actual vessel passing speeds, the PLA has itself collected data, which shows that there are more vessels transiting past the jetty (and moored vessel) at above 10 knots than can be called 'rare', as the pNRA currently does. The PLA acknowledges that some of these passing vessels have a shallow draught, but the pNRA doesn't define what draught is considered 'safe' to pass at over 10 knots, both inbound (west) and outbound (east). As such, the PLA considers that additional work should be undertaken by the Applicant to consider passing distances from the proposed berth, draught effects on varying tides and what the evidenced base for genuine passing speeds for vessels in the Reach."	Defining a precise passing speed is difficult because there are rarely two situations the same. A small vessel in ballast would cause very little draw off effect and could pass quite safely at, say, 12 knots without slowing down, whereas a deep draft vessel passing close would be safer at, say 7 knots or 8 knots. It is anticipated that though shallow draught vessels may pass at greater speed, they will not necessarily produce the large passing forces associated with deeper draught vessels. The PLA has shared data on existing vessel speeds. The applicant will review this and identify which are likely to slow when passing a moored LCO_2 ship to discuss further with the PLA.
REP1-039	"5.6 The PLA's position continues to be that the design and construction of the proposed jetty and its associated infrastructure to safely moor vessels loading this cargo must be appropriate for the existing navigational conditions found in this Reach."	As per the PLA bylaws, it is the duty of pilots/captains in passing vessels to control their speeds such that damage will not occur. Subsequently, pilots are expected to adapt their speed and position in the river according to the risks they perceive. Modifying the channel will inevitably lead to a change in pilot perception, reaction and decision making according to the new environment. The applicant has mitigated the impacts through design as detailed in the pNRA.
REP1-039	"6.4 As noted above at paragraph 4.2.(a), the Applicant does not intend to undertake any dredging in the authorised channel and the limits of deviation have allowed for slumping associated with that dredging. Whilst there are general references to construction works and dredging within the pNRA, the only specific reference is in relation to the need for dredging being dependent on project vessel size. There is no mention of maintenance dredging other than when referring to how maintenance dredging on the adjacent Middleton Jetty might affect the project vessels alongside the proposed jetty. The risks, impacts and associated mitigations of any capital or maintenance dredging operations on navigation generally and within the authorised channel in particular, need to be thoroughly assessed within the NRA, which is required prior to marine construction works under Requirement 19 in Schedule 2 of the dDCO."	The Applicant has confirmed that dredging (during both construction and operation phases) would be by backhoe rather than water injection dredging, due to contaminations found at the Proposed Jetty location. The maintenance dredging assessment is therefore identical in terms of operations and risks to the capital dredging assessment. The risks, impacts and associated mitigation of both capital and maintenance dredging operations on navigation generally and within the authorised channel will be assessed within the NRA prior to marine construction works, pursuant to Requirement 19 of the **Draft DCO (updated alongside this submission)**.

Doc ref	Summary of issue raised	Applicant's response
Order Limits		
REP1-039	(4.2a) "The limits of deviation for Work No. 4C extend into the authorised channel. The Engineering Plans – Proposed Jetty Indicative Drawing [APP-017] shows dredge slopes extending to but not within the authorised channel. This accords with the Applicant's response to the PLA's Relevant Representation [AS-043] where it is stated in table 7-1 that it is the Applicant's intention to tie the dredged pocket to the authorised navigation channel and that their intention is [not] to undertake dredging itself within the authorised channel (although this cannot be completely ruled out at this stage) but the limits of deviation need to allow for any slumping that is associated with it".	As noted in its previous responses, the PLA will retain control of such operations pursuant to its Protective Provisions, and article 8 of the **Draft DCO (updated alongside this submission)** provides for no fetter on the PLA's activities in the navigation channel.
REP1-039	(4.2b) "The Land Plans [AS-052] show that plot 2-006 extends beyond Work No. 4C to the midpoint of the river. Schedule 10 Land of which temporary possession may be taken states that temporary possession of plot 2-006 may be taken to undertake Work No. 4 including temporary moorings". (4.4) "The PLA would argue that this direction has not been followed by the applicant. Whilst the Rochdale Envelope approach is acknowledged in PINS Advice Note 9 'Using the Rochdale Envelope', the Advice Note cautions "this element of flexibility is not to be abused." The PLA considers that the Applicant has applied an unnecessary degree of flexibility in the setting of the Order Limits." (4.5) The PLA further considers that if the Applicant requires temporary possession of the river extending beyond the most riverward extent of Work No. 4C, then they should provide more details on what reasonably might take place and that as a minimum, the preliminary Navigational Risk Assessment ("pNRA") [AS-060] should be updated and an assessment undertaken of temporary possession being taken of the authorised channel to the midpoint of the river. The PLA contends that, given the importance of the authorised channel and the need for it to remain unimpeded for vessels exercising the public right of navigation and the implications of placing moorings etc within the channel, the pNRA would be unable to demonstrate that what is proposed is as low as reasonably practicable ("ALARP") in terms of navigation and that it should therefore not be consented. The PLA therefore considers that as a minimum the Applicant should re-draw the Order Limits back to the edge of Work No. 4C.	The Applicant has developed the temporary possession extent within the river Thames on the basis of enabling sufficient room for the construction works to take place, whilst accounting for the constraints of existing operations in the area. In particular this includes accounting for: • dredging extent; • positioning of the barge bringing in material; • positioning and operations of a crane barge and/or jack up barge; • positioning of other small craft associated with the construction works, for example work boats; • positioning of dredger and other plant associated with dredging operations; • facilitating potential use of Middleton jetty providing construction vessels holding points and getting crew on and off; and • safe water areas for standby vessels. It also accounts for the practicalities of undertaking the different phases of the works: • for retaining wall installation and jetty construction: the use of anchored barges with feeding material barges; and • for dredging: allowing for backhoe dredging on anchored barges with feeding muck away barges. All of the barges referred to above will have anchor lines, with any anchors deployed being located in the riverbed that is owned by the PLA. At this stage of design, it is hard to estimate the footprint of the anchor lines and the extent of time that they will be in situ, as it will depend on the wave, current and wind climate during the operations, tidal levels, plant dimensions and overall construction programme. Given the location of the navigational channel to the location of where the Proposed Jetty and dredging will take place, the temporary possession extent therefore cater for the scenario where those anchor lines may need to be in the navigation channel, i.e. to cater for all eventualities of what might constitute temporary possession.

Doc ref	Summary of issue raised	Applicant's response
		All aspects of these matters will be able to be considered by the PLA in approving the construction methodology and design of Work No. 4 pursuant to their Protective Provisions.
REP1-039	3.4 Within the Order Limits there are a number of licensed works, varying in form and scale from the former Belvedere Power Station Jetty to campsheds (to enable barges to lie flat and level on the riverbed during low tide), pipes and bank stabilisation works. The PLA has shared historical information on the location and nature of these works with the Applicant. Discussions are ongoing in relation to the approach that the Applicant proposes to take to these works and the provisions included in the dDCO in Article 7 which deal with extinguishing and varying existing River Works Licences. 3.5 The elements of the drafting that continue to be discussed relate to the timing for the variation of any existing licences that are both inside and outside of the limits of deviation of Work No. 4 or are located wholly outside of the area of Work No. 4. The PLA believes that it and the Applicant agree that extant river works licences should not be extinguished or varied if the Applicant will ultimately not be interfering with the works. 3.6 An example of this relates to a campshed that is located within the Order Limits and a very small area of the campshed is located within the boundary of Work 4A. If this campshed is not to be impacted by Work 4A, the PLA considers that the extant licence should remain unaltered. The PLA and the Applicant have discussed amendments to Article 7 relating to this matter and these discussions continue. The PLA has also suggested to the Applicant that a very small amendment to the limits of deviation to work no 4 would remove the campshed from the scope of Article 7.	The Applicant does not propose to amend the Order limits at this time, to ensure that that the Proposed Scheme has the flexibility required for successful delivery. The Applicant has discussed the drafting of what is now article 8 in relation to this issue in advance of Deadline 2 and updated the drafting in the updated DCO that has been submitted at Deadline 2. This drafting seeks to reflect all the key points that the PLA wants to see within the article (and paragraph 46 of the Protective Provisions) and the vast majority of the drafting is agreed. As such, the PLA will consider this Deadline 2 drafting with the aim that any final tweaks are able to be agreed by Deadline 3.

Table 2-2-2 – Marine Management Organisation

Doc ref	Summary of issue raised	Applicant's response
DCO Drafting		
REP1-036	2.1 The MMO urges the Applicant to amend the term 'Licence Holder' to 'Undertaker' throughout the DML going forward.	As set out in its previous submissions, the Applicant does not intend to make this change as there needs to be a differentiation between the 'undertaker' for the purposes of the DCO as a whole, and the holder of the DML.
REP1-036	2.2 The MMO considers that following definitions should be included within the DML. "Local Planning Authority" "MCMS" "Notice to Mariners" "Percussive Piling" "Seabed" "Vessel" "HU60" "HU56".	Local Planning Authority is not used in the DML. MCMS is not used in the DML. Notice to Mariners is not used in the DML for the reasons stated below (item 2-2-3-7). HU60 and HU56 are not used in the DML. Given the nature of the MMO's comments generally, the Applicant would welcome proposals from the MMO as to definitions of "Percussive Piling" "Seabed" and "Vessel".

Doc ref	Summary of issue raised	Applicant's response
REP1-036	2.3 The address in section 2 (b) is currently incorrect. Details have been provided for the correct establishment.	This has been updated in the draft DCO submitted at Deadline 2.
REP1-036	2.4 Section 2, the following should be added - (3) Unless otherwise advised in writing by the MMO, MCMS must be used for all licence returns or applications to vary this licence.	Wording to this effect has been added to the draft DCO submitted at Deadline 2.
REP1-036	2.5 Request for coordinates be provided in Part 1 of the DM as this is standalone document and not covered by the Works Plans.	This is not required because the DML is integrated into the draft DCO so that it can be read alongside the DCO and the documents that are certified alongside it (including, for example, the **Outline CoCP (as updated alongside this submission)**). The definitions and the Works Plans have been updated to make the linkage clearer.
REP1-036	2.6 Piling – Request for the mitigation measures included for piling in the outline code of construction practice document and the mitigation set out in the 'Statutory nature conservation agency protocol for minimising the risk of injury to marine mammals from piling noise' to be included. Point 12, the MMO considers this condition is not detailed enough and we request the following conditions are added – • Between 1 March and 30 June (inclusive), in any given year, no piling of any type must take place in the water. • No piling of any type is permitted between sunset and sunrise each day. The times of sunset and sunrise should be set in accordance with HM Nautical Almanac Office data. • Soft Start requirements/vibro piling requirements There shall be at least a 20 minutes "soft start" period prior to the commencement of any piling and wherever possible the undertaker will use vibro-piling methodology whilst it is recognised that percussive piling may be required to drive the piles to their ultimately required depth.	The controls in the **Outline CoCP (as updated alongside this submission)** do not need to be added to the DML because condition 9 of the DML requires that licensed activities must be carried out in accordance with the full code of construction practice approved under the DCO Requirements. The **Outline CoCP** (**as updated alongside this submission)** provides for the matters raised here by MMO.
REP1-036	2.7 MMO request a notice to mariners be added to the DML.	The Applicant does not repeat its response made at line 7.2.23 of its **Response to Relevant Representations (AS-043)** except to say that this is not needed for the reasons stated in that response. The MMO has not indicated why this response is not sufficient.
REP1-036	2.8 MMO request a notice regarding pollution and spills be added to the DML.	The Applicant does not repeat its response made at line 7.2.20 of its **Response to Relevant Representations (AS-043)**. The additional text in the MMO's submission is provided for by cross references to the rest of the DML in the Applicant's version of the text. Sub-para (4) suggested by the MMO is not required as DML condition 9 already requires compliance with the approved code of construction practice, which, pursuant to Requirement 7, already provides for a pollution prevention plan to be developed.
REP1-036	2.9 MMO request a notice regarding Marine Written Scheme of Archaeological Investigation be added to the DML.	The Applicant does not repeat its response made at line 7.2.16 of its **Response to Relevant Representations (AS-043)** except to say that this is not needed for the reasons stated in that response. The MMO has not indicated why this response is not sufficient.

Doc ref	Summary of issue raised	Applicant's response
REP1-036	2.10 MMO request a condition regarding the Marine Noise Registry be added to the DML.	The Applicant does not repeat its response made at line 7.2.12 of its **Response to Relevant Representations (AS-043)** except to say that this is not needed for the reasons stated in that response. The MMO has not indicated why this response is not sufficient.
REP1-036	2.11 MMO request a notice regarding a CEMP be added to the DML.	The Applicant does not repeat its response made at line 7.2.11 of its **Response to Relevant Representations (AS-043)** except to say that this is not needed for the reasons stated in that response. The MMO has not indicated why this response is not sufficient. The DML forms part of the DCO so should not be treated as a separate document and should not be duplicating controls that already exist within the DCO.

Table 2-2-3 – Thames Water Utilities Limited

Doc ref	Summary of issue raised	Applicant's response
DCO Drafting		
REP1-057	4.2 However, not all of the part of the TWUL owned LNR is required for the Project, nor is it incidental to or required to facilitate the Project. As set out in the LaBARDS, the part of the TWUL-owned LNR which is not required for ducting is not needed for mitigation: the Applicant only proposes to 'enhance' it. Given that this land is already subject to an ongoing nature conservation and management obligation, pursuant to the 1994 Agreement, TWUL is not convinced the land necessarily requires enhancement, nor is it required to mitigate the impact of the Project in planning terms. As such, it is not clear what the compelling case in the public interest is for the land to be acquired compulsorily and TWUL therefore does not consider the requirements of section 122 of the 2008 Act are satisfied. 4.3 Additionally, in light of the representations set out above in respect of the East Zone assessment, TWUL considers there is a viable alternative site which could be acquired from a willing seller. This would negate the requirement for the compulsory acquisition powers sought by the Applicant, particularly in relation to the loss of the MOL-designated East Paddock and Stable Paddock.	The Applicant has set out in its application documentation, Response to Relevant Representations, its Deadline 1 submissions, and the responses to the Terrestrial Biodiversity and Optioneering themes in this document that: • the TWUL owned sections of the LNR are either required for the Proposed Scheme (the East Paddock), for mitigation or enhancement proposals, or to ensure that a consolidated management expanded Crossness LNR is able to be developed. The Applicant's compulsory acquisition proposals ensure that the LaBARDS is able to be delivered; and • the chosen South Zone 1 and its layout are appropriate for the Proposed Scheme and that the East Zone is not a viable alternative site. Given Schedule 1 and Requirement 12, there can be no doubt that the TWUL land is required for the Proposed Scheme. The compulsory acquisition tests in section 122 of the Planning Act 2008 and the tests set out in guidance are therefore clearly met.
REP1-057	5.1 TWUL affirms the Applicant's confirmation at the examination hearings that the STW emergency access is operational land, used for the purposes of the STW. As such, section 127 of the 2008 Act is engaged, i.e. the development consent order may only include provision authorising the compulsory acquisition of the access if the Secretary of State is satisfied that: 5.1.1 the access can be purchased and not replaced without serious detriment to the carrying on of the undertaking; or	The Applicant can confirm that (a) the necessity of diverting the TWUL Access Road is not yet confirmed and will not be known during the Examination period and that (b) any design for diverting the TWUL Access Road will not be known during the Examination period. As such, the protection for TWUL comes from paragraph 39 of their Protective Provisions, which provides that the TWUL Access Road cannot be diverted until TWUL has approved the details of any diversions and that access rights to use it are granted on terms pursuant to TWUL.

Doc ref	Summary of issue raised	Applicant's response
	5.1.2 if purchased, the access can be replaced by other land belonging to, or available for acquisition by, TWUL without serious detriment to the carrying on of TWUL's undertaking. 5.2 At this stage TWUL is unable to make an assessment as to the level of impact acquiring the access will have on TWUL's operations, as the Applicant has not provided any firm proposals for an alternative access. TWUL will therefore continue to object to the compulsory acquisition of the access until such time as it is satisfied the Applicant is able to provide an acceptable alternative.	These terms ensure that no serious detriment can be caused to TWUL's undertaking and reflect the standard approach in DCOs that statutory undertaker interests are protected through Protective Provisions.
REP1-057	7.1 Article 51 of the draft development consent order includes that the Applicant or the local planning authority may make byelaws in respect of the Crossness LNR. 7.2 Requirement 12 of the draft order requires the Applicant to submit the detailed LaBARDS to the LPA prior to commencement of development of the Project and not to commence until the detailed LaBARDS has been approved. 7.3 In both cases, TWUL is concerned that is currently has no involvement in either the byelaws or the LaBARDS. Given that TWUL is being asked by the Applicant to manage the LNR in accordance with the approved detailed LaBARDS (pursuant to the proposed planning agreement), TWUL considers it necessary to also be given the power to make byelaws and to be involved in the design of the detailed LaBARDS. TWUL has engaged with the Applicant on the latter point (and will continue to do so) and will also propose amendments to article 51 in due course.	In respect of the LaBARDS, TWUL were added as a consultee in the **Draft DCO (REP1-002)** submitted at Deadline 1, albeit noting that the Outline LaBARDS and the Deed of Obligation approach already set out that the Applicant had already provided for TWUL to play a key part in the development of the proposals for the expanded Crossness LNR. In respect of article 53 (what was article 51), the DCO has been updated at Deadline 2 to provide for TWUL to be consulted prior to the making of any byelaws. It is also noted that TWUL could ultimately object to any byelaws pursuant to the procedures in the Local Government Act 1972 or the Byelaws (Alternative Procedure) (England) Regulations 2016.

Table 2-2-4 – London Borough of Bexley (responding to suggestions in the Track Changed DCO provided by LBB)

Doc ref	Summary of issue raised	Applicant's response
DCO Drafting		
REP1-033	Seek to amend article 17(3) (what was 15(3)) to read : "*The undertaker may, in connection with the authorised development and subject to the relevant highway agreement, construct new public footpaths…"*	This provision is not required. The construction of new footpaths cannot happen until LBB has approved the detailed LaBARDS pursuant to article 17(4). The detailed LaBARDS will provide for the detailed routing and surfacing of the footpath, as well as maintenance obligations. Article 17(7) and (8) deal with the legal requirements for the footpath to be created legally. In any event, even in the non-DCO setting, footpaths are not dealt with by a 'highways agreement', if what is meant by this is a section 278 Agreement.
REP1-033	Seek to amend article 18(1)(a) (what was 16(1)a)) to read: *"The undertaker may for the purposes of the authorised development—* *(a) with the approval of the highway authority, form and layout temporary and permanent means of access from Norman Road in the London Borough of Bexley between the points E and K on the access and rights of way plan."*	This is not agreed. The Applicant's approach is that works to create accesses off of Norman Road north of the junction with the Lidl/Asda/Iron Mountain Access Road only have an impact on Cory operations, as it is only Cory operations which use that stretch of Norman Road. It is also in Cory's interest that that part of Norman Road, and accesses off of it, are in a fit state to support those operations, including HGV usage, and so will

Doc ref	Summary of issue raised	Applicant's response
		ensure that such works are undertaken to a sufficient standard. There is therefore no need for local highways authority oversight of such works.
REP1-033	Requirement 8: Seek a change to construction working hours to 8am to 6pm Monday to Friday and 8am to 1pm on a Saturday.	This is not agreed. The Applicant's proposed working hours are set as was approved on the Riverside 2 DCO. The Applicant sees no reason why the hours successfully applied to that project should be different for the Proposed Scheme. See also the response at **Table 2-3-2** below.
REP1-033	Requirement 15 (skills and employment plan): Seek the addition of a new sub-paragraph (2): "*The skills and employment plan must include measures to enable residents of the London Borough of Bexley to have opportunities to be employed and to access any skills and training for the construction phase of the development.*"	At Deadline 2, the Applicant has submitted alongside this report an Outline Skills and Employment Plan which enables these outcomes to be achieved. Requirement 15 has therefore been updated in the draft DCO submitted at Deadline 2, to provide that the skills and employment plan submitted to LBB (now to be pre-commencement, rather than pre-commissioning) must be in substantial accordance with that outline plan.
REP1-033	Requirement 25 (heat strategy): Seek addition of new sub-paragraph (2)(e): "*The heat strategy must demonstrate that the development does not conflict with the details approved in relation to condition 31 of planning permission 16/02167/FUL (details approved under planning ref. 16/02167/FUL02) and Requirement 24 of the REP Order.*"	This wording is not required, as it may in fact be the case that the strategy necessitates the overall heat strategy approach on the Riverside Campus to differ from what was previously planned. The Applicant has instead updated sub-paragraph (3) and (4) so they read as follows: (3) The heat strategy submitted, and the relevant planning authority approval ~~approved~~ under sub-paragraph (1) must not ~~does not need to~~ require the undertaker to repeat actions already undertaken pursuant to— (a) Requirement 24 (combined heat and power) of the REP Order; (b) any document produced pursuant to Requirement 24 of the REP Order; (c) condition 31 of planning permission 16/02~~21~~167/FUL relating to Riverside 1 issued by the London Borough of Bexley; (d) condition 31 of the consent issued under section 36C of the Electricity Act 1989 in respect of Riverside 1 dated 17 December 2021; (e) any condition of planning permission 22/00728/FUL issued by the London Borough of Bexley; and (f) any document produced pursuant to the Requirements and conditions referred to in sub-paragraphs (a) to (e). (4) The heat strategy must be implemented as approved and such implementation does not constitute a breach of the documents, conditions and Requirements referred to in sub-paragraphs (1)(a)-(f).

Table 2-2-5 – National Highways

Doc ref	Summary of issue raised	Applicant's response
DCO Drafting		
REP1-037	National Highways propose amendments to the DCO to ensure that they are consulted on the Construction Traffic Management Plan.	The Applicant can confirm that National Highways are included in the current DCO wording regarding their role with the Strategic Road Network. The wording of the DCO Requirements is considered to achieve what National Highways have requested.

Table 2-2-6 – Environment Agency

Doc ref	Summary of issue raised	Applicant's response
DCO Drafting		
REP1-035	"The protective provisions included within the draft development consent order are not acceptable to the Environment Agency. We expect to enter into discussions with the applicant seeking to agree protective provisions. Schedule 3 of the dDCO seeks to disapply (c) Metropolis Management (Thames River Prevention of Floods) Amendment Act 1879(c) and (k) Thames Barrier and Flood Prevention Act 1972(k); and replace it with bespoke Article 6(2). We are reserving our position on whether to accept those disapplications until and unless we agree the protective provisions. We expect to have a new standard set of Environment Agency proposed protective provisions available shortly"	The Applicant awaits comments on the draft Protective Provisions, but as it has based them on previous project experience with the Environment Agency, hopes that these will be able to be resolved quickly.
REP1-035	"We request that requirement 12 should be modified to include a lighting strategy and for mitigation-with particular reference to Water Vole habitat. We would strongly encourage the applicant to draw up proposals to utilise one of the redundant/retained piers to create an ecological niche area. The structure could additionally be enhanced with timbers and/or fish refugia."	No lighting is proposed in the Mitigation and Enhancement Area. Requirement 11 already provides for a Lighting Strategy to be submitted and approved, in substantial accordance with the **Outline Lighting Strategy (APP-123)**. That Outline strategy provides for the detailed lighting strategy to be cognisant of the ecological constraints of the site. The EA's comments with regards to the piers are noted. The Applicant will consider this as part of its overall considerations of the approach to the Belvedere Power Station Jetty (disused), in developing the 'jetty works environmental design scheme' required to be approved, in consultation with the Environment Agency, under Requirement 14.

Table 2-2-7 – Save Crossness Nature Reserve

Doc ref	Summary of issue raised	Applicant's response
Compulsory Acquisition		
REP1-047	162. Regarding the first aspect of this test, acquisition of the MEA is not required for the development. The meaning of the word "required" was considered by the Court of Appeal in Sharkey and Another v Secretary of State for the Environment and South Buckinghamshire District Council (1992) 63 P. & C.R. 33216. McGowan LJ giving the leading judgment endorsed the approach taken by Roch J and stated: "I agree with Roch J. that the local authority do not have to go so far as to show that the compulsory purchase is indispensable to the carrying out of the activity or the achieving of the purpose; or, to use another similar expression, that it is essential. On the other hand, I do not find the word "desirable" satisfactory, because it could be mistaken for "convenient," which clearly, in my judgment, is not sufficient. I believe the word "required" here means "necessary in the circumstances of the case." (emphasis added).	In the Applicant's **Written Summary of its Oral Submissions at CAH1 (REP1-028)**, the Applicant has set out why compulsory acquisition of the Mitigation and Enhancement Area is required both generally and in the circumstances of the case.

Doc ref	Summary of issue raised	Applicant's response
REP1-047	163. Firstly, Compulsory acquisition of the MEA is not necessary in the circumstances of the case. Mitigation and enhancement can be achieved without compulsory acquisition. Crossness Nature Reserve is Statutory Undertakers' land (discussed more below) and Thames Water (TW) are bound by a s.106 agreement to maintain and enhance the nature reserve (again, discussed more below). Peabody, as owners of Norman Road Field, are bound by the separate s.106 agreement and broader planning controls set out above – in fact, if these controls were enforced they would already achieve a very similar standard to the Proposed Scheme. There is no reason why the Applicant cannot seek to amend these existing s.106 agreements as opposed to compulsorily purchase the land. Alternatively, TW and Peabody could enter into new s.106 agreements. The Applicant's approach already involves TW doing so in relation to the members area, and TW's obligations could simply extend to all the remaining Crossness Nature Reserve land, leaving compulsory acquisition unnecessary. In the same way compulsory acquisition of Thamesmead Golf Course is not necessary to secure the BNG proposals, compulsory acquisition is not necessary for the MEA. 166. Fourthly, the Applicant seeks to bolster its position saying that compulsory acquisition is needed in order to ensure certainty of delivery. This argument does not assist the Applicant because the s.106 agreement route to delivery would provide sufficient certainty of delivery. This is because s.106 agreement are enforceable agreements. Further, even on the Applicant's proposed route (acquisition but continued management by TW), TW cooperation is still necessary. It's not clear what Applicant would do if TW no longer complied. Consequently, there is no certainty that the land would be managed appropriately through compulsory acquisition, which in turn raises significant concerns over the long-term maintenance of the nature reserve. There is no suggestion from the Applicant that it would be able to manage the land itself	As set out in **REP1-028,** under the DCO, the Applicant is ultimately responsible for delivery of the expanded Crossness LNR and the detailed LaBARDS, and so must ensure that it has the ability to deliver on those commitments. It could not simply 'expand' existing section 106 obligations/create a new section 106 to secure delivery of the proposals, as it cannot require TWUL to enter into any Agreement, and TWUL has no obligation to enter into it. Given that section 106s bind on landowners, TWUL would therefore have ultimate responsibility for compliance, which (a) it would not want, and (b) would not be acceptable to the Applicant given that it is seeking to mitigate and compensate for the impacts of its own scheme and would mean that would be facing an enforcement gap (i.e. it could be enforced against by failures of another party). Furthermore, requiring delivering of the LaBARDS to be secured by section 106 rather than DCO Requirement would run contrary to the general policy imperative that matters should only be secured by section 106 "*where it is not possible to address unacceptable impacts through a planning condition*" (NPPG on Planning obligations). As noted at CAH1, the Applicant does not rely on the inclusion of the Member's Area that is within TWUL's fenceline to demonstrate the effectiveness or robustness of its LaBARDS proposals. If that area is able to be managed in a cohesive fashion, that would be positive, however, the Applicant recognises that TWUL may not agree, and it cannot force TWUL to do so. As such, the Applicant's approach will adapt if TWUL indicate that they do not agree. This exemplifies, however, why a section 106 only approach cannot be relied upon for the overall delivery of the LaBARDS. As set out in **Appendix F** to the Applicant's **Written Summary of its Oral Submissions at CAH1** (**REP1-027**), the section 106 Requirements over Peabody no longer subsist, so commitments on Norman Road Field will need to be 'new' arrangements. Please see **REP1-028** for further discussion of this point. Finally it is noted that the approach to Thamesmead Golf Course is different because it is offsite, is primarily for BNG purposes, and that there is a need to be flexible as to the delivery of what is secured offsite if the timescales for delivery of the works at the golf course do not align with the programme for the Proposed Scheme.
REP1-047	164. Secondly, the reason the Applicant seems to suggest that compulsory acquisition is required is that it would be messy, and it would be desirable to have a clear simple regime. Respectfully, the Applicant is misapplying the test. As per the Sharkley case quoted above, the test concerns necessity, not mere desirability. 165. Thirdly, the Applicant seems to suggest that there is need for "certainty" and to avoid any unknown agreements appearing at a later stage in the process. This argument is flawed. Again, this argument seems be based in desirability rather than whether it is required/necessary (contrary to the statutory test). Additionally, this argument doesn't make sense, because compulsory acquisition would not override any existing s106 rights	The Applicant does not consider that there is a dichotomy between certainty and necessity. The 'certainty' being referred to is not just relevant to the Applicant being certain that it is able to deliver without impediment, but also the Secretary of State, and post-consent LBB. The MEA is a core part of the Proposed Scheme, necessary to mitigate impacts. In order for it to be taken into account in decision making, there needs to be certainty that those mitigations are deliverable.

Doc ref	Summary of issue raised	Applicant's response
	without expressly abrogating them. The s.106 rights cannot be abrogated without first having knowledge of them. Thus, the risk of any unknown planning obligations is the same in either scenario.	
REP1-047	167. Regarding the second condition which must be satisfied, there is no compelling case in the public interest pursuant to Section 122 (3) of the Planning Act 2008. When considering a compelling case in the public interest, the Planning Act requires compliance with the Human Rights Act 1998. This especially refers to Articles 1 and 8 of the European Convention on Human Rights, which safeguard the peaceful enjoyment of possessions and respect for private and family life. The Examiner will also be aware of the Grazier's who have protected characteristics under the Equality Act 2010 (namely race).	The Applicant has clearly made out the compelling case in the public interest for the compulsory acquisition of land, including accounting for balancing that case against human rights and equalities considerations, in its **Statement of Reasons (APP-020)**, **Response to Relevant Representations (AS-043)**, and its **Written Summary of Oral Submissions at CAH1** and its Appendices (**REP1-028)**.
REP1-047	168. The Guidance provides further clarification on these statutory requirements, emphasising the need for detailed justification for each parcel of land and the importance of negotiating with landowners to avoid compulsory acquisition where possible.	The Applicant has provided detailed justification for each parcel in its **Schedule of Negotiations and Powers Sought (APP-023)**, supplemented by its Examination submissions.
REP1-047	169. The Examining Authority will be conversant with R. (FCC Environment) v SSECC [2015] Env L.R. 22, in which the Court of Appeal considered the effect of the compulsory acquisition provisions. Examples of where compulsory acquisition may not be justified despite the project being supported by a national policy statement include (see FCC at [11]): a. Where the land sought to be acquired exceeds what is necessary to construct the proposal; b. The acquisition of a more limited right, rather than the entire land, would suffice; c. The owner is willing to agree to a sale and accordingly it is unnecessary to compel him to do so; d. Where, despite the relevant NPS not requiring the consideration of alternative sites for the purposes of deciding whether to grant development consent, the existence of an alternative would be relevant for the purpose of deciding whether there was a compelling case in the public interest for compulsory acquisition.	The Applicant has clearly set out that the land it seeks to acquire is required. In particular: • the **Works Plans (as updated alongside this submission)** set out the amount of land that is required for each aspect of the Proposed Scheme; • this is supported by the **Indicative Equipment Layout Drawing (AS-054)**. Although not a secured document, this sets out the vast array of infrastructure required to develop the Carbon Capture Facility; • the **Statement of Reasons (APP-020)** sets out the philosophy of the approach to powers requires for each type of work; • the outline **LaBARDS (REP1-012)** sets out the proposals for the Mitigation and Enhancement Area; • the **Schedule of Negotiations and Powers Sought (APP-023)** sets out plot by plot requirements; • the Applicant's Examination submissions have further explained what is required, why compulsory acquisition is required, why lesser powers would not suffice and why South Zone 1 is the appropriate place for the Proposed Scheme to be located; • equalities considerations are set out at **Appendix A** of **Written Summary of Oral Submissions at CAH1 (REP1-028)** which confirm that there would not be a detriment to the graziers in land or health terms; and • the response to the Deadline 1 submission of Munster Joinery/Landsul, submitted also at Deadline 2, which defends and justifies the extent of the Carbon Capture Facility to demonstrate that it is not excessive.
REP1-047	170. In respect of these points: a. The land sought to be acquired exceeds what is necessary to construct the proposal; b. As stated above, a s.106 agreement would give the Applicant sufficient rights over the land and therefore it is unnecessary to compulsory purchase the land; c. The Applicant is required to consider alternative sites and there are better alternative sites for this development.	
REP1-047	171. Further, the Grazier's and local residents' particular circumstances mean that the use of powers of compulsory purchase are unjustified because: a. The detrimental consequences on the functionality as a grazier; b. The adverse impact on the ability of	

Doc ref	Summary of issue raised	Applicant's response
	the Grazier's to enjoy the land; c. The adverse impact on the residents ability to enjoy the land; d. The adverse impact on health (including mental) and welfare of those impacted.	The Applicant is therefore confident that it meets the tests set out in FCC Environment and that compulsory acquisition is justified.
Section 127 Planning Act 2008 – Statutory Undertakers' Land		
REP1-047	173. TW own the land as statutory undertakers and operate the land as statutory undertakers. This land is necessary to TW to render the sludge incinerator acceptable in planning terms. This means that the nature reserve is inherently linked to and part of TW's operations. Further, TW are under obligations under a s106 agreement to maintain and enhance the nature reserve. They are under statutory duties to further conservation and enhancement of natural beauty and conservation of flora and fauna (s.3 Water Industry Act 1991), and to have regard to conserving biodiversity (s.40 Natural Environment and Rural Communities Act 2006). 174. SCNR's understanding is that TW hold the land for the purposes elucidated in the above paragraph. However, even if it were the case that TW hold this land solely for the purposes of the s.106, this is irrelevant and would not overcome the s.127 issue. Neither of the s.127 conditions apply because (s.127(3)): a. The land cannot be replaced without serious detriment to the carrying on of TW's undertaking; and b. there is no other land that can be acquired by Thames Water to carry out this specific function, especially when the unique status of the nature reserve land is taken into account. 175. For the avoidance of doubt, if either subsections (a) and (b) in the above paragraph (which mirror those in s.127(3) Planning Act 2008) apply, the acquisition of land is prevented. The suggestion that acquisition would nullify TW's s.106 agreement obligation is based on flawed logic. First, the s.106 agreement which places obligations on TW and still serves a purpose and TW act in order to maintain and enhance the nature reserve to this date. This is not an obligation that can simply be bought out. Secondly, If the Applicant's position were correct, this would defeat the very purpose of s.127 of the Planning Act 2008.	The Applicant does not agree that the Crossness LNR is held for the purposes of TWUL's statutory undertaking, but acknowledges that its access road does constitute such land. Whilst TWUL does have the statutory duties referred to, that in of itself does not mean the Crossness LNR land is 'statutory undertaker's land'. These are general duties held by TWUL overall, and do not bite on specific pieces of land. The land is held by TWUL to meet obligations under section 106, and no other purpose. As set out in the **Statement of Reasons (APP-020)** even if this is not agreed and Crossness LNR was considered to be statutory undertaker's land, there is no 'serious detriment' to TWUL's undertaking arising from the Proposed Scheme. Without the DCO, the only 'detriment' would be TWUL's ability to comply with the section 106 and being enforced against for failing to comply. The drafting of the DCO ensures that this cannot be the case. The Applicant does not argue that compulsory acquisition, by itself, prevents that detriment arising – it is the DCO that does that. The consequences of the powers in the DCO need to be seen as a whole. Finally, it is noted that section 127 is only engaged where a statutory undertaker submits a representation which states that it considers a serious detriment is caused as a consequence of the powers proposed. TWUL has not done so for the Crossness LNR land.
REP1-047	176. The suggestion that acquisition would nullify TW's s.106 agreement obligation is based on flawed logic. First, the s.106 agreement which places obligations on TW and still serves a purpose and TW act in order to maintain and enhance the nature reserve to this date. This is not an obligation that can simply be bought out. Secondly, If the Applicant's position were correct, this would defeat the very purpose of s.127 of the Planning Act 2008.	
REP1-047	177. In conclusion, s.127 applies in relation to the Proposed Scheme. S.127 prevents the compulsory purchase of the land. The impact of s.127 cannot simply be overcome by	

Doc ref	Summary of issue raised	Applicant's response
	purchasing the land, which would be contrary to the s.106 agreement currently in place and the purpose of s.127.	
S.131 Planning Act 2008 – Special Category Land		
REP1-047	178. (…) The bird hide and wildlife viewing screens show how the inaccessible areas are used for recreation – they have been carefully designed to allow for viewing and enjoyment of wildlife without disturbing it (and for visitor safety). Consequently, the Applicant's case that "recreation" means that the land must be "publicly accessible" (seemingly in a physical sense) is wrong. 179. As such, SCNR's case is that s.131 Planning Act 2008 applies as the Proposed Scheme impacts on special category land and the applicant needs to satisfy the requirements of this section. 180. Special parliamentary procedure will apply in such cases unless the Secretary of State is satisfied that one of the following circumstances applies: a. replacement land has been, or will be, given in exchange for land being compulsorily acquired (sections 131(4) or 132(4)); b. the land being compulsorily acquired does not exceed 200 square metres in extent or is required for specified highway works, and the provision of land in exchange is unnecessary in the interests of people entitled to certain rights or the public (sections 131(5) or 132(5)); c. for open space only, that replacement land in exchange for open space land being compulsorily acquired is not available, or is available only at a prohibitive cost, and it is strongly in the public interest for the development to proceed sooner than would be likely if special parliamentary procedure were to apply (sections 131(4A) or 132(4A)); d. for open space only, if the land, or right over land, is being compulsorily acquired for a temporary purpose (sections 131(4B) or 132(4B)). 181. None of the circumstances outlined immediately above apply in this case. 182. Pursuant to R. v Secretary of State for the Environment (1986) 52 P. & C.R. 318, the burden is on the Applicant to establish the test for compulsory purchase has been met and the compulsory purchase order can be properly made. Additionally, it is the duty of the Applicant to lay the information and evidence that is required to demonstrate the test is met. 184. Even if the Examiner were to consider the issue to be evenly balanced, the Examiner should come down against compulsory acquisition, in accordance with Prest v Secretary of State for Wales [1983] 1 WLUK 416, which is authority for the following propositions:	The Applicant notes that the special category land definition in section 131 of the Planning Act 2008 refers to the definition of open space in section 19 of the Acquisition of Land Act 1981, which is "*land laid out as a public garden, or used for the purposes of public recreation, or land being a disused burial ground*". In statutory terms, land that is fenced off and inaccessible unless you have the code/key to access the gates, cannot be considered to be for the purposes of 'public' recreation. The Applicant has acknowledged that the Non-Accessible Open Land has value in planning terms, and considered this in the TVIA chapter of the ES. However, that land is not Special Category Land for Planning Act 2008 purposes. The Applicant has acknowledged the existence of Special Category Land within the Order limits. In the **Statement of Reasons (APP-020),** and as discussed at CAH1, the Applicant has made its case that section 131(4A) clearly applies. The Applicant considers that there is no doubt that there is a compelling case in the public interest for the Applicant's compulsory acquisition proposals.

Doc ref	Summary of issue raised	Applicant's response
	a. where the scales are evenly balanced then the decision should come down against compulsory acquisition; b. the deprivation of an interest in land against the citizens' will is only lawful if the public interest decisively so demands; and c. if there is any reasonable doubt on the matter, the balance must be resolved in favour of the citizen.	

2.3 EMISSIONS

Table 2-3-1 – Individual Interested Parties

Doc ref	IP Name	Summary of issue raised	Applicant's response
REP1-067	Margaret White	Air Quality: Concerns raised regarding PM2.5 emissions.	The air quality assessment undertaken, presented in **Section 5.8** of **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)**, has shown that, with appropriate mitigation measures (both embedded and additional mitigation), the residual impact of $PM_{2.5}$ will not lead to a significant effect on human health.
REP1-067	Margaret White	Air Quality: Concerns raised regarding effects on human health from poor air quality in an already heavily polluted area.	As shown in **Table 5-46** of **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)**, the maximum impacts to air quality combined with the background concentrations (the PEC) are well within the statutory air quality standards. As a result, it is unlikely that there will be any significant effect on human health.
REP1-067	Margaret White	Air Quality: Concerns raised regarding the potential for long lasting pollutions to be uncovered when the Proposed Scheme is operational.	The Environmental Permitting process will identify and control all pollutants of concern, including any that may be persistent in the environment. During the operation of the Proposed Scheme, the plant will be subject to continuous monitoring of stack emissions, a standard requirement of the Environmental Permit. It is important to note that emissions of pollutants from the combustion process at the Site, including dioxins and furans that are persistent within the environment, will either be reduced or unchanged by the addition of the Carbon Capture Facility. Furthermore, the carbon capture process itself has not been identified as a source of additional persistent organic pollutants.
REP1-065	James Hewitt	Air Quality 3.1 – It would be helpful if the Applicant lists - in a single, clear table - credible estimates of the flow of CO_2 of not only constructing and operating the proposed works, but also the "do nothing" counterfactual. 3.2 - The latter would reflect the net sequestration of unpaved land and the loss of sequestration and soil carbon pertaining to earth brought into the site (to raise or leave the land or form embankments).	The presentation of Greenhouse Gas (GHG) emissions in **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)** is consistent with the reporting structure for environmental topic chapters across the ES, i.e. separating out the GHG emissions for the Baseline "do nothing" counterfactual (within **Table 13-7** of **Section 13.6**), the construction phase (within **Table 13-8** of **Section 13.8**) and the operation phase (within **Table 13-10** of **Section 13.8**) of the Proposed Scheme. To assist the analysis, summary GHG emissions for the baseline, the construction phase and the operation phase are presented together in a single table: **Table 13-11** in **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. For clarity, **Table 13-11** also provides cross-references to the breakdowns provided in **Table 13-7, Table 13-8** and **Table 13-10**. The potential change in sequestration of CO_2 attributable to changes in land use for the Proposed Scheme is accounted for in the GHG emissions presented in **Table 13-8** for the construction phase (Land use, Land Use Change And Forestry (A5)) and **Table 13-10** for the operation phase (Land use, Land Use Change And Forestry (B6)). Together they represent <0.1% of the total GHG emissions attributable to the Proposed Scheme. With regard to soil imported to the Site, sequestration of CO_2 would depend on the type of land use for the source of the soil, which is unknown. However, the embodied carbon for topsoil imported to the site has been accounted for in the GHG emissions presented in

Doc ref	IP Name	Summary of issue raised	Applicant's response
			Table 13-8 for the construction phase (Product Stage (manufacture and transport of raw materials to suppliers) (A1-3)).
REP1-065	James Hewitt	Greenhouse Gases 3.3 The former should reflect the probability that the proposed works will not achieve anything like the carbon capture rate specified by the Applicant. Such a capture rate would be less than the minimum required to meet the UK's Net Zero by 2050 target. 3.4 The former should also include the additional CO_2 emissions which would occur at power stations elsewhere in order to compensate for the decline in the amount of electricity which Riverside 1 and 2 dispatch when operating the proposed works. There would be no such decline in the 'do-nothing' counterfactual. Thoe additional emissions would of course need to be abated (requiring more generation etc). Given their primary purpose is to burn waste, it is more likely that Riverside 1 and 2 dispatch electricity as baseload than intermittently.	The Carbon Capture Facility will be designed to capture at least 95% of the emissions of carbon dioxide from Riverside 1 and Riverside 2 and it will be operated under an Environmental Permit. The Environmental Permit will control the capture rate. Furthermore, it is noted that Government supports Carbon Capture infrastructure as a critical national priority that is a necessity, not an option, to deliver Net Zero. It is for the National Grid to balance the electricity generation mix for the UK, and it is not within the scope of the GHG assessment to identify how it would compensate for electricity no longer exported from Riverside 1 or Riverside 2. With a decarbonising grid, it cannot be assumed that there would be any 'replacement' by, for example, CCGT. It would also not be possible to reasonably assess what the replacement of any such exports would involve, which would add significant uncertainty to the GHG assessment. Due to the scale of UK grid decarbonisation by the time the Proposed Scheme becomes operational (2031), it is considered that compensation of electricity exported by Riverside 1 and Riverside 2 would not change the beneficial impact identified for the Proposed Scheme. The purpose of Riverside 1 and Riverside 2 is to turn London's waste into low-carbon electricity. Both Riverside 1 and Riverside 2 (once operational) will generate electricity continually, providing baseload – with Riverside 1 generating enough low carbon electricity to power 160,000 homes and Riverside 2 generating enough low carbon electricity to power 176,000 homes each year.
REP1-065	James Hewitt	Greenhouse Gases 3.5 The 5% or more of the post-combustion CO_2 from Riverside 1 and 2 which the Applicant does not plan to capture in the proposed works will make the Applicant one of the UK's leading net emitters of CO_2.	The GHG assessment is presented in **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. The purpose of the GHG assessment for the EIA is to evaluate the change in emissions attributable to carbon capture activities of the Proposed Scheme relative to a baseline without the Proposed Scheme. The CO_2 emissions not captured do not represent additional GHG emissions attributable to the Proposed Scheme, as these would be released to the atmosphere from Riverside 1 and Riverside 2 without the Proposed Scheme. The CO_2 emissions not captured by the carbon capture process are accounted for in the GHG assessment, which demonstrates there would be a significant overall saving in GHG emissions entering the atmosphere relative to the baseline without the Proposed Scheme, which is a beneficial impact for the climate.
REP1-065	James Hewitt	Disposal 3.6 The price which the Applicant assumes it would be obliged to pay the shipping enterprise which transports the CO_2 to sites for permanent disposal as may then be available would presumably change if demand	The Applicant is a member of the Viking CCUS cluster consortium and intends to transport liquid CO2 by ship for permanent sequestration in the Viking store, as/when the project is selected for development as part of the DESNZ Track 2 process. There is no intention to transport CO2 by pipeline, and consent is not sought for one. Paragraph 13.8.28 of Chapter 13: Greenhouse Gases of the Environmental Statement (APP-062) confirms that whilst Viking is considered the most likely destination option, the

Doc ref	IP Name	Summary of issue raised	Applicant's response
		from others (especially those who are better able to pay) is more intense than the Applicant has assumed. Proposed disposal sites in the depleted Viking field area may not be in operation by 2030. Access to these may be more costly than the Applicant has assumed. It may need to be replaced by a high-pressure pipeline designed to operate safely when transporting dense-phase CO2 (from a cluster of heterogenous sources).	main GHG assessment has accounted for '*a reasonable worst-case scenario requiring transportation of LCO2 from the Proposed Scheme for geological storage at a location in the North Sea, approximately 1,150km shipping distance from the Site Boundary.'* The Applicant has considered the likely environmental effects should the Viking CCUS cluster consortium not be available. The other concerns raised by Mr Hewitt are neither important nor relevant to the Secretary of State's decision making.
REP1-065	James Hewitt	Greenhouse Gases 3.7 If the design life of the proposed works really is 50-55 years, then it would be helpful to understand why this is much longer than proposed for other post-combustion CO2 capture facilities.	The design life of the civil works associated with the jetty is 50/55 years. The Proposed Scheme is intended to operate for at least 25 years, which is in line with other facilities. However, for the purpose of assessing a reasonable worst case scenario in the ES, a design life of 50 years was assumed, as per typical design life of the civil and structural elements of the Proposed Scheme.
REP1-065	James Hewitt	Greenhouse Gases 4.1 The table should explicitly include CO2 which would be attributable to the Applicant's long-promoted proposals to supply heat to the Bexley area if it were ever built. 4.2 The table should not promote the current mix –because this has evolved without combustion of fossil-based waste being subject to the UK ETS. The displacement of fossil-based waste for incineration elsewhere and is replacement by biogenic waste of the same calorific value would, self-evidently, make no net difference. 4.3 The table should be subdivided to reflect a range of realistic scenarios – for example the expiry in 2032 of Cory's 30-year waste management contract with WRWA. 4.4 The Applicant suggests that the life of the proposed works would be 50 or 55 years. During that time, particularly in the near future, improvements should be expected to the regulation of what is currently waste of fossil-based material. The amount of waste may decline steeply. These changes may have a substantial impact on the purported benefits of the proposed works. The financial risks to the Applicant of such changes will presumably not be underwritten by government. 4.4 By 2032, very little if any of the life of the proposed works will have elapsed. The quality and/or quantity of truly residual waste received by WRWA may be less than needed by R1 or R2. A note explaining how this real and perhaps substantial risk to the mix of fossil-based and	The recovery of heat from Riverside 1 and Riverside 2 for use in local heat networks is beyond the scope of the GHG assessment for the Proposed Scheme. The potential for recovery of heat from the carbon capture process is identified for the Proposed Scheme; however, at the current stage of the design there is too much uncertainty regarding the availability of heat recovery to account for the potential emissions savings associated with the use of this heat in the GHG assessment (as presented in in **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**). With respect to waste composition, the Applicant has considered the potential for changes attributable to the delivery of upcoming waste policies and legislation. However, there is not expected to be a material change in the composition of residual waste received by Riverside 1 and Riverside 2, as the removal of both plastics and food waste in tandem will effectively cancel each out. It is therefore considered that the current biogenic/fossil mix for residual waste (51%/49%, respectively) is the most appropriate composition to use. Sensitivity analysis (presented **as Appendix F** to the **Applicant's Response to Relevant Representations (AS-043)**) has been previously carried out to determine the whole-life carbon emissions associated with the quantity of CO_2 available for capture by the Proposed Scheme, considering variations in waste throughputs received by Riverside 1 and Riverside 2. The Applicant is confident that the residual waste management capacity provided by Riverside 1 and 2 will remain to be required for the foreseeable future (certainly their and the Carbon Capture Facility assumed lifetimes) even in the context of the policy, legislation and possible practice changes. As may be expected, the sensitivity analysis indicates that for the lower waste throughput scenarios the overall savings in GHG emissions are reduced. However, for each of the scenarios there was still an overall saving in whole-life carbon emissions, so in line with IEMA guidance for determining

Doc ref	IP Name	Summary of issue raised	Applicant's response
		biogenic waste available should be made in the text explaining the table scenarios.	significance for GHG assessment[1] there is no change to the finding of Beneficial (Significant) effect for climate identified in the assessment within **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. The Applicant has a long-proven history of delivering large-scale complex 'strategic' sustainable infrastructure projects in London and in this locality especially, including Riverside 1, which has been in operation since 2011 and Riverside 2 which is under construction and targeting being operational in 2026 and so considers that it will be able to deal with any financial headwinds in building the Proposed Scheme. In particular, it is noted that Cory has extensive and proven experience in securing funding arrangements to deliver sustainable infrastructure projects of this scale and complexity. For example, Riverside 2 achieved financial close in 2022 on the basis of nearly £1 billion in estimated costs. As part of this project, Cory has managed fluctuating and high inflationary headwinds (Ukraine War, Covid) to stay within its financing envelope, through skilled and experienced project finance management and careful supply chain management. Further, the Applicant has submitted the **Funding Statement (APP-141)** pursuant to regulation 5(2)(h) of the Infrastructure Planning (Applications: Prescribed Forms and Procedure) 2009 (as amended) and further to the Department of Communities and Local Government guidance, Planning Act 2008: Guidance related to procedures for the compulsory acquisition of land (September 2013) because the Order sought for the Proposed Scheme would authorise the compulsory acquisition of land. The financial risk raised by Mr Hewitt is neither important nor relevant to the Secretary of State's decision making.
REP1-065	James Hewitt	Greenhouse Gases 5.1 - The proposed works were to capture 1.7 million tonnes of CO2 in a year while clause 1.1.2 of the "Statement of Reasons" anticipates than 1.3 million tonnes of CO2 would be captured, then this implies a capture rate of nearly 80%. The discrepancy between this and the minimum capture rate of 95% proposed in that clause warrants explanation. The Government's "Industrial Decarbonisation Strategy" dated March 2021 requires annual average capture rates of 90%. Government plans for Net Zero are to be re-submitted early in 2025, having twice been ruled unlawful by the High Court. 5.2 - If the discrepancy is attributable to a "typographic" error (perhaps introduced to enhance the apparent credentials of the proposal), then the Application should be corrected to better reflect reality.	The difference between the values identified for the quantity of CO_2 captured by the Proposed Scheme is not due to a discrepancy in the minimum 95% capture rate but reflects differences in waste throughput quantities estimated for typical operation in the **Statement of Reasons (APP-020)** and maximum consented limits in **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. The value of 1.3 $MtCO_2$ captured, reported in the **Statement of Reasons (APP-020)** is based on the 95% capture rate being applied to nominal waste throughputs of 789,000 t/yr for Riverside 1 (with an assumed emissions factor of 1.05 tCO_2/tonne of waste), and 655,000 t/yr for Riverside 2 (with an assumed emissions factor of 0.89 tCO_2/tonne of waste). The value of 1.65 $MtCO_2$ captured, reported In **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)** is based on the 95% capture rate being applied to maximum consented waste throughputs of 850,000 t/yr for Riverside 1 and 805,820 t/yr for Riverside 2 (with an emissions factor of 1.05 tCO_2/tonne of waste applied to both Riverside 1 and Riverside 2 for consistency).

[1] IEMA. (2022). 'Assessing Greenhouse Gas Emissions and Evaluating Their Significance'

Doc ref	IP Name	Summary of issue raised	Applicant's response
			In determining likely carbon emissions associated with the 'With Proposed Scheme' and 'Without Proposed Scheme' cases, the Greenhouse Gas (GHG) assessment of the operational effects have been based on the maximum consented waste throughput for Riverside 1 and for Riverside 2 (**Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**). The Applicant recognises that whilst this represents the worst-case scenario for emissions from waste combustion, by consequence this represents an assessment of potentially the highest quantity of CO_2 emissions that would be captured by the Proposed Scheme. Additional sensitivity analysis has been provided in **Appendix F** of **Response to Relevant Representations Appendices (AS-044),** to address the difference between waste throughputs estimated for typical operation and maximum consented limits. The sensitivity analysis also considers a potential scenario where waste throughputs are lower than typical operation. The sensitivity analysis shows that for lower waste throughput scenarios the overall savings in GHG emissions are reduced; however, there is still a significant overall saving in whole-life carbon emissions for the Proposed Scheme and there would be no change to the finding of a Beneficial (Significant) effect for climate identified in the assessment within **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. The minimum 95% capture rate was assumed for each scenario in the sensitivity analysis and would be regulated by the Environment Agency through the Environmental Permit.
REP1-065	James Hewitt	Greenhouse Gases 5.3 Neither Riverside 1 or 2 may have been designed with post-combustion CO_2 in mind. If the capture rate partly depends on the composition of the flue gas from the facilities there may be merit in requesting that the Applicant refer to this for the Examination; identifying how the flue gas of each would be treated prior to entering the proposed works.	There is no requirement for additional flue gas pre-treatment prior to supply to the capture plant, other than the cooling, water removal and neutralisation incorporated in the design of the Proposed Scheme.

Table 2-3-2 – London Borough of Bexley

Doc ref	Summary of issue raised	Applicant's response
Air Quality		
REP1-034	Air Quality; the location of short term generators has not been provided These should be located at least 25m from Crossness LNR.	Reference 3.1.1 of the **Applicant's Response to Relevant Representations (AS-043)** confirms that the Proposed Scheme includes the provision of back-up power generators that are expected to run for fewer than 50 hours per year. Chapter 5 of the ES explicitly considered the impact of these generators, concluding that the effects were not significant. The location of any backup generator is yet to be determined and may move around the site during the operation phase. To respond positively to LBB's request, a new Design Principle and Design Code is proposed: New Design Principle (under 'Place' theme) **DP_PL 1.10** Provide separation between CCF back-up generators and the Crossness Local Nature Reserve boundary to as far as practicable reduce the impact of noise and emissions. The exact positions for generators within the CCF and distance offsets from boundaries will be established during detailed design stage, pursuant to **Air Quality Assessment (Chapter 5) (APP-054)** and **Noise Assessment (Chapter 6) (APP-055)** of the **Environmental Statement (Volume 1)**, responding to location specific constraints and giving consideration to achieving the **LaBARDS (APP-129)**, operational requirements, and process safety for the CCF. Amended Design Code (Under CCF – Form and Layout) **DC_CCF 1.9** Allow for a minimum 25m offset between back-up generators and the Crossness Local Nature Reserve boundary where practicable, to minimis the impact of noise and emissions. These will be provided in an update to that document at Deadline 3.
REP1-034	No response has been received to the LBB's Relevant Representation (RR-124) regarding the potential emissions of chemicals used to capture CO_2 emissions.	A detailed dispersion modelling assessment, including sensitivity analysis, of the potential air quality impacts of the carbon capture plant has been undertaken and reported in **Section 5.8** of **Chapter 5 Air Quality of the Environmental Statement (Volume 1) (APP-054)**. The assessment has considered the impacts of potential degradation products of an amine based solvent, covering products formed within the carbon capture plant itself, such as ammonia and aldehydes, and those formed in the atmosphere, such as nitrosamines and nitramines. A conservative approach based on the use of Monoethanolamine (MEA) and Dimethyl amine (DMA)[2] as proxy amine compounds was taken and assessing nitrosamines and nitramines against the Environmental Assessment Level for NDMA has been adopted.

[2] MEA and DMA are proxy compounds and not likely to be representative of the actual emissions.

Doc ref	Summary of issue raised	Applicant's response
		The Applicant has investigated a potential reduction in impacts from ammonia emissions on ecological sites. Additional modelling has been undertaken post-submission of the Environmental Statement using a reduced emission limit value (ELV) of 10mg/Nm^3 (at 11% O_2, dry) for ammonia post-carbon capture. The application of the reduced ELV will result in impacts over all sites designated for nature conservation that are markedly lower than presented within the **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)**. Further detail is provided within **Appendix B** of this report. The reduced ELV has been incorporated at 1.12 of the **Mitigation Schedule (REP1-010)** and is secured via the **Draft DCO (updated alongside this submission)**.
REP1-034	EA Nitrosamine guidance has been followed and an acceptable level of risk demonstrated. However, evaluation of model results in Table 5-36 and Figure 5-12 not consistent with EA guidance.	There is a typographical error in **Table 5-36** of **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)**, whereby the column labels indicate the data is in µg/m^3. This is not the case, as the values for all nitrosamine and nitramine concentrations are in fact ng/m^3. The maximum modelled Process Contribution (0.013ng/m^3) is well below the correct air quality Environmental Assessment Level for nitrosamines (0.2ng/m^3) and the conclusions drawn below the table (**Paragraph 8.8.89**) remain valid.
REP1-034	Best practice measures for dust should include minimise dust nuisance and human health effects during construction.	The mitigation measures provided in **Section 5.7 and 5.9** of **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)** and the **Outline CoCP (as updated alongside this submission)** are intended to reduce all impacts of dust, including dust nuisance and human health effects, and reflect best practice measures as developed by the Institute of Air Quality Management.
Noise and Vibration		
REP1-034	The following negative impacts have been identified: a) Potential for noise impacts due to noise emissions from the proposed development affecting the nearest residents, particularly as this is a 24-hour operation. b) Potential for additional road traffic, generated by the development during construction and operations, to cause negative impact on local access routes. c) During construction of the proposed development, but this would be of a temporary nature.	The potential for significant construction noise effects arising from construction activities and heavy vehicle movements has been assessed, as presented in **Section 6.8** of **Chapter 6: Noise and Vibration of the Environmental Statement (Volume 1) (APP-055)**. As described in **Table 6-14** of **Chapter 6: Noise and Vibration of the Environmental Statement (Volume 1) (APP-055)**, the assessment has concluded that there are no significant residual effects. Significant effects due to operational road traffic noise levels was scoped out, as described in **Section 6.4** of **Chapter 6: Noise and Vibration of the Environmental Statement (Volume 1) (APP-055)**. A full Code of Construction Practice is secured through a requirement in the draft DCO, which will be in accordance with the **Outline Code of Construction Practice (as updated alongside this submission)**. The **Draft DCO (as updated alongside this submission)** includes Requirement 20 to which requires details to be submitted to and approved by LBB as the relevant planning

Doc ref	Summary of issue raised	Applicant's response
		authority prior to commissioning of any part of Work No.1 demonstrating how the maximum permitted operational noise rating levels will be achieved.
REP1-032	Noise & Vibration assessment concludes impact on local area is not significant with mitigation. Construction hours proposed exceed LBB limitations for noisy works (which can be amended as necessary e.g. jetty works). Amendments to requirement in draft DCO changes requested.	Requirement 8 of the **Draft DCO (as updated alongside this submission)** replicates Requirement 12 of the Riverside Energy Park Order, including the acceptable hours of construction. **Chapter 6: Noise and Vibration of the Environmental Statement (Volume 1) (APP-055)** concludes that there are no significant effects, as described in row 2-3-25 above; and this outcome is not disputed by LBB. The Applicant has not received any complaints from LBB in regard to noise and vibration as a result of the construction activities for Riverside 2. Indeed, albeit within tightly scoped parameters, and for a defined period of time, LBB has agreed to extended working hours at Riverside 2. Consequently, there is no justification for the requested change in construction hours. Further, the Applicant would note that, whilst the amendments suggested by LBB may appear to be limited, they would have a substantial impact on the overall construction period. Requirement 8 of the **Draft DCO (as updated alongside this submission)** allows for 66 working hours, whilst LBB's suggestion would reduce that to 55 hours each week. This represents a 17% reduction in construction working time each week, which would extend the period and cost of the construction phase. The parties have agreed that the construction hours as proposed are acceptable (see **SoCG Rev B (Document Reference 8.1.1)**.
Greenhouse Gases		
REP1-034	The GHG assessment has not considered any future evolution of waste throughput and composition as an immediate consequence of the implementation of upcoming expected waste policies and legislation on landfill.	Additional consideration of waste throughput and composition has been provided in **Appendix F** of **Response to Relevant Representations Appendices: 9.2 (AS-044). Appendix F** provides a sensitivity analysis which shows that for lower waste throughput scenarios the overall savings in GHG emissions are reduced; however, there is still an overall saving in whole-life carbon emissions for the Proposed Scheme and there would be no change to the finding of Beneficial (Significant) effect for climate identified in the assessment within **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. With respect to waste composition, the Applicant considers that future variation in biogenic and fossil material present in residual waste will be designed to remove sources of both biogenic and fossil material from the residual waste stream through waste prevention initiatives such as taxation and increased recycling. As reported in **Appendix F** of **Response to Relevant Representations Appendices (AS-044)**, it is considered reasonable to assume an equal weighting to the implementation of the policies and that the removal of both plastics and organic waste in tandem will effectively balance out, with no material change anticipated in the future composition of residual waste received by Riverside 1 and Riverside 2 (once operational).
REP1-034	Strategies to reduce carbon capture at source have not been addressed.	The scope of the assessment presented in **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)** was to evaluate the change in GHG

Doc ref	Summary of issue raised	Applicant's response
		emissions attributable to carbon capture activities of the Proposed Scheme only. The source of GHG emissions to be captured by the Proposed Scheme is the existing waste operations of Riverside 1 and the future operation of Riverside 2, which would remain the same with or without the Proposed Scheme. The Riverside 1 and Riverside 2 operational activities that generate GHG emissions are already fully consented and are outside the scope of the assessment for the Proposed Scheme, as described in **Section 13.4** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. With respect to the waste processed by Riverside 1 and Riverside 2, it is recognised that minimising materials, including plastics, entering the waste stream could help to reduce the release of GHG emissions from Riverside 1 and Riverside 2. However, whilst the Applicant will continue to evaluate the viability of complementary measures to reduce emissions from Riverside 1 and Riverside 2, there are significant technological challenges identified with effective pre-sorting of materials in the upstream waste stream. Development of additional pre-sorting facilities for waste materials would also require significant associated development, including infrastructure for storage, operation and transport logistics. Even if viable, it is considered that alternative measures to reduce sources of GHG emissions in the residual waste processed by Riverside 1 and Riverside 2, would not be capable of achieving the scale of GHG emissions savings attributable to the Proposed Scheme.
REP1-034	Corrections to the actual removals (biogenic carbon) and carbon savings (fossil carbon) have not been applied.	Where appropriate, and in-line with best practice for GHG reporting, **Chapter 13: Greenhouse Gases Volume 1) of the Environmental Statement (Volume 1) (APP-062)** has differentiated between CO_2 emissions that would be removed from the atmosphere (i.e. from biogenic sources) and those that would be reduced in the atmosphere (i.e. from fossil sources). In line with IEMA guidance[3], the GHG assessment should identify the net change in GHG emissions attributable to the Proposed Scheme, which for the carbon capture activity needs to consider the change associated with both biogenic and fossil sources of CO_2 present in the atmosphere. The presentation of net emissions savings in **Table 13-11** of **Chapter 13: Greenhouse Gases Volume 1) of the Environmental Statement (Volume 1) (APP-062)**, which accounts for the capture of biogenic and fossil CO_2 emissions with other sources of GHG emissions released to the atmosphere, is therefore considered to be the correct approach to account for the net change in GHG emissions and potential effects on the atmosphere for the Proposed Scheme.
REP1-034	Changes in the profile of net electricity exports after installing the carbon capture plant have not been considered.	The decisions as to how to balance the grid are taken by National Grid, who take account of a wide variety of factors in determining where their base load comes from. It is for the National Grid to determine the electricity generation mix for the UK, and it would be conjectured to seek to guess how it would choose to replace any electricity no longer

[3] 8 IEMA. (2022). 'Assessing Greenhouse Gas Emissions and Evaluating Their Significance'. Available at: [redacted]

Doc ref	Summary of issue raised	Applicant's response
		exported from Riverside 1 or Riverside 2. With a decarbonising grid, it cannot be assumed that there would be any 'replacement' by, for example, CCGT. It would also not be possible to reasonably assess what the replacement of any such exports would involve, which would add significant uncertainty to the GHG assessment. Given the amount of renewable electricity generation projects already coming forward to meet the challenge set by NPS EN-1 (and the future coming on stream of Hinkley Point C and Sizewell C Nuclear Power Stations), it is considered that the replacement of electricity exported by Riverside 1 and Riverside 2 would not change the beneficial impact identified for the Proposed Scheme. Due to the scale of UK grid decarbonisation by the time the Proposed Scheme becomes operational (2031), it is expected that the carbon intensity of electricity exported to the grid from Riverside 1 and Riverside 2 without the Proposed Scheme would be higher than the UK grid average GHG emissions profile. Therefore, whilst the supply of energy to the Proposed Scheme from Riverside 1 and Riverside 2 would reduce exports of electricity to the UK grid, it is expected that beneficial impacts for the Proposed Scheme would be enhanced relative to the carbon intensity of electricity grid exports from Riverside 1 and Riverside 2 without the Proposed Scheme. The energy supplied to the Proposed Scheme from Riverside 1 and Riverside 2 is accounted for in **Chapter 13: Greenhouse Gases Volume 1) of the Environmental Statement (Volume 1) (APP-062)**, which is considered to be consistent with a realistic worse case assessment of material effects required for the Environmental Statement. It is also noted that that the Proposed Scheme does not change the electricity generating capacity of the Riverside 1 or Riverside 2.

Table 2-3-3 – Greater London Authority

Doc ref	Summary of issue raised	Applicant's response
REP1-072	"The GLA requested that the applicant provide an Air Quality Neutral (AQN) Assessment as part of the Environmental Statement, referring to the London Plan Guidance 'Air Quality Neutral'; notably footnote 9, which refers to the use of benchmarks when the use class/ land use type is not listed or specified. In addition, the development will introduce other new emissions' sources through new vehicle movements and generators on-site. Cory have subsequently undertaken and AQN assessment, however, no building emissions are included. The emissions associated with the energy used by any new office space or other building space needs to be calculated and compared with the benchmark, even if it's generated on site and from an Energy from Waste process. The point made that the CO2 capture would make up for these emissions is not considered valid as CO2 is not considered an ambient air pollutant and is not captured in the Air Quality Neutral policy which aims to address the key pollutants PM2.5 and NO2."	It is reiterated that it is intended that the Proposed Scheme will not require any additional space heating or combustion for heating purposes since it will use waste heat from on-site processes i.e. this is heat that cannot be used elsewhere in the process. Nevertheless, an updated Air Quality Neutral Assessment will be submitted at Deadline 3 which will take into account the space heating of the few potentially occupied internal spaces which will be the control room/welfare facilities and gatehouse for the Carbon Capture Facility, should the use of waste heat from the process not be available. The Proposed Scheme will have a backup diesel generator. It is understood that the backup generator will run for fewer than 50 hours per year. Therefore, the Proposed Scheme is air quality neutral in terms of building emissions. In response to the latter point regarding CO_2 capture as set out in **Paragraph 1.2.4 of Appendix A** of the **Relevant Representation Appendices (AS-044)** *"In relation to combustion emissions from Riverside 1 and Riverside 2, the Proposed Scheme is inherently neutral since the Proposed Scheme removes CO_2 from the exhaust gases whilst leaving the mass of combustion-related local air quality pollutants unchanged i.e. a*

Doc ref	Summary of issue raised	Applicant's response
		neutral impact.". That is to say that the impact on the mass of local air quality pollutants (including $PM_{2.5}$ and NO_2) emitted as a result of the Proposed Scheme will not change. There is no suggestion that this will be offset by the reduction in mass of CO_2 emissions.
REP1-072	The Mayor has been clear that London does not require increased incineration capacity and opposed the development of the Riverside 2 Energy from Waste Facility. The Mayor maintains this position, and as set out in the LES, is determined that where capacity does exist it manages only truly non-recyclable waste. It is also essential that Energy from Waste facilities make the most of capturing the offtake from energy production through combined heat and power and connecting this for use by, for example, housing. These factors should remain priorities for Cory in the development and management of the Riverside facilities regardless of plans for carbon capture and storage. The Mayor would like to see faster progress by Cory and its partners in connecting to a local heat network as a contribution to net zero.	The Proposed Scheme does not affect waste throughput at the Riverside Campus. The Carbon Capture Facility has the potential to enhance heat export to distribution network(s), which is expected to be welcomed by the GLA. Requirement 25 of the DCO ensures that an updated heat strategy for the Riverside Campus is brought forward.

Table 2-3-4 – Save Crossness Nature Reserve

Doc ref	Summary of issue raised	Applicant's response
Climate Change		
REP1-047	108. The Applicant places great reliance on carbon capture to justify various harms arising from the Proposed Scheme. These harms are principally to climate change and air quality. 109. In placing great reliance on carbon capture, the Applicant relies on the "*CNP presumptions*" in EN-1 to justify the harms created under the Proposed Scheme. 110. The mitigation hierarchy is not overriden by the climate benefits that the Applicant asserts will be achieved if the carbon capture is implemented as part of the Proposed Scheme. It is wrong, as a matter of principle and logic, for the Applicant to rely on a carbon capture scheme that involves destruction of the above-described biodiverse land to achieve a climate benefit.	The purpose of the Proposed Scheme is to capture carbon dioxide emissions from Riverside 1 and Riverside 2, i.e. those emissions that are generated through the sustainable management of residual waste. It is a carbon capture project and as such is recognised as critical national priority infrastructure in NPS EN-1. The Applicant recognises this function in the Applicant documents but does not rely upon it; the Applicant is explicit in recognising the harm that result from the Proposed Scheme and addresses it. For example: very special circumstances are given for the inappropriate development in MOL; mitigation and compensation are provided for the loss of habitat, and a biodiversity net gain is proposed; Design Principles and Design Code are set out, not least for the impact on views and user experience. Further, the mitigation hierarchy has not been overridden. The Applicant recognises the mitigation hierarchy as that defined in both Paragraph 186(a) of the National Planning Policy Framework (2023) and the glossary of the Overarching National Policy Statement for Energy (EN-1): • Avoid; • Minimise/reduce; • Mitigate; and • Compensate. These options are in decreasing order of preference such that those lower on the list should only be carried out once higher options have been exhausted, with compensation (including off-setting of biodiversity loss) only undertaken as a 'last resort' option.

Doc ref	Summary of issue raised	Applicant's response
		The Applicant's approach to the mitigation hierarchy is presented throughout the Application documents, not least the **Planning Statement (APP-040)** at Section 4.7 and the **Applicant's Response to Relevant Representations (AS-043)**, particularly paragraphs 2.5.8 to 2.5.10. The optioneering process described in **Chapter 3: Consideration of Alternatives Environmental Statement (Volume 1) (APP-052)** and the **Terrestrial Site Alternatives Report (TSAR) (APP-125)** describe how the site selection process and criteria used placed emphasis on the avoidance of biodiversity features. Upon Site selection, a design process was undertaken seeking to compress the layout of the Proposed Scheme such that its footprint could be minimised (as detailed in the **Design Approach Document (DAD) (APP-044 to 046)**. These actions demonstrate compliance with the avoid/minimise level of the mitigation hierarchy. As demonstrated in **Section 7.7 and 7.9** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**, both embedded and additional mitigation for both habitats and protected species have been designed, such as measures for water voles and reptiles, and habitat creation within the indicative layout of the Carbon Capture Facility comprising the Proposed Scheme. This demonstrates compliance with the penultimate level of the mitigation hierarchy (mitigate). Through provision of compensation, comprising habitat creation and enhancement in the Mitigation and Enhancement Area and Biodiversity Net Gain Opportunity Area (as detailed in **the Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**), compliance with the mitigation hierarchy is completed. Compensation for the loss of Coastal Floodplain Grazing Marsh (CFGM) in the form of habitat enhancement will be provided within Norman Road Field on Site. Compensation for loss of Reedbed habitat will be provided by a combination of on-Site and off-Site habitat creation, and compensation for loss of Open Mosaic Habitat (OMH) will occur entirely through off-Site habitat creation. Off-Site compensation is required to as further on-Site habitat creation would require a concurrent loss of valuable CFGM habitat and not achieve the required standard of additionality (i.e. a net gain for biodiversity). At section 2.5 of its Response to Relevant Representations (AS-043) the Applicant agrees that *'there is a level of tension between policy intended to address global warming and climate change priorities and that seeking to maintain sites locally designated for ecology (often necessarily with a local focus), when considering proposals for built form that seek to deliver carbon capture infrastructure. Consequently, there is need to consider the Proposed Scheme as a whole, recognising the potential impacts of it, but also the benefits; this is standard procedure in planning decisions. Addressing climate change will be beneficial for those areas designated for biodiversity (both locally and globally) and the Proposed Scheme includes meaningful actions to address the local designations, to improve their quality for the foreseeable future*.'

Doc ref	Summary of issue raised	Applicant's response
REP1-047	111. The proposed carbon capture facility also needs to be seen in context. First, there are several other sites nationally and regionally where carbon capture facilities can be installed without loss to biodiverse land with various designations and protections, including delivery of the Proposed Scheme in the East Zone (detailed below).	Section 2.2 of the **TSAR (APP-125)** sets out the framework for reasonable alternatives, identifying (at paragraph 2.2.26) that 'any reasonable alternative to be considered in choosing a location for the Proposed Scheme therefore needed to be aligned with the following Project Objectives' which are, as also set out at paragraph 127 of the SCNR Written Representation: • located in the vicinity of the Riverside Campus and the River Thames, for efficient connection to EfW facilities and the Proposed Jetty; • of sufficient size to accommodate the Carbon Capture Facility, including its Supporting Plant and Associated Infrastructure in order to capture and process the carbon created by both Riverside 1 and Riverside 2; and • deliverable in a timely manner. At paragraph 128 of its Written Representation, the SCNR agrees that *'these are reasonable objectives and align with government's objectives for the energy system...*'. The Applicant would also highlight paragraphs 4.3.23 and 4.3.24, which are directly relevant to SCNR's point and demonstrates that policy would disagree with their assertion: 4.3.23 *The Secretary of State should be guided in considering alternative proposals by whether there is a realistic prospect of the alternative delivering the same infrastructure capacity (including energy security, climate change, and other environmental benefits) in the same timescale as the proposed development.* *4.3.24 The Secretary of State should not refuse an application for development on one site simply because fewer adverse impacts would result from developing similar infrastructure on another suitable site, and should have regard as appropriate to the possibility that all suitable sites for energy infrastructure of the type proposed may be needed for future proposals.*
REP1-047	112. Secondly, the carbon capture facility is being proposed on the basis that it will, during the operation phase, as a minimum, be expected to have a 95% carbon capture rate for emissions from Riverside 1 and Riverside 2 (ES, para 13.9.4). The Applicant of course cannot guarantee this level of capture - this is revealed by the use of the word "expected", which nullifies any claim to this being a "minimum". 113. Looking to carbon capture projects that already exist, the success rate is far lower than the Applicant's optimistic projections. A report from Institute for Energy Economics and Financial Analysis dated 1 September 2022 (Appendix 9), found that "underperforming carbon capture projects considerably outnumber successful projects globally, and by large margins, with both the technology and regulatory frameworks found wanting". Of the 13 projects studied, seven under-performed, two failed and one was mothballed.	The Carbon Capture Facility will be designed to capture at least 95% of the emissions of carbon dioxide from Riverside 1 and Riverside 2 and it will be operated under an Environmental Permit. The Environmental Permit will control the capture rate. As is recognised at section 4.12 of NPS EN-1, the planning and environmental permitting regimes are separate but complementary. The planning system controls the development and use of land in the public interest. The environmental permitting regime is concerned with preventing pollution, for example through the use of measures to prohibit or limit the release of substances into the atmosphere. It is the environmental permitting regime that will set the limit for carbon capture rates and is the Environment Agency's role to monitor compliance with that limit. Crucially, the NPS is clear that the Secretary of State can rely on the permitting regime to regulate emissions. Furthermore, it is noted that Government supports Carbon Capture infrastructure as a critical national priority that is a necessity, not an option, to deliver Net Zero.

Doc ref	Summary of issue raised	Applicant's response
REP1-047	114. Thirdly, this 95% carbon capture rate only accounts for savings from Riverside 1 and Riverside 2 and does not represent a net figure. Additionally, the figure fails to account for the embodied carbon in development, and emissions involved in operating the carbon capture facility, including the transport and burying of CO2.	An assessment of GHG emissions sources for the construction and operation phases of the Proposed Scheme is reported in **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062).** The assessment methodology (**Section 13.4)** confirms that in addition to the capture of CO_2 in the operation phase, the GHG assessment has accounted for embodied carbon in the construction phase (reported in **Table 13-8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1)**), and GHG emissions arising from operation of the Proposed Scheme and the onward transfer of captured CO_2 for geological storage (reported in **Table 13-10** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1)**). The GHG assessment has shown that although there would be emissions attributable to construction and operation of the Proposed Scheme, there would be net savings in GHG emissions due to the quantity of CO_2 captured by the Proposed Scheme, which is considered to be a significant beneficial effect for the climate. **Paragraph 13.8.24** of **Chapter 13: Greenhouse Gases** confirms that the payback period, '*the time it would take for carbon emissions calculated for the construction and operation phases to be offset by the savings in carbon emissions from the Proposed Scheme*' is less than 5 weeks.
REP1-047	115. Fourthly, GHG emissions are not the only byproduct of the Proposed Scheme. There will be other harmful gases emitted into the atmosphere. Of particular concern are nitrous oxide (N2O) which contributes to climate change due to its positive radiative forcing effect, and the gas has a relatively high impact, with a global warming potential (GWP) of 265 compared with a figure of 1 for carbon dioxide13. Consequently, even if the carbon capture system were to achieve the "expected" carbon capture rate, which is disputed, there would still be a significant climatic impact associated with this proposed Scheme.	It is acknowledged that nitrous oxide is a greenhouse gas that contributes to warming of the atmosphere; however, nitrous oxide would be released to the atmosphere from Riverside 1 and Riverside 2 without the construction or operation of the Proposed Scheme. The Proposed Scheme is not a source of additional nitrous oxide. Additionally, it is confirmed that the GHG assessment presented within **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)** has accounted for the release of nitrous oxide to the atmosphere in the baseline emissions attributable to Riverside 1 and Riverside 2 (reported in **Table 13-7** of the chapter). Whilst the Proposed Scheme is designed to capture CO_2 and is not designed to capture emissions of nitrous oxide released from Riverside 1 and Riverside 2, the GHG assessment has shown there would be net savings in overall GHG emissions due to the quantity of CO_2 captured by the Proposed Scheme, which is considered to be a significant beneficial effect for the climate.
REP1-047	116. The decommissioning process and the emissions for decommissioning of the carbon capture facility has been scoped out and not considered in the ES (see paragraphs 13.4.7 and 13.8.40). This approach obfuscates the true climatic impact associated with the carbon capture facility and the Proposed Scheme as a whole. This is important, particularly when considering this is likely to be a live issue within 20 years (the relevant "lifetime").	As set out in **Chapter 2: Site and Proposed Scheme Description (Volume 1)** at **Section 2.7** and **Chapter 4: EIA Methodology (Volume 1) of the Environmental Statement (Volume 1)** at **Section 4.15 (APP-051 and APP-053 respectively)**, any decommissioning would be likely to be completed in less time than the construction phase and would be likely to require a similar degree of plant, equipment and disturbance to that predicted during construction. The Proposed Scheme is intended to operate for at least 25 years, however in order to assess a worst case scenario, the assessments within the Environmental Statement are

Doc ref	Summary of issue raised	Applicant's response
		based on the Proposed Scheme having a design life of 50 years as described in **Chapter 2: Site and Proposed Scheme Description (Volume 1)** at **Section 2.7**. It is also worth noting, that the carbon payback period, the time it would take for carbon emissions calculated for the construction and operation phases to be offset by the savings in carbon emissions from the Proposed Scheme (excluding decommissioning) is less than five weeks. See **Paragraph 13.8.24** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**. If the same level of GHG emissions for the construction phase (98,332 tCO_2e: see **Table 13-8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**) were incorporated into the carbon payback period as a proxy for emissions from decommissioning (noting that this is likely to be a worst case scenario considering that the UK should achieve net zero emissions by the time of decommissioning), there would be a marginal increase in the carbon payback period to less than seven weeks, i.e. a minimal amount compared to the overall savings arising from the Proposed Scheme.
REP1-047	117. It is important that decommissioning is properly considered because it is directly relevant to the assessment of the benefits and harms. For example, if decommissioning is due to take place in 20-25 years' time14, then this minimises the benefits and makes the harm of loss of valuable natural land (ancient grazing marsh) seem less justifiable. 118. In relation to emissions associated with decommissioning, the Applicant asserts that the data is not "consistently" available. This implies that data is obtainable. As such, this data should form part of the assessment (R v Cornwall County Council (ex parte Hardy) [2001] Env. L.R. 25). The more pertinent issue is the "consistency" or lack thereof. Where there are issues of consistency or there is a wide range of outcomes, the Applicant should adopt a "worst case" approach (R (on the application of Milne) v Rochdale Metropolitan Borough Council [2001] 81 P. & C.R. 27 at [122]). It is not sufficient to simply scope the issue out of consideration.	The Applicant notes that the recent *Finch* and West Cumbrian mine judgments make clear that assessments within an ES should not be based on speculation and conjecture. They should be based on reasonably available information to enable a judgement on the 'likely significant effects' of the Proposed Scheme. Given the project lifetime of the Proposed Scheme it would not be possible at this time to undertake a reasonable assessment of what emissions would be. However, as stated in the previous response, any decommissioning would be likely to be completed in less time than the construction phase and would be likely to require a similar degree of plant, equipment and disturbance to that predicted during construction; and so, as a worse case (given likely technological improvements in the intervening period), construction emissions could be considered to be repeated at that stage. In that scenario, as set out above, if the same level of GHG emissions for the construction phase (98,332 tCO_2e: see **Table 13-8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**) were incorporated into the carbon payback period as a proxy for emissions from decommissioning (noting that this is likely to be a worst case scenario considering that the UK should achieve net zero emissions by the time of decommissioning), there would be a marginal increase in the carbon payback period to less than seven weeks, i.e. a minimal amount compared to the overall savings arising from the Proposed Scheme.

2.4 TERRESTRIAL BIODIVERSITY

Table 2-4-1 – London Borough of Bexley

Doc ref	Summary of issue raised	Applicant's response
REP1-032	Mitigation hierarchy is a 4 step process that should lead to BNG. Need to demonstrate efforts to avoid, minimise, restore and off-set biodiversity loss. Applicant has not explored consideration of alternatives fully and so cannot consider and address the Biodiversity Mitigation Hierarchy.	The Applicant recognises the mitigation hierarchy as that defined in both Paragraph 186(a) of the National Planning Policy Framework (2023) and the glossary of the Overarching National Policy Statement for Energy (EN-1): • Avoid; • Minimise/reduce; • Mitigate; and • Compensate. These options are in decreasing order of preference such that those lower on the list should only be carried out once higher options have been exhausted, with compensation (including off-setting of biodiversity loss) only undertaken as a 'last resort' option. The Applicant's approach to the mitigation hierarchy is presented throughout the Application documents, not least the **Planning Statement (APP-040)** at Section 4.7 and the **Applicant's Response to Relevant Representations (AS-043)**, particularly paragraphs 2.5.8 to 2.5.10. The optioneering process described in **Chapter 3: Consideration of Alternatives Environmental Statement (Volume 1) (APP-052)** and the **Terrestrial Site Alternatives Report (TSAR) (APP-125)** describe how the site selection process and criteria used placed emphasis on the avoidance of biodiversity features. Upon Site selection, a design process was undertaken seeking to compress the layout of the Proposed Scheme such that its footprint could be minimised (as detailed in the **Design Approach Document (DAD) (APP-044 to 046)**. These actions demonstrate compliance with the avoid/minimise level of the mitigation hierarchy. As demonstrated in **Section 7.7 and 7.9** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**, both embedded and additional mitigation for both habitats and protected species have been designed, such as measures for water voles and reptiles, and habitat creation within the indicative layout of the Carbon Capture Facility comprising the Proposed Scheme. This demonstrates compliance with the penultimate level of the mitigation hierarchy (mitigate). Through provision of compensation, comprising habitat creation and enhancement in the Mitigation and Enhancement Area and Biodiversity Net Gain Opportunity Area (as detailed in **the Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**), compliance with the mitigation hierarchy is completed. Compensation for the loss of Coastal Floodplain Grazing Marsh (CFGM) in the form of habitat enhancement will be provided within Norman Road Field on Site. Compensation for loss of Reedbed habitat will be provided by a combination of on-Site and off-Site habitat creation, and compensation for loss of Open Mosaic Habitat (OMH) will occur

Doc ref	Summary of issue raised	Applicant's response
		entirely through off-Site habitat creation. Off-Site compensation is required to as further on-Site habitat creation would require a concurrent loss of valuable CFGM habitat and not achieve the required standard of additionality (i.e. a net gain for biodiversity).
REP1-034	Loss of circa 3.3 hectares of Erith Marshes Metropolitan Site of Importance for Nature Conservation (MSINC). The land lost also forms part of Crossness Local Nature Reserve.	Loss of habitat within Erith Marshes MSINC that would result from the construction and operation of the Proposed Scheme is acknowledged in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Compensation for CFGM loss within the SINC will be undertaken within the Mitigation and Enhancement Area through enhancement of remaining CFGM, and reedbed within the SINC through a combination of reedbed creation within the Mitigation and Enhancement Area and Biodiversity Net Gain Opportunity Area, as reported in **Section 7.11** of the chapter, and are demonstrated to outweigh the impacts on biodiversity. The site appraisal process has been undertaken following a rigorous, iterative and proportionate approach, that delivers the policy requirements of NPS EN-1. In addition to the **TSAR (APP-125)**, and the **TSAR Addendum (AS-044)** the Applicant provided the further information sought by the Examining Authority (including impacts on FP4 and explanation of the economic assessment) in its **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, particularly at **Appendices B, D and E (REP1-025)**. The Applicant has consistently demonstrated that there is no other reasonable alternative site, such that impact on the SINC cannot be avoided. However, the Proposed Scheme has been carefully designed such that these effects are suitably minimised, mitigated and compensated. The **Design Principles and Design Code (AS-020)** provides ongoing control throughout the detailed design phase through to implementation, such as timing of works to avoid impacts on breeding/wintering birds and control of lighting to maintain dark corridors through the SINC. The policy requirements of NPS EN-1, the London Plan and Bexley Local Plan are met. As agreed, and documented within the **London Borough of Bexley Statement of Common Ground (as updated with this submission)** the mitigation measures required at Norman Road Field for the Veridion Park development have been implemented and managed for the requisite period of ten years. Consequently, there is no extant mitigation commitment at Norman Road Field. As is also set out at **Appendix F** of the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-026)** the habitat enhancement proposals set out in the **Outline LaBARDS (REP1-012)** will both enhance biodiversity at this location and secure a further 30 years of management commitment. It is envisaged that once enhancements are established management would be scaled down over time until it occurs through grazing alone (through the rights of graziers), as would occur in a traditional grazing marsh setting, allowing habitat to be maintained beyond the end of the 30-year commitment, thus ensuring degradation would not occur when this ends.

Doc ref	Summary of issue raised	Applicant's response
REP1-034	Impact on Strategic Green Wildlife Corridor and Southeast London Green Chain	It is appreciated that the Proposed Scheme coincides with land identified as a Strategic Green Wildlife Corridor within the Bexley Local Plan 2023[4]. Compensation for habitat loss within that corridor (CFGM and reedbed) is described within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** through enhancement of habitats within the Mitigation and Enhancement Area which would consequently maintain the integrity of the Strategic Green Wildlife Corridor. The Southeast London Green Chain "*consist of footpaths and the open spaces that they link, which are accessible to the public*", as defined by the Bexley Local Plan 2023[4]. This definition recognises the importance of accessible open spaces along the green chain for biodiversity. Notwithstanding the loss of CFGM habitat in Crossness LNR acknowledged by **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, within the East Paddock which is not accessible and will be compensated for through the enhancement of CFGM in Norman Road Field, the Proposed Scheme will not lead to a reduction in the amount of available open space accessible by the public within the Southeast London Green Chain. Potential effects on Accessible Open Land are described within **Chapter 10: Townscape and Visual** and **Chapter 14: Population, Health and Land Use of the Environmental Statement (Volume 1) (APP-059 and APP-063** respectively**)**.
REP1-034	Completed biodiversity metric calculation tool has not submitted.	**Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)** provides PDF copies of each metric spreadsheet as well as a discussion of in its wider text of the calculations within Annex C. The Applicant has provided spreadsheet copies of the metric calculation tool to LBB for their consideration.
REP1-032	Baseline conditions and future baselines for marine biodiversity are limited and further expansion of baselines to include addition information is required.	The Applicant considers the baseline and future baseline for marine biodiversity has been suitably considered within **Chapter 8: Marine Biodiversity of the Environmental Statement (Volume 1) (APP-057)**. The Environmental Statement has considered the main potential changes to future baseline from predicted impacts from climate change, other developments and sea level rises. The Applicant is not clear what other information LBB is seeking.
REP1-034	Neutral impacts will be entirely dependent on the successful implementation of mitigation and local compensation as outlined in the Applicant's Biodiversity net gain report.	The Applicant acknowledges LBB's position and notes that compliance with the detailed LaBARDS is a Requirement of the **Draft DCO (as updated alongside this submission)**. Compliance with the DCO is enforceable by LBB and breach of the DCO is a criminal offence. Furthermore, the Applicant has a track record in keeping its ecological commitments, as seen within the Order limits with the Riverside 1 ecological mitigation area, that the electrical connection for Riverside 2 has been laid with improved ecological outcomes and that off-site BNG sites are being delivered. There can be confidence therefore that the commitments made for the Proposed Scheme will be met and a beneficial outcome achieved. Compensation for habitat loss resulting from the

[4] London Borough of Bexley. (2023). 'The Bexley Local Plan 2023'. Available at: https://www.bexley.gov.uk/sites/default/files/2023-07/bexley-local-plan-adopted-26-april-2023.pdf

Doc ref	Summary of issue raised	Applicant's response
		Proposed Scheme is proposed within both the Mitigation and Enhancement Area (on site) and the BNG Opportunity Area (off site). It is acknowledged that off site compensation is required to compensate for on site loss of habitat, in particular reedbed and open mosaic habitat (as discussed in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**). However, the extent of compensation through habitat creation and enhancement exceeds the requirement to achieve no net loss in biodiversity (i.e. a neutral residual impact), and achieves additionality through a 10% gain in biodiversity units, as well as compliance with the trading rules. Delivery of this Net Gain is secured pursuant to Requirement 12 of the **Draft DCO (as updated alongside this submission)**.
REP1-034	The applicant is seeking in the DCO at paragraph 48 (2) (c) to abrogate clause 4 of the 1994 Section 106 agreement between the London Borough of Bexley and Thames Water. Clause 4 of that S106 ensures that the Crossness Nature reserve is managed for 99 years by Thames Water and sets out processes etc for reviewing management plans etc. A S106 (or S111) agreement would be needed to secure that the nature reserve is still managed and processes etc for reviewing management plans etc are maintained for the remainder of the 99-year period and what was agreed previously.	The Applicant's proposals ensure that there is no 'gap' in planning terms. Through the LaBARDS and Deed of Obligation commitments, the Applicant will be responsible for managing the expanded Crossness LNR for the lifetime of the Proposed Scheme. Any gap in time between the end of that lifetime and 2093 (the end of the 99 year period) will be covered by the proposal for the Applicant's to give LBB an 'Endowment Sum' for it to be maintained as a LNR for that remaining period.
REP1-034	The Norman Road field is also subject to biodiversity enhancement measures via a S106 (or S111). It is unclear whether mitigation measures were implemented and therefore baselines are questioned.	The Applicant and LBB are agreed (see **SoCG Rev B (Document Reference: 8.1.1**, submitted alongside this response) that the mitigation measures required at Norman Road Field for the Veridion Park development have been implemented and managed for the requisite period of ten years. Consequently, there is no extant mitigation commitment at Norman Road Field. As is set out at **Appendix F** of the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-026)** he habitat enhancement proposals set out in the **Outline LaBARDS (REP1-012)** will both enhance biodiversity at this location and secure a further 30 years of management commitment.
REP1-03	The Norman Road field is already within the Erith Marshes Metropolitan SINC.	The Applicant acknowledges within the Application documents that Norman Road Field is already located within Erith Marshes SINC; albeit the habitat condition is poor. The habitat enhancement proposals set out in the **Outline LaBARDS (REP1-012)** will both enhance biodiversity at this location and secure a further 30 years of management commitment. The Applicant agrees that LBB has the powers to extend the LNR designation with the agreement of the land, and that this outcome was posited in consideration of Phase 1 of Veridion Park. The Applicant notes that this has action has not been taken since permission was granted (January 2005) and considers that the proactive approach set out within the Proposed Scheme is beneficial in this regard.

Table 2-4-2 – Natural England

Doc ref	Summary of issue raised	Applicant's response
REP1-038	Inner Thames Marshes Site of Special Scientific Interest Nitrogen Deposition has been calculated as 2.7% of the Critical Load for the Inner Thames Marshes. This is over 1% and is therefore significant and requires additional assessment (please see [redacted]. This is necessary in order to assess any impact that the scheme may have on the interest features of the Inner Thames Marshes SSSI. We welcome the additional information provided by the Applicant on the modelled spatial impact of the scheme over the SSSI and referenced in table 3-2A Ref 3.2A.2 of the Applicant's Response to Written Representations Document 9.2 (AS-043). This identifies habitats in which the 1% significance threshold is breached. However, it remains necessary for the assessment to identify the sensitive interest features for which the site is notified in these locations, and to assess the impact of the scheme on these specific features. Evidence provided indicates that areas where the 1% threshold for Ndep is breached includes units, 1, 11, and part of Unit 2. Of these units, unit 1 contains vascular plants which are a notified feature and are sensitive to air quality impacts. We advise that a clear site-specific impact assessment of the scheme on vascular plants within until 1 of the SSSI is required in order to provide sufficient information on the ecological impact of the scheme. Natural England have advised that it is not appropriate to state the presence of existing impact pathways as reasoning to conclude whether or not a scheme's impact is significant. The impact must be considered as a percentage of the Critical Level/ Load with additional information provided per NEA001 if the 1% threshold is breached. We note that the Applicant is further analysing the calculations to validate the findings of the assessment presented in Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056) alongside working with technology providers to investigate a design solution to consider if the modelled above 1% threshold increase in NDep affecting designated sites can be reduced. We welcome this could be a potential way to ensure that air quality impacts are avoided, but there is not enough information to rely upon this at this time.	The Applicant prepared an Ammonia Emissions Technical Note to address comments from Natural England on the impact of amine deposition from the Proposed Scheme on designated ecological sites. This note was sent to Natural England on the 19th November 2024 and is included in **Appendix B** of this report, the Applicant is currently awaiting Natural England's response to this note. Further mitigation is provided in the form of changes to ammonia emission limit values which has been incorporated in the **Mitigation Schedule (REP1-010)**. The reduction to the ammonia emission limit value results in a reduction of both the ammonia and nitrogen deposition impacts on Inner Thames Marshes to below 1% of the relevant critical loads across the habitat site. As such, the impacts modelled at permitted limits will be negligible or beneficial over all sites designated at national and international levels including Epping Forest Special Area of Conservation (SAC)/ Site of Special Scientific Interest (SSSI) and Inner Thames Marshes SSSI.
REP1-038	Protected Species "Natural England's position regarding protected species has not changed since submission of our Relevant Representations (RR-150). Natural England were presented with a Water Vole Method Statement for review on the 8th October 2024. We have not provided formal written comments on this method statement, but our Natural England Wildlife Licensing Service (NEWLS) team had significant concerns and met with the Applicant to discuss the matter on the 21st	The Applicant had a productive meeting with Natural England's representative regarding the water vole method statement on the 21st November 2024, as described in the **Natural England SoCG (PDA-002)**, and is in the process of revising the water vole method statement in line with comments provided by Natural England. The Applicant is grateful for the input of the Wildlife Licensing Service advisor for their help and appreciate this is a key concern. In particular, the Applicant has committed to a change from a programme of water vole capture, captive breeding and subsequent release as mitigation, towards direct displacement of water voles into newly created habitat. This will

Doc ref	Summary of issue raised	Applicant's response
	November 2024. Given that this meeting was so recent, we have not yet agreed the minutes of the meeting or formulated written advice on the subject. We anticipate that the Applicant will revise their mitigation proposals and Water Vole Method Statement and we will provide updated advice accordingly. The submission of a draft protected species licence application remains outstanding This matter is of key concern given that the Application is currently in examination."	be reflected in the Outline LaBARDS once Natural England have agreed the revised method statement. The Applicant remains committed to providing a draft protected species licence application, based on the method statement, such that Natural England can issue a Letter of No Impediment to support it.

Table 2-4-3 – Thames Water Utilities Limited

Doc ref	Summary of issue raised	Applicant's response
REP1-057	2.33 If the direct loss of LNR land/MOL is not deemed sufficiently harmful in itself (a position which TWUL does not accept), then TWUL considers that the adverse ecological impacts provide further weight against the grant of the Application. Firstly TWUL remains of the view that the survey methodologies used by the Applicant to inform its Environmental Statement were not in accordance with best practice in many respects, notwithstanding the Applicant's responses to relevant representations. 2.34 With regards to reptile surveys, these occurred at the very end of the survey period for a period of just two weeks (September 13, 15, 19, 22, 26, 29 2023 and refugia collected in on October 3 2023). The recognised survey season runs from March to October when temperatures are between 8 and 18 degrees centigrade. Although late August to late September can be useful for capturing juveniles, according to Froglife8 , March captures animals emerging from hibernation, with peak months for adults being in April and May. Amphibian and Reptile Conservation's (ARC) National Reptile Survey Protocol9 states that sampling should be split between two sampling periods incorporating six visits in March to June, and mid-August to mid-October. Further ARC guidance recommends that the survey be split with four visits in the first sampling period (1st March to 30th June) and two in the second (15th August to 31st October). They suggest that as a general guide, surveyors should allow for an interval of at least five days between visits. 2.35 Reptile surveys did not occur in the key areas that would be lost to the Project. As stated in 2.4.2 of ES Appendix 7-7: Reptile Survey Report, the East Paddock was not surveyed due to the presence of horses and the Stable Paddocks were not surveyed. TWUL maintain that the East Paddock should have been surveyed for reptiles. This provides good reptile habitat and, being located immediately west of the development footprint, will suffer the impacts of shading, particularly in the mornings when reptiles require warm basking spots to regulate their temperature.	The Applicant recognises accepts that there will be the direct loss of land within Erith Marshes SINC/Crossness LNR and has undertaken a detailed assessment of the impacts of the Proposed Scheme on this designated site and ecological features it supports in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. **Section 7.4** of this chapter and its associated supporting appendices, details the survey methodologies used to provide the ecological baseline for assessment presented in **Section 7.8** of the chapter, and the Applicant considers these were appropriate to evaluate the ecological features. Limitations of surveys are described within the reports that form appendices to **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. The Applicant is confident that further survey or changes in methodology would not yield a difference in the conclusions returned by the assessment within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, and for this reason the survey methods are considered robust. As detailed in **Table 7-4** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, timing of visits was chosen to cover optimal months for reptile survey, avoiding warm summer months when the use of artificial refugia to attract reptiles is not effective[5] . Remaining elements of the methodology, as detailed in **Appendix 7-7: Reptile Survey Report of the Environmental Statement (Volume 3) (APP-094)** followed guidance issued by Froglife[6] and in the Herpetofauna Workers Manual[7]. As detailed in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, the East Paddock was not surveyed on the grounds of health and safety due to the permanent presence of horses that were known to disturb equipment if left out in the field (i.e. the refugia used to detect reptile presence). The Applicant, as detailed in the report, maintains that this was not considered a significant limitation to the survey as the field is heavily grazed by horses and therefore provides

[5] Reading, C. (1996). 'Evaluating Reptile Survey Methodologies. English Nature Research Report 2000'. English Nature, Peterborough.
[6] Froglife. (1999). 'Reptile Survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation'. Froglife Advice sheet 10. Froglife, Halesworth.
[7] Gent, A and Gibson, S. (1998). 'Herpetofauna Workers Manual, Joint Nature Conservation Committee, Peterborough'.

Doc ref	Summary of issue raised	Applicant's response
		only a low suitability for reptiles. It should be noted that evaluation of Site for reptiles took into account not just field survey results, but also desk study information including records of reptile sightings noted by Thames Water at Crossness LNR from 2015 to 2022, as well as those held by Greenspace Information for Greater London (GiGL). In addition, if survey data from East Paddock had been available it would not have changed the evaluation of reptiles, the assessment of impacts on them, nor the mitigation for effects that has been proposed. Sources of baseline data have therefore provided an appropriate and robust baseline for the evaluation of the Site's importance for reptiles to inform the assessment in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**.
REP1-057	2.36 With the Project intending to utilise the whole of the Crossness LNR, TWUL remain concerned that no baseline ecological surveys were undertaken across the LNR. Only 1 static bat detector was located across the 25ha reserve10, the location of which would have skewed the data by its close proximity to the construction of Riverside 2 and subsequent light pollution. No reptile surveys took place on TWUL land11 . A review of the breeding bird survey appears to indicate that Lagoon Field and Island Field were not surveyed12, even though the Applicant appears to be identifying Lagoon Field as a potential receptor site for the relocated stable block, Public Footpath 2 (Fig 9 of the LaBARDS), and the relocated STW emergency access/egress road, (as presented verbally during a site visit with TWUL's tenant graziers and Crossness Nature Reserve Manager on 14th May 2024). Similarly, Island Field and Island Field Lagoons did not form part of the Wintering Bird Survey13 (as demonstrated by the lack of survey results shown in Fig 7-27 – Overall Distribution of Waterbirds – Figures – Part 1) despite those parcels of land being identified as part of the Project's 'Mitigation and Enhancement Area'.	Baseline ecological surveys were undertaken covering areas under the footprint of the Proposed Scheme and the Mitigation and Enhancement Area, where direct impacts and compensatory habitat creation and enhancement will occur. Regarding survey extent, at the time of the baseline terrestrial biodiversity surveys, although the Site Boundary did not include the Lagoon Field and Island Field, no interventions (through the Proposed Scheme directly or habitat creation and enhancement) are proposed in these areas – they are instead proposed to be managed as part of the overall expanded Crossness LNR. Ecological surveys focussed on the development footprint and areas within the Mitigation and Enhancement Area (i.e. Norman Road Field) where measures proposed in the **Outline LaBARDS (REP1-012)** would be focussed, with the application of an appropriate survey buffer. However, the evaluation of the Site for protected and/or notable species (including bats, wintering and breeding birds) took into account not just field survey results, but also desk study information including records noted by Thames Water at Crossness LNR from 2015 to 2022, as well as those held by Greenspace Information for Greater London (GiGL). These sources provided an appropriate and robust baseline for the evaluation of the Site's importance for protected and/or notable species to inform the assessment in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**.
REP1-057	2.37 No part of the LNR received a botanical survey except East Paddock and Stable Paddocks, which was inadequately carried out from the roadside with binoculars, thereby missing notable species such as the large stand of Strawberry Clover (Trifolium fragiferum) listed as Vulnerable to Extinction in the 2020 Plant Atlas , the Pink Water-speedwell (Veronica catenata), and Borrer's Saltmarsh-grass (Puccinellia fasciculata) all of which are indicative of Thames Grazing Marsh habitat, the latter being included in the list of habitats and species of principal importance in England (Habitats and Species List), pursuant to section 41 of the Natural Environment and Rural Communities Act 2006 (NERC). The Applicant also missed the presence of narrow-leaved bird's-foot Trefoil (Lotus tenuis), which is listed as Vulnerable to Extinction in this region.	Botanical survey described within **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)** was undertaken to identify habitats and characterise the botanical community for the purposes of the impact assessment, and to determine the condition of habitats for the purposes of Biodiversity Net Gain. It was appropriate that it focussed on areas where habitat would be lost (i.e. the East Paddock/Stable Paddock) or where compensation/enhancement was proposed (i.e. the Mitigation and Enhancement Area, namely Norman Road Field). Thus, although further species may have been present and not revealed by the botanical survey, the data collected was appropriate for the identification of habitat types, primarily confirmation that Coastal Floodplain Grazing Marsh is dominant, and to allow their evaluation as well as of the botanical community as a whole. Data on habitat condition was also appropriate to inform **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement**

Doc ref	Summary of issue raised	Applicant's response
		(Volume 3) (APP-088) as it followed the methodology associated with the UK Government's Statutory Metric[8]. The Applicant does not agree that an inappropriately low level of value of designated sites, habitats or notable plants has been presented within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Crossness LNR, SINCs, habitats (other than those that are clearly common and widespread) and notable plants have been evaluated at County level (i.e. important in the wider Greater London area). The Applicant maintains this is an appropriate and robust baseline position for the assessment of ecological impacts on the habitats and botanical features relevant to the Proposed Scheme. With reference to survey of East Paddock and Stable Paddock, no safe access was available to the East Paddock due to the presence of horses. However, the plant species were recorded directly from the southern and eastern boundaries of the field (as noted in the survey limitations presented in **Section 2.4** of **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)**. Other parts of the habitat could be adequately surveyed from the other side of the fence using binoculars to confirm visually they are similar to those directly surveyed. Thus, the survey is considered to be sufficient for the purposes it was intended.
REP1-057	2.38 In relation to NERC, it is important to note that section 4.2.10 of the NPS makes clear that applicants for CNP infrastructure must show how their application meets not only the requirements in the NPS but any other legal requirements. So far as legal requirements are concerned, footnote 99 of the NPS states that: "The Secretary of State will continue to comply with any legislative requirements, such as…section 40 of the [NERC]". Section 40 of NERC requires public authorities to "consider what action the authority can properly take, consistently with the proper exercise of its functions, to further the general biodiversity objective." Sections 40(4)(a) and (c) of NERC confirm that 'public body' includes a Minister of the Crown and a government department and so. the Secretary of State is a public body for the purposes of NERC. As such, the Secretary of State has a legal duty to further the general biodiversity objective, which is of significant importance in the Secretary of State's determination of the Application.	The NERC Act was amended by the Environment Act 2021 to set out that the 'general biodiversity objective' is "*the conservation and enhancement of biodiversity in England through the exercise of functions in relation to England".* It is agreed that the Secretary of State needs to consider this matter in exercising his/her functions in determining the DCO application for the Proposed Scheme. In DCO decisions, the Secretary of State usually states something akin to the following (taken from the Decision Letter for the Mallard Pass Solar project DCO): *The Secretary of State notes the "general biodiversity objective" to conserve and enhance biodiversity in England, section 40(A1) of the Natural Environment and Rural Communities Act 2006 and considers the application consistent with furthering that objective, having also had regard to the United Nations Environmental Programme Convention on Biological Diversity of 1992, when making this decision.* *The Secretary of State is of the view that the ExA's Report, together with the Environmental Impact Assessment considers biodiversity sufficiently to inform the Secretary of State in this respect. In reaching the decision to give consent to the Proposed Development, the Secretary of State has had due regard to conserving biodiversity.* In the Applicant's view, the conclusions of the ES for the Proposed Scheme, taken with the Applicant's commitments in the LaBARDS and in respect of BNG, will enable the

[8] UK Government. (2023). 'Statutory biodiversity metric'. Available at: Statutory biodiversity metric tools and guides - GOV.UK (www.gov.uk)

Doc ref	Summary of issue raised	Applicant's response
		Secretary of State to make a similar decision – the ES concludes only significant effects in respect of local ecological air quality impacts, and a minimum 10% BNG is to be delivered, as secured through the DCO.
REP1-057	2.39 As per Government guidance on habitats and species of principal importance in England, the Habitats and Species List "is for…public bodies – to help them meet their 'biodiversity duty' to be aware of biodiversity conservation in their policy and decision making". Given there is a species listed on the Habitats and Species List present on the part of the LNR on which part of the Project is to be constructed, which the Applicant has failed to identify and has not assessed in its ES, the Application fails to meet a legal requirement that is considered to be of such importance as to be explicitly noted in the NPS and is not in accordance with the NPS in this respect. The Secretary of State therefore needs to be satisfied that granting the Application would be consistent with its duty to further general biodiversity objective. Without the impact of the loss of the protected species being assessed in the ES, TWUL's view is that the SoS cannot be so satisfied.	The Applicant notes that any obligations relating to the NERC relate to the NERC, not the NPS. The Applicant cannot be 'not in accordance with the NPS' for a footnote which reminds the Secretary of State of his/her statutory obligations. The assessment carried out within **Environmental Statement Chapter 7: Terrestrial Biodiversity (APP-056)** has evaluated Crossness LNR, habitats that comprise the LNR (primarily but not limited to Coastal Floodplain Grazing Marsh, recognised as a Habitat of Principal Importance under the NERC act) and notable plants found within the LNR and habitats on Site more widely as being of County value (i.e. the scale of Greater London). The Applicant's position is that this remains the correct evaluation of these ecological features, and that as it covers the botanical species found at the LNR is confident that habitats and species including those that may be identified as being of Principal Importance have been appropriately assessed within the ES. The Applicant's view is that the conclusions of the ES are therefore correct and able to be taken into account by the Secretary of State in discharging his/her NERC duty.

Table 2-4-4 – Buglife

Doc ref	Summary of issue raised	Applicant's response
REP1-046	Buglife remain concerned about the impact on the invertebrate populations within the Thames Estuary South Important Invertebrate Area (IIA) due to the loss of a 2 ha area of the Crossness Local Nature Reserve to the proposals. The Outline Landscape Biodiversity, Access and Recreation Delivery Strategy (Outline LaBARDS) states "This proposal allows for the ongoing Crossness LNR management to be retained and the additional benefits of a single and enlarged LNR to be secured through the Proposed Scheme." Whilst the scheme may result in a larger area of LNR from a legal standpoint, the area of habitat actually available for use by invertebrates will have decreased. As this site is functionally linked to other sites within the IIA, the loss of habitat on this site is likely to have much wider impacts on invertebrate populations within the region, particularly in the context of the continuing loss and erosion of many high-quality invertebrate sites within the Thames Estuary. As far as Buglife are aware, there is no threat to management being able to continue at Crossness LNR and therefore this is not a benefit from the proposals. From the most recent data available (Terrestrial Invertebrate Survey Report 2020-21, Colin Plant Associates, November 2021), the reserve currently supports six Specific Assemblage Types of invertebrates in favourable condition associated with a range of habitats across	The Applicant had a productive meeting with Buglife's representative regarding Buglife's concerns on the 26th November 2024, as described within the **Buglife SoCG (as updated alongside this submission)**. The Applicant is aware of taking land within an industrial landscape that is a Habitat of Principle Importance (HPI) and the Applicant recognises that the invertebrate community is of county importance within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, which has informed the Applicant's strategy for ecological mitigation from the beginning. The Applicant explained that, on site, the Proposed Scheme would improve Coastal Floodplain Grazing Marsh (CFGM) habitat and increase pollen/nectar plants alongside ditch improvements. The Proposed Scheme would enhance the habitat across Norman Road Field and put in place new 30-year management provision, following compliance with the Environment Act, on habitat compensation and enhancement measures, through provisions of the **Outline LaBARDS (REP1-012)** as secured through a requirement in the **Draft DCO (REP1-002)**. The Applicant also explained that it is working with Peabody to deliver off site mitigation at the BNG Opportunity Area (at former Thamesmead Golf Course) (as described in the **Peabody SoCG (REP1-017)**), which will involve creation of ditches and Open Mosaic Habitat (OMH) next to wildflower meadows which will provide a wildflower rich

Doc ref	Summary of issue raised	Applicant's response
	the site. The Terrestrial Invertebrate Report (Appendix 7.8 of the Environmental Statement (ES)) highlights that the site as a whole supports the best examples of the range of the eleven Habitat Elements that were considered in the survey. Survey Area 2 in the report is the area that will largely be lost to the development footprint supported five of the best examples of these Habitat Elements that are considered of importance to invertebrates.	environment that will benefit invertebrates. The Applicant continues to discuss matters addressed within the SoCG with Peabody, and will incorporate commitment to include invertebrate survey in work to update the ecological baseline required prior to any BNG works at the Thamesmead Golf Course in the next revision of the **Outline LaBARDS (to be submitted at Deadline 3)**. The Applicant welcomed Buglife's input during the aforementioned meeting and understood that whilst improving the habitat condition of CFGM on site, will not always improve habitat for invertebrates, the Proposed Scheme includes a commitment to restoring water drainage (which will restore CFGM) but also that the habitat is not uniform and so there are opportunities to manage for micro habitats that will benefit invertebrates. The Applicant welcomed the opportunity to detail specific management for invertebrates in the full LaBARDS.
REP1-046	The adjacent habitat in Norman Field currently acts as a further habitat resource to invertebrates and therefore does not comprise a new or expanded area of habitat. In fact, the Terrestrial Invertebrate Report (Appendix 7.8 of the Environmental Statement (ES)) indicates four different Habitat Elements that are already considered 'Good Quality' examples in the survey area that included Norman Field, including nectar resources which are of key important to species such as the Shrill Carder Bee (Bombus sylvarum). The report states these examples are "Likely to be a predominant factor in supporting characteristic and specialised invertebrate assemblages"	The Applicant understands that sections of Norman Field are beneficial to invertebrates as detailed within **Appendix 7-8: Terrestrial Invertebrate Survey Report of the Environmental Statement (Volume 1) (APP-095)**. However, there are still opportunities to enhance this area for invertebrates by managing micro habitats that benefit invertebrates. In the meeting with Buglife's representative on the 26th November 2024, as described within the **Buglife SoCG (as updated alongside this submission)**, the Applicant welcomed the opportunity to develop specific management provisions for invertebrates with Buglife's cooperation. One suggestion from Buglife was seasonally wet areas with mounds of substrate dotted through the site, which the Applicant is happy to incorporate into the management plan where practicable. The Applicant would also increase the extent of pollen/nectar producing plants, where practicable, which will benefit the Shrill Carder Bee (if present).
REP1-046	Land use conflicts and mitigation concerns. The land at Crossness is already subject to a Section 106 agreement of which the intention was to secure the whole area as a nature reserve until 2093 as compensation for development. A new Section 106 agreement is proposed for this scheme with the intention this will provide the mechanism to secure the future of the site. It is difficult to have confidence that these agreements will be upheld when the previous agreements in place for the LNR are not being kept in order to facilitate a further development.	The Applicant notes that compliance with the detailed LaBARDS is a Requirement of the DCO. Compliance with the DCO is enforceable by LBB and breach of the DCO is a criminal offence. Furthermore, the Applicant has a track record in keeping its ecological commitments, as seen within the Order limits with the Riverside 1 ecological mitigation area, that the electrical connection for Riverside 2 has been laid with improved ecological outcomes and that off-site BNG sites are being delivered. There can be confidence therefore that the commitments made for the Proposed Scheme will be met.

Table 2-4-5 –Environment Agency

Doc ref	Summary of issue raised	Applicant's response
REP1-035	"The land raising and the spatial extent of the development platform could have significant impacts to watercourses, designated habitats and protected species. Maximising the setback from main rivers where possible is essential to protect the ecology of the watercourse and allow space for fluvial floodplain compensation works."	Impacts of the Proposed Scheme, and effects on ecological features as a result of its construction, are assessed within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. This has included consideration of land raising and the spatial extent of the development platform principally through assessment of habitat loss, which has covered effects on watercourses (i.e. ditches and

Doc ref	Summary of issue raised	Applicant's response
		other waterbodies present within the Site, designated habitats (Crossness LNR, SINCs, HPIs) and protected species (including water vole). The detailed design of the Proposed Development including the configuration of the Development Platform for the Carbon Capture Facility will be progressed following determination of the application for a DCO. The **Design Principles and Design Code (AS-020)** will form the basis of design assessment for the development of the Proposed Scheme as the detailed design comes forward through requirement discharge; a Compliance Statement would be submitted to support the discharge of the detailed design Requirements of the **Draft DCO (as updated alongside this submission)** which will report on compliance with both the Design Principles and the Design Code. The **Design Principles and Design Code (AS-020)** states the intention to allow for a minimum 5m offset, up to 8m or greater where practicable, from the top of bank on existing retained watercourses to allow for maintenance, to protect habitats and for the delivery of flood compensation. Works within the watercourse corridors will be defined in the full Landscape, Biodiversity, Access, and Recreation Delivery Strategy and Code of Construction Practice, both of which will be prepared in substantial accordance with the **Outline LaBARDS (REP1-012)** and the **Outline Code of Construction Practice (as updated with this submission)**. It is also noted that the **Appendix 11-2: Flood Risk Assessment of the Environmental Statement (Volume 3) (AS-023)** (compliance with which is secured by Requirement 18(1) of the **Draft DCO (as updated alongside this submission)** requires that the Environment Agency and LBB will approve the compensation for the loss of floodplain proposals of the Applicant at the detailed design stage.
REP1-035	"We are in agreement with comments from Natural England. We have concerns with the proposed infilling of ditches with a presence/potential for Water voles. No development should take place until a water vole mitigation strategy that includes displacement under licence is submitted to and approved by the local planning authority. At present, the proposals represent a degradation of viable habitat for o water voles and certain harm without displacement and mitigation. Proposals should include: • Mitigation measures for habitat destruction. • A methodology of displacement under licence. Biodiversity net gain assessment to include new habitat created on and off site. • Further ecological mitigation in the form of retaining and enhancing pier structure(s) should be included within the BNG assessment. In addition, further proposals to create on-site habitat for pollinators/birds should be included. This could include, but not limited to green roofs/walls green SuDS schemes and native planting."	The Applicant recognises the Proposed Scheme will require infilling of ditches that are used by water voles, and **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** assesses these impacts on the affected population. The Applicant had a productive meeting with Natural England's representative regarding the water vole method statement on the 21st November 2024, **Natural England SoCG (PDA-002),** and is in the process of revising the water vole method statement. We are grateful for the input of the Wildlife Licensing Service advisor for their help and appreciate this is a key concern. In particular, the Applicant has committed to a change from a programme of water vole capture, captive breeding and subsequent release as mitigation, towards direct displacement of water voles into newly created habitat. The Applicant remains committed to providing a draft protected species licence application such that Natural England can issue a Letter of No Impediment to support it. Intertidal piers associated with the Belvedere Power Station Jetty (disused), Middleton Jetty and the Proposed Jetty are accounted for within **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088),** both as their footprint (i.e. developed land with no ecological value) and the vertical surface available to biodiversity (i.e. intertidal hard structures, valuable to wildlife). The Applicant is open to

Doc ref	Summary of issue raised	Applicant's response
		discussion with the Environment Agency as to which 5-pier structures could be enhanced such that their value to intertidal fauna is increased, and they will be consulted on final BNG proposals in the intertidal environment pursuant to Requirement 16. Finally, on site proposals for pollinators and birds are currently outlined in habitat creation measures described by the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**. These do not include green roof or green wall structures as they have been considered unfeasible for an industrial facility such as the one comprising the Proposed Scheme, but will rely on native planting. The **Outline Drainage Strategy (AS-027)** for the Proposed Scheme subscribes to SuDS principles and engineered changes to the hydrology within the Mitigation and Enhancement Area to increase the amount of water received to correct a longstanding issue with insufficient water within Norman Road Field which currently limits its biodiversity value. This will contribute significantly to biodiversity, as described in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**.

Table 2-4-6 – Save Crossness Nature Reserve

Doc ref	Summary of issue raised	Applicant's response
REP1-050	Provision of a Botany Report	The Applicant recognises that the **Botany Report (REP1-050)** provided by Save Crossness Nature Reserve (SCNR) (hereafter referred to as the 'SCNR Report') has been undertaken by a nationally recognised expert with extensive experience in the identification of vascular plants and habitats, supported by a second botanist that has achieved the highest level (6) of certification under the Botanical Society of Britain and Ireland's Field Skills Identification Certificate. Thus, the Applicant does not dispute the extensive species lists both authors have provided within the SCNR Report. However, it is the Applicant's position is that the information provided, although a more detailed and extensive description of the botanical community at Crossness LNR, does not change the position presented in relation to evaluation of Crossness LNR, Site habitats or notable plants (i.e. the botanical community) and the assessment of impacts on them within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Nor does it change the overall position with regards BNG as presented in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**. The Applicant's reasoning is presented below. **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)** was undertaken to identify habitats and characterise the botanical community for the purposes of impact assessment, and to determine the condition of habitats for the purposes of Biodiversity Net Gain. It was appropriate that it focussed on areas where habitat would be lost (i.e. the East Paddock/Stable Paddock) or where compensation/enhancement was proposed (i.e. the Mitigation and Enhancement Area, namely Norman Road Field). Thus, although further species may have been present and not revealed by the Applicant's botanical survey, the data collected was appropriate for

Doc ref	Summary of issue raised	Applicant's response
		the identification of habitat types, and to allow their evaluation as well as that of the botanical community as a whole. The Applicant notes the SCNR Report does not dispute the classification of the East Paddock and Stable Paddock (the area of Crossness LNR to be lost) as Coastal Floodplain Grazing Marsh, nor that the Mitigation and Enhancement Area (Norman Road Field) is also Coastal Floodplain Grazing Marsh. The Applicant recognises and welcomes the agreement with their botanical work and that undertaken by SCNR, as summarised in the SCNR Report's conclusions, that the majority of Norman Road Field is Coastal Floodplain Grazing Marsh, in to support of the assessment within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, despite strongly opposing viewpoints on the Proposed Scheme. The Applicant does not agree that an inappropriately low evaluation for designated sites, habitats or notable plants has been presented within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and disputes the statement within the Report that the ecological value of Crossness LNR has been 'significantly underestimated'. Crossness LNR, SINCs, habitats (other than those that are demonstrably common and widespread in the UK) and notable plants have been evaluated at County level (i.e. important in the wider Greater London area). Although it is appreciated graphical representations of modelling work that has quantified the impact of shading, as presented in **Appendix 7-11: Shading Study of the Environmental Statement (Volume 1) (APP-098)**, may be hard to directly reconcile with habitat maps, due to the way in which these data are presented (the former as 3D renderings and the latter 2D maps), the impacts of shading are fully described and effects assessed within **Section 7.8** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Shading due to buildings and installation of equipment from the Carbon Capture Facility during operation would not extend more than 10-20m from structures but would shade habitats underneath Above Ground Pipelines directly, in particular reedbed, as acknowledged by the Moderate Adverse (Significant) effect recorded for this habitat described in **Paragraph 7.8.96** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Compensation for reedbed loss is proposed as Additional Mitigation for this loss and the residual effect is Negligible (Not Significant) as described in **Table 7-11** of the chapter. The Applicant maintains an appropriate and robust baseline position for the assessment of ecological impacts on habitats and botanical features has been presented within **Section 7.6** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Therefore, the assessment within **Section 7.8** of the chapter also remains robust alongside the additional data presented in the SCNR Report. The SCNR Report recognises an area of grassland 0.66ha in size within the south of the Mitigation and Enhancement Area as Coastal Floodplain Grazing Marsh when it has been classified as neutral grassland by the Applicant's botanical survey. This area is

Doc ref	Summary of issue raised	Applicant's response
		roughly diamond shaped, bordered by the A2016 Eastern Way to the south, Norman Road to the east, and separated from majority of the Mitigation and Enhancement Area to the north by a watercourse running east to west. This area of habitat would not be lost as it is outside the footprint of the Carbon Capture Facility; it is proposed be subject to enhancement as part of compensation for habitat loss resulting from the Proposed Scheme as described in the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**. Classification of this area as Coastal Floodplain Grazing Marsh would not change the conclusions of the assessment within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** for this reason. The situation with regards Biodiversity Net Gain as described in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)** would remain unchanged, and no further land for habitat compensation would be required from the BNG Opportunity Area at the former Thamesmead Golf Course to achieve a 10% net gain in biodiversity value; it would still be included in enhancement proposals as described in the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**. The SCNR Report makes two comments on proposals in the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**. Firstly, that tree planting in areas of Coastal Floodplain Grazing Marsh would be detrimental to the enhancement of this habitat. This point is accepted. The trees within the submitted landscape designs are indicative of the approach only and will be removed in light of this commentary going forwards in the next iteration of the Outline LaBARDS to be submitted to the Examination at Deadline 3 (which will be happening in any event to reflect NE's comments on water voles, discussed above). The Applicant confirms that the position with regards to Biodiversity Net Gain, as presented in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, has not relied on tree planting in the Mitigation and Enhancement Area; their removal will not affect the BNG Metric outcomes. The illustrative proposals in **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)** Figure 14 suggest a sparse collections of trees along the eastern edge of Norman Road Field. The intention was to: • Improve diversity of ditch side habitat to include some occasional low level native trees such as *Salix caprea*. • Provide additional layers of screening for the CCF built form and fence lines when viewed from CLNR. • Maintain light levels for grazing marsh plant species through wide spacing between proposed trees/ shrubs and selecting species with a low/ hunkered form. However, we are in agreement that tree planting should not detract from grazing marsh habitats and will update the illustrative Figure 14 to show significantly reduced tree numbers. LaBARDS is an outline document, with full LaBARDS to be approved by LBB under Requirement of the **Draft DCO (as updated alongside this submission)**.

Doc ref	Summary of issue raised	Applicant's response
		Secondly, the advice stemming from the SCNR Report's authors experience that sowing seed within Coastal Floodplain Grazing Marsh habitat would be unnecessary as part of enhancement is welcomed and will also be incorporated into detailed plans for enhancement of this habitat type which would be described within the full Landscape, Biodiversity, Access and Recreation Delivery Strategy, pursuant to a requirement in the **Draft DCO (REP1-002)** and referenced in the next iteration of the Outline LaBARDS to be submitted to the Examination at Deadline 3.

Table 2-4-7 – Greater London Authority

Doc ref	Summary of issue raised	Applicant's response
REP1-072	"Results from the ES highlight a potential significant negative impact of nitrogen oxides from the proposed development on ecological receptors (namely Ingrebourne Marshes and the Inner Thames Marshes SSSIs, and Crossness and Rainham Marshes Local Nature Reserves). However, the report does not clearly set out proposed mitigation approaches."	The NOx impacts of the full Proposed Scheme during operation are presented in **Table 5-47** of **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)**. As shown, at all habitat sites assessed, except for West Thurrock Lagoon, the NOx PEC is well below the relevant Critical Load and in all cases, the impacts are negligible (not significant). The Applicant has investigated a potential reduction in impacts from ammonia emissions on ecological sites. Additional modelling has been undertaken post-submission of the Environmental Statement using a reduced emission limit value (ELV) of 10mg/Nm^3 (at 11% O_2, dry) for ammonia post-carbon capture. The application of the reduced ELV will result in impacts over all sites designated for nature conservation that are markedly lower than presented within the **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)**. Further detail is provided within **Appendix B** of this report. The reduced ELV has been incorporated at 1.12 of the **Mitigation Schedule (REP1-010)** and is secured via the **Draft DCO (updated alongside this submission)**.
REP1-072	The results state that the net gain in habitat units is +10.01% including both onsite and offsite locations. It would be more transparent to note that the onsite score by itself is +1.31%.	This point is noted by the Applicant. However, the Applicant has been clear off-site proposals will be required to achieve Biodiversity Net Gain through **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**, and the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**.
REP1-072	The jetty location has not yet been determined, the BNG assessment will need to be updated once that happens.	The Applicant agrees that the BNG calculations for the Proposed Scheme would need updating once the position with regards retention of demolition of the Belvedere Power Station Jetty has been confirmed during the detailed design of the Proposed Scheme, and this would be accounted for in order to meet the requirements of Requirements 12 and 16 of the **Draft DCO (as updated alongside this submission)**. However, it should be noted that this report takes a worst-case approach with regards the Belvedere Power Station Jetty and Biodiversity Net Gain to ensure the precautionary principal is followed.
REP1-072	Temporary construction compounds, utilities connections and site access works are included within the assessment. However, it is unclear how/whether the habitats within these areas have been treated differently to permanently impacted habitats. For	Where habitats fall under temporary or permanent work areas they have been treated as lost, and compensatory habitat creation provided to replace them. Compensatory habitat

Doc ref	Summary of issue raised	Applicant's response
	example, have they been treated as lost and re-instated due to their temporary nature? (1.1.2)	creation proposed is described in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)**.
REP1-072	The methodology for assigning Strategic Significance (SS) scores is outlined in Table 2-1. There is no mention of the Preliminary Ecological Appraisal being used to help assign scores or whether habitats are 'ecologically desirable' to species within the footprint and surrounding area. (2.1.2)	Although the **Appendix 7-2: Preliminary Ecological Appraisal Environmental Statement (Volume 3) (APP-089)** is not specifically referenced, **Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)** states in **Paragraph 2.2.1** that desk study data, including that showing designated sites and Habitats of Principal Importance, has been used as a source to inform allocation of Strategic Significance to habitats. The criteria used are clearly defined with respects to elements of desk study data in Table 2-1.
REP1-072	A 'delay' in habitat creation of 2 years has been applied in the Metric, because habitats proposed within the scheme footprint will be installed following the completion of the construction phase. Note that if the delay will be more than 2 years, this will need to be amended and will impact the BNG score. (2.1.3)	The Applicant notes this point and confirms they will amend delays recorded for habitat creation in the Metric should the proposed construction programme change.
REP1-072	3.3 outlines variables that influence the metric score for onsite biodiversity. It is noted that an area for the piers is not given, only that they are assumed to be 1m in diameter. It is unclear what area of 'developed land' has been entered into the metric on this basis, or a statement that the total area of piers is under threshold	Piers supporting jetties, including Middleton Jetty, the Belvedere Power Station Jetty and the Proposed Jetty have been included in total values given for Developed Land; Sealed Surface in **Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)** where this occurs in the marine environment. This includes in the baseline (without the Proposed Jetty), and the post-development situation (with the Proposed Jetty).
REP1-072	4.1.5 sets out the habitat creation and enhancement measures within the Mitigation and Enhancement Area. It is queried why 'Poor' condition is targeted for the new woodland creation	The Applicant has taken a conservative approach to what can be achieved with some elements of landscaping within the footprint of the Carbon Capture Facility. For woodland in particular, the Applicant has targeted Poor condition to ensure deliverability of the habitat and to not overpromise on the ecological value such woodland within an industrial context could bring. See also the response in **row 15 of Table 2-9-3**.
REP1-072	It should be added as a note that any changes to the assumed habitat creation and enhancements that have been entered into the Metric, will result in a change in the BNG score. So that any contractor delivering the scheme is aware that changes to specification will have an impact.	This is noted. The Applicant will make sure that changes to the specification that would result in changes to habitats retained, enhanced or created will result in revision of the Biodiversity Net Gain Metric calculations which would accompany seeking approval of the detailed LaBARDS. However, it is anticipated that the measures included in **Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)** will be implemented as proposed.
REP1-072	Linear habitats appear to be missing on the figures.	Ditches and other linear water features are shown as their area footprint on the figures within **Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)**. This is considered the clearest way to present this information.
REP1-072	It would be useful to have an explanation of the trading rules for each distinctiveness type. There is presence of high distinctiveness habitats that should be replaced like-for-like. Although the report states that trading rules are satisfied, it would be useful to provide a narrative around how trading rules influenced the mitigation provided.	This is noted. The Applicant has prepared a Technical Note, which describes how the trading rules are met for each habitat type and will provide this into the examination at Deadline 3.

Table 2-4-8 –Save Crossness Nature Reserve

Doc ref	Summary of issue raised	Applicant's response
Site Context		
REP1-047	46. The high biodiversity value of Crossness Nature Reserve is confirmed by its designation as a Local Nature Reserve (which "provide a significant and long-term contribution to nature conservation"7) and part of Erith Marshes SINC. It consists of high quality ancient coastal and floodplain grazing marsh and reedbed, which are both Habitats of Principle Importance (HPI)8. The Applicant disputes whether this grazing marsh land can be considered "ancient" – however, Ordnance Survey Drawings dating back to 1799 show this land has been part of Erith Marshes for at least 225 years. This gives even greater value to Crossness Nature Reserve, and emphasises how irreplaceable it is.	The Applicant does not disagree that Crossness LNR, Erith Marshes SINC, Coastal and Floodplain Grazing Marsh and Reedbed are important ecological features, and for this reason they have all been evaluated as being of County value within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. In the SoCG discussions with SCNR, the Applicant has confirmed that it does not consider the grazing marsh within the Order limits to be ancient, not least as the area was arable land before reverting to grassland and becoming a grazing marsh. It hasn't existed in its current form since 1600 or pre-industrial times. Although the Applicant recognises the ecological importance of habitats comprising Crossness LNR, they are not classified as irreplaceable with respect to Biodiversity Net Gain, as defined within the Schedule of The Biodiversity Gain Requirements (Irreplaceable Habitat) Regulations 2024.
REP1-047	50. The Proposed Scheme results in harm to protected species and their habitat (as detailed out below). Therefore, the Secretary of State should give substantial weighting to the biodiversity harm caused by the Proposed Scheme and should refuse consent. As the CNP presumptions do not apply, they cannot override this substantial weighting; and in any event, the significant extent of harm here, and the ability to avoid it, would render this an exceptional case even if the CNP presumptions did apply.	The Application documents (not least the Planning Statement (APP-040) the TSAR (APP-125) and the Environmental Statement (particularly Chapter 7) (APP-056)) comprehensively address paragraph 4.2.10 of NPS EN-1 to show how the Proposed Scheme meets the requirements of the NPS *'applying the mitigation hierarchy, as well as any other legal and regulatory requirements*.', and thus CNP status will apply. At paragraph 4.2.15, NPS EN-1 states that: '*Where residual non-HRA or non-MCZ impacts remain after the mitigation hierarchy has been applied, these residual impacts are unlikely to outweigh the urgent need for this type of infrastructure. Therefore, in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts*. ...' . Whilst adverse impact to terrestrial biodiversity within the Order limits is identified, the level of harm is not '*exceptional'* or substantial*.* The level of harm resulting from the Proposed Scheme is not unusual for a project of this scale and, importantly, it is readily mitigated and compensated, with the proposals set out in the Outline LaBARDS and **Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)** providing for biodiversity net gain. Furthermore, the Applicant notes that there will no residual harm to protected species with water voles able to be mitigated pursuant to a licence and the Applicant is aiming to obtain a Letter of No Impediment from Natural England, before the end of Examination.
Breeding Birds		
REP1-047	54. The Applicant's desk study failed to account for three species on the IUCN Red List of Threatened Species: common cuckoo, skylark and northern lapwing. The common cuckoo has been spotted on Crossness Nature Reserve on multiple occasions in spring this year. Breeding skylarks were spotted on Borax Fields up until Riverside 2 construction began. The Applicant notes that lapwing have been present on Crossness Nature Reserve in the past, but have not successfully bred on the site in recent years (the most recent recorded breeding being 2021). The failure of the desk study to account for these species highlights	The Applicant maintains that the information provided here by SCNR does change the evaluation of the Site for breeding birds presented in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** nor the subsequent assessment of impacts provided therein. Desk study data obtained from Greenspace Information for Greater London is summarised in **Table A-1** of **Appendix 7-5: Breeding Birds Survey Report of the Environmental Statement (Volume 3) (APP-092)** and shows the Applicant's desk study identified records of northern lapwing (referred to by its

Doc ref	Summary of issue raised	Applicant's response
	the limitations of this methodological approach to ecological impact assessments. There is a need for a further full assessment that factors these species in.	UK vernacular name 'lapwing' rather than the international name 'northern lapwing'), common cuckoo (referred to simply as 'cuckoo' using UK vernacular) and skylark, demonstrating the desk study has not failed to take these species into account nor that this information was not incorporated into the assessment within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Moreover, northern lapwing and common cuckoo were identified by breeding bird survey work (**Appendix 7-5: Breeding Birds Survey Report of the Environmental Statement (Volume 3) (APP-092)**), the former species as present within the survey area but not actively breeding (as detailed in **Table 4-2**) and the latter as present outside the survey area but within Crossness LNR (as detailed in **Paragraphs 4.2.2** and **5.1.15**). All three species are therefore covered by existing baseline ecological information for the Proposed Scheme.
REP1-047	55. The Applicant understates the high biodiversity value of the Site in its assessment at paragraph 7.6.35 of ES Chapter 7(…) 56. This is a flawed assessment. The Site is clearly large enough for these birds, as evidenced by their presence (either to this day or in the recent past), therefore it cannot be said that the size precludes more sensitive species. The timing of the absence of skylark aligns with commencement of construction of Riverside 2 and the increased anthropogenic disturbance it creates. While the absence of lapwing breeding pre-dates construction of Riverside 2, we believe the increased anthropogenic disturbance from construction has been a further deterrent that has contributed to the ongoing absence, and the chances of their return would be much higher following construction. The baseline should consider the position excluding/after construction of Riverside 2. This accords with the approach of the CIEEM guidelines which provides for surveys to be conducted over more than one season, during different seasons and tailored to meet the needs of the study. 57. The recent absence of the lapwing and skylark shows how easily an ecosystem can be changed, and the great risk of the Proposed Scheme leading to further absences of other breeding birds, as well as other species. A proper analysis of sensitivity would emphasise that the large loss of SINC / HPI land under the Proposed Scheme presents a significant harm to more sensitive species.	The Applicant does not agree that the importance of the biodiversity of the Site has been understated and refers to its response to **row 1 of Table 2-4-8** above. The Applicant does not agree that the assessment presented in **Paragraph 7.6.35** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056**) (i.e. assessment of the importance of the Site for Breeding Birds) is flawed. Crossness LNR is clearly relatively small when compared to other designated sites in the Thames Estuary, especially those down river. This comparison holds true even when compared to nearer sites such as Rainham Marshes. Its size limits the amount of undisturbed habitat available and not accessible to the public, alongside other factors both positive and negative that influence its importance for breeding birds. However, the Applicant reiterates that it has not understated the value of Crossness LNR, with the breeding bird community evaluated as being of County importance in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056**). As detailed in **Paragraph 7.8.1** of this chapter, the assessment presented considers potential impacts from the construction and operation of the Proposed Scheme alongside Riverside 1 and Riverside 2 on those species. As noted in the Applicant's response to **row 3** of **Table 2-4-8** above, lapwing and skylark have been considered within the baseline for the assessment conducted within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, both through desk study records (where both species were identified and covering past years and therefore allowing for changes overtime) and field survey (which only identified non-breeding lapwing). **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** assesses the impacts of loss of designated sites (including Crossness LNR, Erith Marshes SINC and others) and Habitats of Principal Importance (including Coastal Floodplain Grazing Marsh, Reedbed and Open Mosaic Habitat), and details mitigation and compensation for effects on these sites and habitats.
REP1-047	58. The Applicant refers to existing anthropogenic disturbance is flawed. This is inherently already factored into the study of what already exists on site, so shouldn't be an additional consideration. It is wrong to use existing disturbance to justify further disturbance. We dispute whether the breeding bird community could be expected at similar wetland sites; in	With regards to disturbance, the Applicant confirms that the Proposed Scheme does not seek to justify further disturbance through existing disturbance. The Applicant has evaluated ecological features to inform the assessment in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. In its baseline (**Section 7.6** of the chapter), the assessment takes account of conditions that influence

Doc ref	Summary of issue raised	Applicant's response
	any event, that is not directly relevant to the assessment of harm to the birds that do happen to be found on site.	the importance of those ecological features. The **Save Crossness Nature Reserves' written representation (REP1-047)**) has misunderstood the baseline detail for breeding birds as presented in **Paragraph 7.6.36** of the chapter for the assessment of potential effects on breeding birds (which is presented in **Section 7.8** of the chapter), as the description of baseline conditions does indeed present the reader with disturbance 'inherently already factored into the study of what already exists on site' (using words from the written representation) rather than contributed by the Proposed Scheme. By comparing the breeding bird community found at Crossness LNR to other sites, the Applicant is not attempting to infer a lower value that would otherwise be expected. This comparison has been used to establish the site as being of County importance, in line with the method for assigning value and sensitivity (i.e. ecological importance) within **Table 7-6** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**.
REP1-047	59. The loss of 3.5 ha habitat for these birds (being 11.7% of Crossness Nature Reserve) constitutes a large alteration to key elements/features of the baseline conditions, meaning the magnitude should be high, not low (paragraph 7.8.15 of ES Chapter 7. None of the above serves to lower the importance of the site and, given the regular occurrence of Red List species (common cuckoo) and large presence of SPI species, the importance should be considered National rather than County. Therefore, the effect is major, not moderate adverse.	The magnitude of change with regards habitat loss for Crossness LNR, Erith Marshes MSINC, Belvedere Dykes SINC and River Thames and Tidal Tributaries MSINC (i.e. directly affected designated sites) has been given as medium ('Partial loss or alteration to one or more key elements/features of the baseline conditions' of **Table 7-5** of the chapter) within the assessment of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** to account for the loss of the East Paddock and other habitats. Coastal Floodplain Grazing Marsh habitat is similarly treated. For breeding birds, magnitude of change has been assigned as low ('Small shift away from baseline conditions') to reflect the relatively limited importance the East Paddock has for breeding birds, due to the intensity of grazing there and effect of disturbance as discussed within the breeding birds assessment bullet under **Paragraph 7.8.15** of the **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. Note the Applicants response to **row 3 of Table 2-4-8** above which establishes that common cuckoo and other Red List species (e.g. lapwing) identified as missing from baseline data by SCNR have indeed been considered. The Applicant does not agree that the evaluation of the breeding bird community should be of National level. The breeding bird community, as established through desk study and field survey, does not, for any of the breeding species identified constitute (as per the description in **Table 7-6**) "*a regularly occurring/large population of nationally important species (e.g. Red Data Book). A large population of a species identified as a Species of Principal Importance (SPI). A species population that would qualify for SSSI designation*". County level is the appropriate evaluation. Thus, moderate adverse (significant) is the appropriate level of effect.
Plants		
REP1-047	60. The Applicant recorded only one SPI / LPS on the Site (via the botany survey conducted by WSP). The Applicant failed to record two further SPIs and many other important species. We commissioned an alternative botany survey by Mr Mark Spencer (see Appendix 3), which found the following species:	The Applicant has provided a detailed response to the botanical report, including these points, under **Table 2-4-6**.

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	a. Divided Sedge – nationally scarce and listed as a Species of Principal Importance (SPI) under section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act); b. Borrer's Saltmarsh-grass – nationally scarce and SPI; c. Round-fruited Rush – vulnerable to extinction in Great Britain and endangered in Greater London; d. Strawberry Clover – vulnerable to extinction in Great Britain and vulnerable to extinction in Greater London; e. Field Scabious – near threatened in Great Britain and Greater London; f. Pink Water-speedwell – near threatened in Greater London; g. Hairy Buttercup – near threatened in Greater London; h. Wild Celery – near threatened in Greater London; i. Slender Thistle - – near threatened in Greater London; j. Narrow-leaved pepperwort – vulnerable to extinction in Greater London; k. Narrow-leaved Bird's-foot Trefoil - vulnerable to extinction in Greater London; l. Few-flowered Spike-rush – critically endangered in Greater London; # m. Common Spike-rush – endangered in Greater London; and n. Frog Rush – endangered in Greater London. 61. Of the two additional SPIs, Borrer's Saltmarsh-Grass was spotted "across a significant area affected by the proposed development, particularly the East Paddock". Divided Sedge was not spotted on the site, but was spotted adjacent to it, and Mr Spencer notes it is likely to occur across the affected area. 62.Mr Spencer holds that the Applicant's failure to spot these important species, in particular the two SPIs, has resulted in a severe under-valuing of the Site and East Paddock in particular.	
Survey Methodology		
REP1-047	63. The Applicant has suggested the East Paddock is "intensively grazed" and of poor condition as a result. We strongly dispute this claim. In fact, grazing is a key part of the management of this land to maintain plant diversity and the ecological value of the site. For instance, the 2020 Plant Atlas (Appendix 4) confirms that the decline in Strawberry Clover is "largely due to neglect or undergrazing". The Applicant's surveyors did not even enter the East Paddock, and merely surveyed it from the other side of the fence with binoculars. Mr Spencer disputes that the East Paddock could be adequately surveyed in this way. He also notes that important species like Divided Sedge would be easy to overlook, particularly in grazed areas (where the heads/flowers of the plants will be removed). 64. The Applicant also alleges that there is "limited impact" as "the primary aim and relevant function of the MOL will be maintained, there will remain a 'break within the built-up area'. A	The Applicant has provided a detailed response to the botanical report, including these points, under **Table 2-4-6**. The Applicant has assessed the impact of the proposed development on the MOL, particularly in respect of impacts on openness and the ability of the retained land to continue to provide a "break within a built up area". This is set out at Section 5.4 of the Planning St**atement (APP-040)** and in the **Applicant's Responses to Relevant Representations (AS-043)**, in **Section 3.4**. The Applicant confirms that due to the comprehensive design and considered layout of the Proposed Scheme (detailed in **Section 5** of the **Design Approach Document (APP-044 to APP-046)**, which takes into consideration the scale, massing and layout of the Proposed Scheme and seeks to minimise the overall footprint of the built form and loss of MOL as far as possible (only 2.5ha of MOL will be unavoidably lost), the project will have

Doc ref	Summary of issue raised	Applicant's response
	substantial, and definitive, area of openness between the proposed Carbon Capture Facility and the Crossness Sewage Treatment Works will be maintained". We dispute that the impact would be limited. Clearly, the Applicant accepts that there will be a negative impact on the MOL and the extent to which there will be a break within the built-up area will inevitably be reduced if this Proposed Scheme proceeds as currently proposed. The extent to which "some" break within the built-up area will be maintained, is insufficient to achieve the aims and purpose of the MOL designation. As such, the reduction in MOL is unacceptable.	a limited impact on the primary purpose of the MOL to keep land open and provide a break within the surrounding built up area. The remaining MOL will continue to perform its separating function between the built up areas in this location, by retaining a substantial and definitive area of openness between the Carbon Capture Facility and the wider Belvedere Industrial Area and the Crossness Sewage Treatment Works. Moreover, the limited harm resulting from the small loss of MOL will be comprehensively mitigated by a general improvement in the habitats present, the amenity experience of the retained MOL, and the delivery of a more consistent natural environment of recreational facilities and improved access which recognises the proximity of the local community through provision of extended and improved public rights of way and is considered to be consistent with the wider aims of MOL policy.
Terrestrial Invertebrates		
REP1-047	66. The Applicant acknowledges that "habitat loss within the East Paddock would remove habitat supporting the wider nationally important terrestrial invertebrate community". However, the Applicant seeks to minimise the ham by claiming the East Paddock is "intensively grazed" leading to the plants serving as food to these pollinators being "pushed to marginal areas", thus "limiting [the East Paddock's] role as supporting habitat". This is incorrect: as stated above, the East Paddock is carefully grazed under a well-managed regime, which serves to preserve and enhance the biodiversity. The Applicant's surveyors did not enter the East Paddock; however, Mr Spencer did enter East Paddock, and found multiple SPIs listed above present. He disputes the adequacy of the Applicant's assessment of the East Paddock from a distance. 67. The Applicant also points to mitigation as a means of lessening the effect of the Proposed Scheme, but this is inappropriate: mitigation should only be considered after the initial assessment of harm.	The Applicant does not comment on the quality of grazing or management. However, the effects of grazing of the East Paddock are evident from Norman Road, with a short, close-cropped sward and patches of bare ground present throughout the paddock. These factors influence its importance for wildlife, including terrestrial invertebrates. The Applicant has provided a detailed response the botanical survey submitted by SCNR, response above, under Table 2-4-6. However, surveyors for the Proposed Scheme determined there was no safe access available to the East Paddock due to the presence of horses. Contrary to the statement in this representation however, plant species were recorded *directly* from the southern and eastern boundaries of the field (as noted in the survey limitations presented in **Section 2.4** of **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)** and it is therefore wrong to characterise the Applicant's botanical survey of the East Paddock being undertaken from a distance. Binoculars were used to confirm habitats in inaccessible areas, which were similar to those directly surveyed. The Applicant interprets the statement made by SCNR that "*mitigation should only be considered after the initial assessment of harm*" as meaning that impacts should be assessed in the absence of mitigation. This principle is upheld by the method used by the assessment within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and demonstrated by bullet points associated with **Paragraph 7.4.8**.
REP1-047	68. The extensive presence of SPIs means the Site is of National importance, not County, and the extensive habitat loss for these species is of high magnitude, not low. Therefore, the effect is major, not minor.	Evaluation of the importance of terrestrial invertebrates at County level is discussed in **Paragraphs 7.6.45 to 7.6.47** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. County importance is the appropriate evaluation for the reasons provided in these paragraphs. The terrestrial invertebrate community does not conform to the criteria for National importance as although important species (such as SPI) are present, there is no evidence these populations are large and would qualify for SSSI designation, as described in **Table 7-6** of the chapter. The Applicant confirms that the assessment of effects on terrestrial invertebrates, as detailed in **Section 7.8** of the chapter remains robust for this ecological feature.

Doc ref	Summary of issue raised	Applicant's response
Water Voles		
REP1-047	70.Accordingly, water voles are of National importance, not County. The loss of 11% of drainage ditch habitat is of high magnitude, not low. Therefore, the effect is major, not minor. 71. The Applicant claims harms will be rendered negligible through mitigation – we refute this in detail in the 'Mitigation' section below.	Evaluation of the importance of water voles at County level is discussed in **Paragraphs 7.6.48 to 7.6.50** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**. County importance is the appropriate evaluation for the reasons provided in these paragraphs. The water vole population does not conform to the criteria for National importance as described in **Table 7-6** of the chapter, as the population is not particularly large would not qualify the site for SSSI designation. The Applicant confirms that the impact assessment for water voles as detailed in **Section 7.8** of the chapter remains robust for this ecological feature.
Freshwater Fish		
REP1-047	72. The Applicant notes the presence of European eel, and accepts this species is of National importance. The loss of 11% of drainage ditch habitat is of high magnitude, not negligible – notwithstanding the fact that the impact ditches are not permanently wetted, as they still constitute habitat for the species. The Applicant provides no detailed evidence that these ditches could not be used by European eel – it appears to be an assumption. Therefore, the effect is major, not negligible.	The Applicant considers the outcome of the assessment within **Section 7.8** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** to be valid, with the loss of the not permanently wetted ditches not constituting a major magnitude. The Applicant attempted to survey the ditches on multiple occasions and on each visit they were dry. This reduces the potential for them to be utilised by European eel. In addition, the Applicant has placed a higher value on the permanently wetted ditches in the assessment. The assigned magnitude of impact of negligible is therefore appropriate as described in **Table 7-5** of the chapter, when professional judgement is applied, and the significance of effect therefore also appropriate. The mitigation for the Proposed Scheme includes the routing of surface water into the remaining ditch network (89%), which has the potential to improve this habitat for European eel, as described within the **Outline Drainage Strategy (AS-027)**.
Aquatic Macroinvertebrates		
REP1-047	73. The Applicant's searches found "high conservation values of macroinvertebrate communities" in North Dyke and Norman Road River, including a crawling beetle (designated as Near Threatened on the IUCN Red listing), a diving beetle (Nationally Scarce), a lesser water boatman (Nationally Scarce), and an aquatic beetle (Local conservation importance). At paragraph 7.6.70, the Applicant considers the macroinvertebrate community present within the Site as being of National importance. However, at Table 7-10 the Applicant inexplicably reduces this to Regional/County importance. 74. The Applicant relies on the fact that "no species of conservation importance were recorded in watercourses and ditches that will be impacted by the Proposed Scheme". However, there is insufficient evidence to demonstrate that these highly valuable macroinvertebrate communities are not present in any of the ditches impacted by the Proposed Scheme. Without more detailed evidence, a conservative approach should be taken and National importance should be assumed. 75. The Applicant again relies on the fact that the 11% of drainage ditch habitat lost is not permanently wetted to reduce the magnitude of impact to negligible. Without further evidence this is an illegitimate approach, and such a great loss of habitat should be	73. The Applicant acknowledges this, and it has been captured in the **Errata Schedule (AS-042)** where the importance was increased to National importance. 74. The ditches impacted by the Proposed Scheme were dry when macroinvertebrate surveys were attempted, therefore it is unlikely that they will be used by species of conservation importance. In addition, part of the mitigation for the Proposed Scheme is to improve flows within the remaining ditch network which will improve the existing habitat for these species as described in the above row. The importance of the macroinvertebrate community was captured in the **Errata Schedule (AS-042)** where the importance was increased to National importance. 75. The Applicant considers the assessment of loss valid, as the 11% of the ditch network lost constitutes of non-permanently wet ditches. In addition, the non-permanent nature of these ditches reduces their value to aquatic invertebrate species as they provide sub-optimal habitat. The assigned magnitude of impact of negligible is therefore appropriate as described in **Table 7-5** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, when professional judgement is applied, and the significance of effect therefore also appropriate. The proposed mitigation, including the increase in water flows to the remaining ditches, will provide benefits to the remaining 89% of ditches not lost, as described within the **Outline Drainage Strategy (AS-027)**.

Doc ref	Summary of issue raised	Applicant's response
	considered to be of high magnitude, not negligible. Therefore, the effect is major, not negligible.	
Noise and vibration		
REP1-047	76. The Applicant accepts a moderate adverse effect on Crossness Nature Reserve (and other designated sites), including moderate adverse effect on specific species. It is unclear whether this includes noise and vibration created by the current construction of Riverside 2. These must be discounted from the assessment – if they are, the ultimate effect will be even greater.	As construction of Riverside 2 is nearing completion and will be complete prior to the Proposed Scheme's construction phase, noise and vibration from Riverside 2 is therefore not relevant to the assessment of effects of the Proposed Scheme within **Section 7.8** of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056).** The approach taken for the baseline and future baseline environment within **Chapter 5: Air Quality (Volume 1)** to **Chapter 20: Major Accidents and Disasters** of the Environmental Statement **(Volume 1) (APP-054 to APP-069)** is described within **Section 4.8** of **Chapter 4: EIA Methodology of the Environmental Statement (Volume 1) (APP-053)**. The baseline environment did not account for the construction of Riverside 2, as described in **Paragraph 4.8.6** of **Chapter 4: EIA Methodology of the Environmental Statement (Volume 1) (APP-053).**
Run-off		
REP1-047	77. Emissions from construction of the Proposed Scheme would lead to deposition of nitrogen compounds including nitrogen dioxide and nitrate, and acids including ammonia, which may pollute the water (paragraph 7.8.49 of ES Chapter 7). Furthermore, stored materials, waste and spillages may affect the water quality; runoff is a possible vector for sediment and chemical pollution that would lead to degradation of habitats and altering key conditions for habitats and species (paragraph 7.8.71). 78. Of particular concern is that the degradation of water quality could result in mortality events and reductions in population size for aquatic macroinvertebrates and freshwater fish, both of National importance (paragraph 7.8.35). 79. The Applicant does not assess the harm of the Proposed Scheme before the effect of mitigation measures are applied. Yet, the Applicant concludes that the mitigation measures in the Outline Drainage Strategy reduce the magnitude of change, and therefore the effect, to negligible. 80. Consequently, the Applicant has adopted a flawed approach to this issue. Without establishing the harm caused without mitigation measures being applied, it is not possible to consider the appropriateness and effectiveness of the mitigation that is proposed by the Applicant.	77-78. The Applicant considers the mitigation measures described in **Outline CoCP (as updated alongside this submission)** (including the use of attenuation ponds and controlling water discharge rate) to be sufficient to reduce the potential for impacts to water quality resulting in mortality events to fish and macroinvertebrate species. 79 & 80. The Applicant does not assess the potential harm from the Proposed Scheme prior to mitigation as it considers the measures proposed as embedded mitigation and thus will be part of the Proposed Scheme design. Thus, the Applicant has assessed the potential impacts with this mitigation in place. 80. The Applicant does not accept they have adopted a flawed approach to run-off within **Environmental Statement Chapter 7: Terrestrial Biodiversity (APP-056)**. Mitigation has been appropriately with respect to embedded mitigation measures (which through design avoid and reduce the magnitude of impacts of the Proposed Scheme) and then accounting for additional mitigation measures.
Air Quality		
REP1-047	81. The Applicant notes that the nitrogen compounds, acids and other chemicals produced by the Proposed Scheme would lead to air pollution (paragraph 7.8.43 of ES Chapter 7). The Applicant relies on the fact that "background levels of air pollution in the industrialised area of Belvedere are relatively high" to reduce the magnitude of change to low. We do not accept this as a legitimate approach – the magnitude of change is determined by the increase, not the existing context (that is relevant as a mitigating factor to consider afterwards).	**Paragraph 7.8.43** in the **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** relates to impacts during construction. Construction phase impacts are presented in the **Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054) Tables 5-30**, **5-31** and **5-32** for the combined impact of construction road traffic and marine traffic at sensitive receptors, including within Crossness LNR. **Table 5-27** presents the impacts from marine traffic within the River Thames. The impacts from the Proposed Scheme screen as insignificant against the Environment Agency screening criteria for local sites and are therefore described in

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	82. The Applicant notes that Crossness Nature Reserve would suffer above-threshold changes in ammonia, nitrogen oxides, sulphur dioxide and nitrogen deposition, leading to a moderate adverse effect.	**Chapter 5: Air Quality of the Environmental Statement (Volume 1) (APP-054)** as negligible (not significant). This screening does not rely on a comparison of the magnitude of the impact with existing pollution levels but rather relies on a comparison of the magnitude of the impact to the air quality standards (i.e. critical loads and critical levels). 82. During operation, at the point of maximum impact at Crossness LNR, NO_x and SO_2 concentrations are well within their respective critical levels. Total ammonia concentrations and nitrogen deposition exceed their relevant critical level and critical load but as noted above the contribution from the Proposed Scheme screens as insignificant. Further information regarding ammonia emissions is provided in **Table 2-3-2** of this report.
Additional Harm – Public Access		
REP1-047	83. The Proposed Scheme "extends access through provision of additional PRoW and permissive paths", including "raised walkways". The Applicant has failed to appreciate how increased access and use threatens to damage habitats and upset the balance of the ecosystems within Crossness Nature Reserve – not only from the construction works, but also from increased footfall, noise and littering. The Applicant has not provided any evidence of testing to assess potential additional harm. 84. There is a tension between increased public access and environmental protection which the Applicant has failed to grasp. The currently limited level of public access across Crossness Nature Reserve is very much intentional. It appears the Applicant's approach favours public amenity over environmental protection, or at least places them on equal footing. There is no policy support for this position under EN-1. In fact, the opposite is true, as EN-1 places significantly greater weight on the mitigation hierarchy.	**Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** has, in its baseline (**Section 7.6** of the chapter) taken account of existing conditions that influence the importance of ecological features. This includes baseline levels of disturbance from the public, who already access the nature reserve from PRoW, which would include footfall, noise and littering. Impacts from construction are clearly defined in the chapter and assessed within Section 7.8. The access and recreation proposals for the Scheme largely seek to enhance the existing PRoW routes and connectivity within the Site. This is to encourage and improve the opportunity for active travel, and to improve the amenity, recreation experience and safety of routes. The Mitigation and Enhancement area primarily consists of land that is publicly accessible and this is proposed to be maintained. The indicative locations of new and altered Public Rights of Way (PRoW) are detailed within the **Outline LaBARDS** (REP1-012), however confirmation of the exact routes will be determined as part of the detailed design process, pursuant to Requirement 12 of the **draft DCO (as updated alongside this submission)** and alongside the discharge of the full LaBARDs. As part of this process, consideration to ecological features, including ground nesting bird habitat and ditches used by water voles, and other ecologically sensitive areas, will be given, with measures needing to be to the satisfaction of LBB. The provision of new and altered PRoW within the Mitigation and Enhancement Area is considered appropriate as the ecological sensitive areas will be protected via the Applicant's measures such as signs being installed to ensure visitors do not stray from the paths and to instruct dog walkers to keep their dog on a lead. Furthermore, water voles are able to exist in publicly accessible areas as they occupy the banks of ditches and wetland features generally avoided by visitors; in addition, water voles live in burrows that act as refuges.
Mitigation		
REP1-047	85. Firstly, the biodiversity harm resulting in the net loss of 3.5 ha of land recognised as LNR, MOL, SINC and HPI cannot be mitigated by enhancement across the 'Mitigation and	Enhancement of habitats has been quantified through the Statutory Metric as part of the BNG process such that it can transparently demonstrate that residual effects of the

Doc ref	Summary of issue raised	Applicant's response
	Enhancement Area' (MEA). As above, this qualitative improvement (the extent of which is disputed below) does not make up for the quantitative loss.	Proposed Scheme will be compensated for. Enhancement measures and compensation measures are detailed both in **Section 7.9** of the **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088).**
REP1-047	86.Despite the various significant harms to specific protected species, SPIs and HPIs listed above, the Applicant has failed to provide clear mitigation for these specific harms. The Mitigation Schedule and other relevant Application Documents lack detail; instead, the focus is on general MEA mitigation and enhancement. This approach is insufficient: the direct loss of these species needs considered, focused measures that clearly demonstrate how the specific harm to these species will be mitigated. This is particularly true of the protected species.	As the Proposed Scheme is at an outline stage of design, which is appropriate for the consent being sought and with the understanding that detailed design will follow when the Applicant receives consent the of the **Draft DCO (as updated alongside this submission)**, the Applicant does not agree with the assertion that the application documents lack detail and that this approach is insufficient. Although detailed design is yet to be undertaken, the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012), Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)** detail commitments to biodiversity mitigation such that the Proposed Scheme would not have a residual adverse effects on ecological features, including protected species. These commitments are secured through a requirement the Proposed Scheme's **Draft DCO (as updated alongside this submission)** such that the Applicant will have a legal duty to deliver them.
REP1-047	87. In the case of water voles, which have incredibly strong protections under section 9 of the WCA, the Applicant alludes to mitigation through the establishment of ditch and reedbed replacement (para 8.3.4 of the LaBARDS) and a translocation programme (paragraph 5.2.3 of the Outline CoCP). However, the proposals lack detail and any firm outcome requirements, and are subject to licensing from Natural England. The Applicant has not properly assessed the risk that these efforts will not be successful. The Applicant has failed to explain how the section 9 requirements are met and has failed to provide any clear evidence that the effect will be reduced to negligible or that the significant harm will be sufficiently mitigated.	The Applicant is aware of the legal protection that water voles receive and is current working with Natural England to develop water vole licence documentation, including a method statement for their displacement from the Proposed Scheme's footprint, pursuant to the issue of a Letter of No Impediment (LONI) for the proposed mitigation. The pursuit of a LONI demonstrates compliance with the wildlife licence application process in line with guidance issued by the Planning Inspectorate for Nationally Significant Infrastructure Projects for working with Natural England (specifically "*Nationally Significant Infrastructure Projects - Advice on working with public bodies in the infrastructure planning process, Annex C: Natural England and the Planning Inspectorate*"[9]). Thus, the Applicant is properly addressing risks associated with the Proposed Scheme and wildlife licensing. The Applicant is confident that a LONI will be obtained prior to the end of the DCO Examination, and the Outline LaBARDS will reflect what is committed to as part of the process of obtaining that LONI. The method statement and other required documents (Reasoned Statement, completed Application Form and supporting maps) will provide detail such that Natural England can be satisfied that a licence application would be approved if received in that form, derogating the applicable offences (such as destruction of a place of shelter or protection) detailed in Section 9 of the Wildlife and Countryside Act 1981 (as amended).

[9] The Planning Inspectorate (2024). Nationally Significant Infrastructure Projects - Advice on working with public bodies in the infrastructure planning process, Annex C: Natural England and the Planning Inspectorate. Available: https://www.gov.uk/government/publications/nationally-significant-infrastructure-projects-advice-note-eleven-working-with-public-bodies-in-the-infrastructure-planning-process/nationally-significant-infrastructure-projects-advice-note-eleven-annex-c-natural-england-and-the-planning-inspectorate

Doc ref	Summary of issue raised	Applicant's response
		The Applicant's evidence that residual effects on water voles will be negligible is detailed in **Table 7-11** within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**.
REP1-047	88.More generally, aspects of the mitigation proposed are inappropriate. For example, the Applicant proposes tree planting on both Norman Road Field and on the current site of the stable block on Crossness Nature Reserve. This is inappropriate for grazing marsh: marshland is by definition an open, wet habitat, dominated by rushes, sedges and other wetland species. Trees contribute to the drying out of marsh habitat and create shading. This reduces the capacity for wetlands to store carbon and reduces the species diversity associated with grazing marsh. Tree planting may also lead to the further loss of the SPI and rare plant species listed above, which were overlooked by the Applicant. This view is affirmed by Mr Spencer's botany report – he notes that tree planting is "unsuitable" and "risk[s] destroying these vulnerable plant species and priority habitats". This mitigation risks actively harming, rather than enhancing, the existing natural grazing marsh habitat (which is an HPI).	Although the Applicant appreciates indicative landscape drawings within the **Outline LaBARDS REP1-012)** show trees being planted in Norman Road Field, they can confirm tree planting is not proposed as part of ecological mitigation and achieving Biodiversity Net Gain targets within Norman Road Field. The points made here with regards tree planting on areas of Coastal Floodplain Grazing Marsh are accepted. The illustrative proposals in **Figure 14** of the **Outline LaBARDS (REP1-012)** suggest a sparse collection of trees along the eastern edge of Norman Road Field. The intention was to: • Improve diversity of ditch side habitat to include some occasional low level native trees such as *Salix caprea*. • Provide additional layers of screening for the Carbon Capture Facility's built form and fence lines when viewed from Crossness LNR. • Maintain light levels for grazing marsh plant species through wide spacing between proposed trees/ shrubs and selecting species with a low/ hunkered form. However, the Applicant is in agreement that tree planting should not detract from grazing marsh habitats and will update the illustrative Figure 14 to show significantly reduced tree numbers via a revised version of the **Outline LaBARDS (to be submitted at Deadline 3)**. The **Outline LaBARDS (to be submitted at Deadline 3)** is necessarily an outline document, with full LaBARDS to be approved by LBB under Requirement 12 of the **Draft DCO (as updated alongside this submission)**.
REP1-047	89. Secondly, the proposals involve raising water table levels on Norman Road Field. While this is a good proposal in principle, there is a risk that raising the water table level too high will have impacts on the existing ecosystem. For example, a raised water table level may drown out small mammals and reptiles, which are prey that attract hunting birds like kestrels, barn owls, buzzards and marsh harriers. A raised water table level may also impact ground nesting bees, including the brown-banded carder bee and shrill carder bee (both SPIs, LPSs, London Species of Conservation Concern; shrill carder bee is also nationally notable). The appropriate level needs to be based on a detailed hydrological study and assessment of these potential impacts, with a comprehensive management regime that takes a cautious and incremental approach, in line with the precautionary principle. The Applicant's proposals do not provide adequate detail and risk inadvertently creating further harms.	The Applicant welcomes the fact SCNR agrees that raising the water table is a good proposal, even if it is in principle at this stage and subject to detailed design. The Applicant does not intend to raise the water table to such a level as that it would detrimentally impact fauna associated with Crossness LNR. It intends to alleviate the poor condition in which Coastal Floodplain Grazing Marsh remains due to the low water table (as identified and described **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)** and provide an ecological enhancement to this habitat and the nature reserve more widely. Detailed designs that would support this will likely require hydrological modelling and further studies as appropriate but not at this outline stage. However, the commitment to raising the water table is clearly set out within the Applicant's **Outline Drainage Strategy (AS-027)** and is central to the approach to BNG. Similarly, habitat enhancement proposals set out in the **Outline LaBARDS (REP1-012)** will be secured enhancements through 30 years of management commitment under Requirement 12 of the **Draft DCO (as updated alongside this submission)**. Requirement 13 of the **Draft DCO (as updated alongside this submission)** ensures that the detailed drainage strategy is consistent with the detailed LaBARDS.
REP1-047	90.A large proportion of the MEA is Norman Road Field, which the Applicant believes to be in poor condition. The Applicant's mitigation proposals rely on this belief to set a low baseline	The Applicant has relied on site surveys to determine habitat condition using Biodiversity Metric Condition Assessment tables. Results of condition assessment are given in

Doc ref	Summary of issue raised	Applicant's response
	for the MEA. However, the Applicant has undervalued the current conditions on Norman Road Field. The Applicant's survey was undertaken in November, when many flowering plants would not be in evidence. In our botany report, Mr Spencer notes that November is "a time of year when the identification of more challenging plant species, particularly those indicative of grazing marsh, should only be undertaken by someone with considerable expertise; the optimum time to survey a grassland site such as this would be June-September". Together with the limited experienced of the Applicant's surveyors (as considered in detail in Mr Spencer's report), this has resulted in the Applicant's survey undervaluing the Site.	**Appendix A** of **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)** and **Appendix B** of **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 1) (APP-088)** and have been used to inform Biodiversity Net Gain Assessment. For Coastal Floodplain Grazing Marsh, the condition assessment sheet used was Grassland - Floodplain wetland mosaic and CFGM (i.e. Coastal Floodplain Grazing Marsh). There is no threshold species number included as a criterion within this assessment, although Criteria B does require the surveyor to assess whether the habitat *'is a good representation of the wetland habitat type it has been identified as, based on its UKHab description'*, a judgement the two FISC level 3 certified botanists who carried out the survey were qualified to make. The data presented transparently and in line with statutory assessment methods demonstrate the Applicant has not undervalued the Site. It should be pointed out that Mr Spencer has incorrectly noted the timing of the Applicant's botanical survey where condition assessment of habitats was undertaken as being in November, when it was undertaken in July within the optimum time for such surveys and in agreement with that presented in this representation by Mr Spencer and SCNR. Bullet points under **Paragraph 2.2.1** of **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 1) (APP-088)** identify the source of condition assessment data being botanical survey undertaken in July 2023 *("Detailed botanical survey undertaken in July 2023, which confirmed classification of habitats within the Site as well as providing condition assessment data for all habitats within the Site"*). Further, **Paragraph 2.2.1** of **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)** clearly states that "*botanical survey was undertaken on 14th July 2023"* and condition assessment tables for habitats are given in Appendix A of this report. It is unclear to the Applicant where this confusion has arisen, but it is hoped the information above provides comfort that botanical survey was undertaken at an optimum time of year.
REP1-047	98. It is unclear from the evidence available when exactly the "Ecological Enhancement and Protection Scheme" for Phase 1 approved pursuant to condition 18 was first implemented. However, the earliest it could be is 15 December 2015 (the date it was approved). Assuming this document constitutes the Management Plans referred to in the EMP (noting clause 24 links implementation of the EMP to commencement of Phase 1), the ten-year period is still running and that these planning controls still apply. The ten-year period expressly applies to the Management Plans; it does not run from the date of the EMP or the works carried out under permission 08/01834/FUL. As these planning controls are extant and enforceable, LBB can and should require the landowners to comply with these planning controls. The environmental baseline for Norman Road Field must take this into account.	As agreed, and most recently documented within the **London Borough of Bexley SoCG Rev B (Document Reference: 8.1.1**, submitted alongside this response) the mitigation measures required at Norman Road Field for the Veridion Park development have been implemented and managed for the requisite period of ten years. Consequently, there is no extant mitigation commitment at Norman Road Field. As is also set out at **Appendix F of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-026)** the habitat enhancement proposals set out in the **Outline LaBARDS (REP1-012)** will both enhance biodiversity at this location and secure a further 30 years of management commitment.
REP1-047	99. The Applicant was not aware of the existence of these planning controls when it assessed the environmental mitigation required. This oversight has led to an incorrect assessment of the baseline. Statements made on behalf of the Applicant at ISH1 – that the above regime was "point interventions" and "not looking to change conditions in the long term"11 are simply incorrect. It appears they have assumed that the works granted pursuant to application 08/01834/FUL satisfied all relevant requirements under permission 10/00063/OUTEA, but these works at best only reflect the initial works listed under the	The Applicant was unaware of the s.106 relevant to the Veridion Park permission until it was referenced by the Save Crossness Nature Reserve Group in a draft SoCG. However, the Applicant was fully cognisant of the use of Norman Road Field as an element of the mitigation delivered for the first phase of Veridion Park. It had been assumed that the management of that land had been subject to the standard period of five years for

Doc ref	Summary of issue raised	Applicant's response
	Ecological Master Plan (and it is not clear if this work was fully or properly carried out). The finer detail of the long-term work, pursuant to the Management Plans / Ecological Enhancement and Protection Scheme had not even been agreed yet.	aftercare. However, this history is neither important nor relevant as the required mitigation measures have been implemented and managed for the requisite period of ten years.
REP1-047	100. The Applicant's position is that the extant regime is "essentially replaced by the new proposals" – we agree but reach a very different conclusion: to the extent the improvements under the Proposed Scheme repeat existing controls, they cannot be considered a benefit or new mitigation. This would not only constitute an impermissible double-counting of the environmental benefit, but would also illegitimately incentivise Peabody to continue not to comply with its extant planning controls as it will allow them to charge the Applicant a higher price for the land.	It is not appropriate for SCNR to assert that Peabody has not complied with planning controls – there is no evidence to substantiate such a claim. Further, through its SoCG discussions with the Applicant in regard to the SOCG Rev C submitted at Deadline 1 **(REP1-018)** SCNR, and its professional advisers, will be familiar with the planning history relevant to the Norman Road Field, and the Applicant's position on it as set out at **Appendix F of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-026)**. The Applicant has discussed this planning history with London Borough of Bexley and agreed that the mitigation measures required at Norman Road Field for the Veridion Park development have been implemented and managed for the requisite period of ten years. Consequently, there is no extant mitigation commitment at Norman Road Field. This is most recently documented at **London Borough of Bexley SoCG Rev B (Document Reference: 8.1.1**, as submitted alongside this response).
Biodiversity Net Gain (BNG)		
REP1-047	102. The failure to adequately record biodiversity conditions on the Site (as detailed above) in turn affect the legitimacy of the Applicant's BNG calculations. 103. It is imperative for that the underlying assessment of habitats and their condition is accurate. A failure to produce an accurate assessment can be a fatal flaw (for example, see Bagshaw v Wyre Borough Council [2014] EWHC 508). In order to achieve an accurate assessment of impact, consideration as to the timing of surveys is a matter of fundamental importance. This is because there are seasonal variations in the distribution and abundance of flora and fauna. The CIEEM guidance says that, "Variation in populations, habitats or ecosystems over time in the absence of the project should always be considered. This may require more than one year or one season of data to give an accurate reflection of the situation." (paragraph 3.9,and referenced elsewhere). 104. Unfortunately, the assessment undertaken by the Applicant taken in November, when many plants were not it flower and identification is particularly difficult, and by surveyors with limited experience. As affirmed by Mr Spencer's botany report, the Applicant's assessment is therefore likely to have failed to capture true and reliable data of the full biodiversity value of the Site. 105. Similarly, in respect of the various species and habitats that have been specifically identified above, the assessment failed to adequately consider and account for seasonal variations, thus leading to the likelihood of species and habitats not being captured and, those that were captured, under-reported. 106. Mr Spencer also notes that the Applicant's BNG report "mischaracterises the area in the SE of Norman Road Fields as not being Grazing Marsh". This and the fact that "such a	The Applicant does not agree that they have failed to adequately record the condition of habitats on Site, and that the BNG calculations presented in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 1) (APP-088)** lack legitimacy. Condition assessment data is clearly presented in **Appendix A** of **Appendix 7-6: Botanical Survey Report of the Environmental Statement (Volume 1) (APP-093)** and **Appendix B** of **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 1) (APP-088)**. This data has been used to inform Biodiversity Net Gain Assessment as per UK Government requirements. The assessment sheets justify the classifications assigned to each habitat type and that underpin the baseline of the Biodiversity Metric; the Applicant maintains that they are accurate. As detailed above in the response to within **row 23 of Table 2-4-8**, botanical survey (which included condition assessment of habitats) was not undertaken in November and Mr Spencer and SCNR have incorrectly identified this limitation to the Applicant's Biodiversity Net Gain work; botanical survey of Norman Road Field was undertaken in July 2023, which both the Applicant, Mr Spencer and SCNR agree is an optimum time of year to undertake such survey. Furthermore, although it is recognised seasonal changes in habitats may affect survey results, with respect to botanical work and habitat condition assessment undertaking survey at the optimum time of year (i.e. the plant growing season, as Mr Spencer clearly states in his report for SCNR) is an appropriate way to control for the effects of seasonality which could otherwise confound correct condition assessment. The Applicant does however acknowledge disagreement in the habitat type identified a parcel of land within Norman Road Field (~0.66ha on its southern side) and has responded in detail with respects to Mr Spencer's report above in **row 1 of table 2-4-6**. However, it can be confirmed that changing the Biodiversity Net Gain baseline such as

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	significant area of HPI (& the species therein) will be lost", leads him to conclude that "it is hard to envisage how a 10% BNG could be achieved". 107. Without a more detailed report, taken by more experienced surveyors at a more suitable time of year, there is not sufficient certainty that the BNG inputs are accurate, and therefore there is not sufficient certainty that 10% BNG is achieved under the Proposed Scheme.	this area of habitat is Coastal Floodplain Grazing Marsh (as per Mr Spencer's report) rather than Neutral Grassland (as the Applicant has presented) leads to an increase in the net gain percentage the Proposed Scheme achieves rather than a reduction. This because it allows an additional 0.66ha of Coastal Floodplain Grazing Marsh habitat to be retained and enhanced, which scores more highly than the loss of 0.66ha of Neutral Grassland which would take time to recreate as Coastal Floodplain Grazing Marsh. Thus, under both scenarios the Proposed Scheme achieves 10% Biodiversity Net Gain. Although the opinion that *"it is hard to envisage how a 10% BNG could be achieved"* is presented in **SCR's Written Representation (REP1-047)** and in Mr Spencer's report, no detail or quantified evidence of this position through a Biodiversity Metric or other mechanism has been presented to support this opinion. Lastly, given the above responses, and the reliance placed here and in other parts of the representation by SCNR that botanical survey that informed habitat condition assessment was undertaken at an incorrect time of year (when it can clearly be established that it was undertaken at the optimum time of year), the Applicant considers that there is ample detail such that their assessment of Biodiversity Net Gain has been shown to be accurate and that a 10% net gain for biodiversity will be achieved.
REP1-047	104. Unfortunately, the assessment undertaken by the Applicant taken in November, when many plants were not it flower and identification is particularly difficult, and by surveyors with limited experience. As affirmed by Mr Spencer's botany report, the Applicant's assessment is therefore likely to have failed to capture true and reliable data of the full biodiversity value of the Site. 105. Similarly, in respect of the various species and habitats that have been specifically identified above, the assessment failed to adequately consider and account for seasonal variations, thus leading to the likelihood of species and habitats not being captured and, those that were captured, under-reported.	As detailed above in the response within **row 23 of Table 2-4-8**, botanical survey was not undertaken in November and Mr Spencer and SCNR have incorrectly identified this limitation to the Applicant's Biodiversity Net Gain work; botanical survey of Norman Road Field was undertaken in July 2023, which both the Applicant, Mr Spencer and SCNR agree is an optimum time of year to undertake such survey. Undertaking botanical survey at the optimum time of year is the best way to account for potential seasonal variation that could affect condition assessment results, which the Applicant does not accept has affected their Biodiversity Net Gain assessment presented in **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 1) (APP-088)**.
REP1-047	106. Mr Spencer also notes that the Applicant's BNG report "mischaracterises the area in the SE of Norman Road Fields as not being Grazing Marsh". This and the fact that "such a significant area of HPI (& the species therein) will be lost", leads him to conclude that "it is hard to envisage how a 10% BNG could be achieved".	The Applicant acknowledges the disagreement in habitat classification identified for the parcel of Norman Road Field in question (~0.66ha on its southern side) and has responded in detail with respects to Mr Spencer's report above in **row 1 of table 2-4-6**. However, it can be confirmed that changing the Biodiversity Net Gain baseline such as this area of habitat is Coastal Floodplain Grazing Marsh (as per Mr Spencer's report) rather than Neutral Grassland (as the Applicant has presented) leads to an increase in the net gain percentage the Proposed Scheme achieves rather than a reduction. This because it allows an additional 0.66ha of Coastal Floodplain Grazing Marsh habitat to be retained and enhanced, which scores more highly than the loss of 0.66ha of Neutral Grassland which would take time to recreate as Coastal Floodplain Grazing Marsh. Thus under both scenarios the Proposed Scheme achieves 10% Biodiversity Net Gain.

2.5 TOWNSCAPE AND VISUAL AND HISTORIC IMPACT

Table 2-5-1 – London Borough of Bexley

Doc ref	Summary of issue raised	Applicant's response
Townscape and Visual		
REP1-034	The application site is located partly with a Strategic Industrial Land (SIL) and Metropolitan Open Land (MOL) and wholly within a Metropolitan Site of Importance for Nature Conservation (MSINC).	The built form of the Carbon Capture Facility would use approximately 70% of land allocated as SIL and approximately 30% of land jointly designated as MOL and SINC. It is not correct to say that the Site is located wholly within the SINC. The Mitigation and Enhancement Area (which does incorporate built form other than as limited to habitat enhancement works) does fall in land wholly and jointly designated as MOL and SINC.
REP1-032 and REP1-034	The proposed absorber columns are significant structures, which significantly exceed any of the policy parameters for building heights, as stipulated under Policy DP12 of the Bexley Local Plan (2023). As mentioned in the Policy section of this report a tall building in the Thamesmead and Abbey Wood London Plan Opportunity Area should be up to 25 metres in height. The absorber column towers would have a significant impact upon the character and appearance of the area, both at more local and through wider range views. The visual impacts of the absorber columns have been demonstrated by the applicant as illustrated across the submitted documentation, including within the Environmental Statement (Appendix 10-4 – Photomontages, and within the Design Approach Document (pages 100, 103, 109, 112). It is considered by the Council that these illustrations reinforce the Councils views on the significant visual impact that the absorber columns would have on the area both at short distances and further afield.	The Applicant consulted with LBB and agreed visual receptors to be considered in the assessment of visual amenity, as described within **Table 10-2** of **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)**. The methodology for assessment of visual impact followed GLVIA3 guidance[10] in considering the sensitivity of the receptors and magnitude of impact the Proposed Scheme is likely to have on those receptors. **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** assessed the sensitivity of the baseline townscape environment along with the magnitude of impact to determine the significance of effect. The magnitude of impact considered the scale and nature of the whole of the Proposed Scheme (including the Absorber Column(s) and Stack(s)), the changes to landcover, the increased urbanisation of the skyline, and how much of the Proposed Scheme is likely to be perceived within the townscape. The assessment acknowledges the Absorber Column(s) and Stack(s) would be tall features within the townscape; however, **Appendix 10-4: Photomontages of the Environmental Statement (Volume 3) (APP-104)** illustrate the varying degree to which they would be visible from different locations within the local townscape and how they are set within an environment with other tall elements in the skyline reducing the magnitude of impact. **Section 10.10** of **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** confirms the assessment of residual effect the Proposed Scheme would likely have on the local townscape character (within 2km of the Site Boundary) to be Slight-moderate adverse (not significant) during both the construction and operational phase. **Appendix D** to the **Applicant's Response to Relevant Representations (AS-044)** presents specific consideration of Bexley Local Plan policy DP12 to conclude that it is *'clear that the Proposed Scheme is in compliance with policy DP12 and is a tall building*

[10] Landscape Institute and Institute of Environmental Management & Assessment, Guidelines for Landscape and Visual Impact Assessment, 3rd Edition, Routledge

Doc ref	Summary of issue raised	Applicant's response
		in a suitable location'. Following discussions with LBB on their SoCG, the Applicant will be adding further analysis on this point into Examination at Deadline 3.
REP1-034	Loss of landscape character experienced by users of Norman Road (e.g. walkers) as a result of a reduction in visual links between the marshland and the river.	The Applicant acknowledges the adverse impacts associated with the Proposed Scheme on receptors at Norman Road. The assessment within **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** considers the effect on users of PRoW including Footpath (FP4) at Norman Road and transport receptors on Norman Road in accordance with GLVIA3 guidance[10]. The assessment considers the scale and nature of the Proposed Scheme along with embedded and additional mitigation as outlined in the **Design Approach Document (APP-045)** (such as a visually coherent design of built form and material selection and planted boundaries). At Norman Road, the embedded mitigation provides a controlled interface with the facility and includes enhanced ditch habitats with scrub planting, and regular tree planting to control views into the operational Carbon Capture Facility. The assessment has concluded that the effect of changes in visual amenity for users of PRoW within and in the vicinity of the Site would likely be Moderate Adverse (Significant) during construction and operation (Year 1 and Year 15) of the Proposed Scheme. The assessment concluded that the effect on transport users of Norman Road would likely be Slight-moderate Adverse (Not Significant) during construction and operation (Year 1 and Year 15) of the Proposed Scheme. Whilst the assessment does acknowledge the adverse impacts the Proposed Scheme would likely have on the users of Norman Road, it should be noted that there are no visual links between Norman Road and the River Thames. The open river corridor may be appreciated beyond existing developments, but views of the river are severed by Riverside 1, Riverside 2, and the Thames River wall.
REP1-034	Loss of landscape character for users of the public rights of way across the Crossness LNR and Crossness LNR itself, due to the large scale of the built form as seen from this location.	The Applicant acknowledges the adverse impacts associated with the Proposed Scheme on receptors at Crossness LNR. The assessment in **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** considers the significance of effect on users of the Accessible Open Land (AOL) (parts of which fall within the Crossness LNR) and users of local PRoW including FP1 and FP2 in accordance with GLVIA3 guidance[10]. The assessment considers the scale and nature of the Proposed Scheme along with embedded and additional mitigation such as a visually coherent design of built form and material selection and planted boundaries. Within the AOL, embedded mitigation as detailed in **Section 10.6** of **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** and the **Design Approach Document (APP-045 to APP-046)** includes a controlled palette of robust materials and careful detailing to provide a contemporary feel and quality aesthetic. The **Outline LaBARDS (REP1-012)** includes tree planting screening, enhanced grazing marsh, wetland habitat, and improved footpath construction. As set out in **Table 10-8** of **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)**, the assessment has concluded that the adverse effects experienced by users of both the PRoWs across the AOL would likely be significant during construction and operation (Year 1 and Year 15), however the integrated strategy proposed for the

Doc ref	Summary of issue raised	Applicant's response
		Crossness LNR would provide multifunctional benefits to the quality of the future nature reserve, delivering a robust, well managed and cohesive natural environment.
REP1-034	A number of slight-moderate (not significant) impacts have been reported in the Environmental Statement during operation – these neutral impacts tend to be on mid-distance views (such as the Belvedere or Thamesmead residential areas or the road network) where the proposed development would be in keeping with the existing industrial elements of the view.	The Applicant acknowledges the neutral impacts identified.
Historic Environment		
REP1-032 and REP1-034	An assessment on the impacts of the development upon Lesnes Abbey (a Scheduled Monument and Grade II Listed Building) needs to be provided. The effect is not held to be significant for the purposes of EIA, but nevertheless will give rise to a degree of harm to the assets' heritage significance. Such harm to heritage assets of national importance will need to be considered properly in line with national and local planning policy, statutory provisions and recent case law.	The potential for significant impact on Lesnes Abbey is considered in **Table 3** of **Appendix 9-1: Historic Environment Desk Based Assessment of the Environmental Statement (Volume 3) (APP-100)**. The surviving remains of the Augustinian Abbey of St Thomas the Martyr, now known as Lesnes Abbey, is a scheduled monument (National Heritage List Entry ref: 1002025) and listed Grade II (NHLE ref: 1359415). The assets at Lesnes Abbey are defined and experienced by their relationship to each other and to the surrounding landscape, particularly Lesnes Abbey Woods to the south and the surrounding park to the north. Views to north of the Site itself are not considered to make a significant contribution to the significance of the asset. Together the scheduled monument and listed building are of high significance (value). The digital ZTV model prepared for the Proposed Scheme (presented in Figure 10-3: Visual Assessment Plan of **Figures (Part 2) (APP073))** shows that the Absorber Column(s) and Stack(s) would be visible in long views from the northern part of Lesnes Abbey Woods, at an approximate distance of 1.6km from the asset. Viewpoint 7 (as presented in **Appendix 10-4: Photomontages of the Environmental Statement (Volume 3) (APP-104)** shows the north-east facing (winter) view from land to the north of the scheduled monument. The photomontage shows that the Absorber Column(s) and Stack(s) would be visible next to Riverside 2 in very long views, sitting within a wider urban landscape, which contains modern tower blocks and lower scale 20th century residential housing development. The landscape to the north when the Abbey was built would have formed a remote marshland environment with rough grazing, which has clearly been altered by modern development. Currently these longer views towards the Site do not contribute to the assets' heritage significance (value) and as such an assessment was scoped out of **Chapter 9: Historic Environment** of the **Environmental Statement (Volume 1) (APP-058)**. Although the Proposed Scheme will likely be visible in the longer views from the Lesnes Abbey, it would not affect the relationship between the assets themselves (scheduled monument and listed building) or the asset's relationship with the surrounding landscape. Further, the existing parkland during winter and summer will provide a level of screening of the Proposed Scheme, especially when viewed from the monument itself (which is set

Doc ref	Summary of issue raised	Applicant's response
		further back than Viewpoint 7 (as presented in **Appendix 10-4: Photomontages of the Environmental Statement (Volume 3) (APP-104**)). The Proposed Scheme would not result in a material change to the assets' setting or heritage significance (value).
REP1-034	An assessment on the impacts of the development upon The Crossness group of industrial heritage assets (Crossness Conservation Area; Crossness Pumping Station, Grade I Listed Building; Crossness Pumping Station workshops, Grade II Listed Building; Crossness engine house). The effect is not held to be significant for the purposes of EIA, but nevertheless will give rise to a degree of harm to the assets' heritage significance. Such harm to heritage assets of national importance will need to be considered properly in line with national and local planning policy, statutory provisions and recent case law.	The Crossness group of assets are assessed in **Appendix 9-1: Historic Environment Desk Based Assessment of the Environmental Statement (Volume 3) (APP-100)**) which includes an assessment of harm in accordance with NPS EN-1 and the NPPF. In NPS terminology, the assessed harm is considered 'less than substantial' to heritage significance. There is no direct correlation between the language used in the NPS (i.e. substantial or less than substantial harm) and standard EIA methodology. The term 'less than substantial harm' covers a broad spectrum of environmental effects, and professional judgement has been used to determine whether an effect is moderate or higher, and therefore 'significant' in EIA terminology, or minor, and 'not significant'. In the case of the group of Crossness Pumping Station assets, the potential effects for the operational phase are assessed as Minor Adverse (Not Significant), as described within **Paragraphs 9.8.11 to 9.8.22** and **Table 9-8** of **Chapter 9: Historic Environment** of the **Environmental Statement (Volume 1) (APP-058)**. It is noted this conclusion aligns with LBB's expectations.

Table 2-5-2 – Save Crossness Nature Reserve

Doc ref	Summary of issue raised	Applicant's response
Visual Impact		
REP1-047	120. The Proposed Scheme will have a huge visual impact. In particular, the 113m Absorber Column(s) and Stack(s) will have a significant detrimental impact on the nature reserve. Further, as EN-1 states, visual impacts are not just limited to physical structures but also any visible stream plumes (paragraph 5.10.2). These visual impacts will have a further negative impact on the amenity available to visitors, visitor experience, visitor numbers and socio-economic impacts (see EN-1, para 5.12.6). 121. The Applicant recognises that the Proposed Scheme will have significant adverse visual impacts, but fails to attribute appropriate weight to these impacts within its assessment. In assessing the impact, one must consider the scale of the impact and the nature of the impact on the particular site.	The Applicant acknowledges the adverse impacts associated with the Proposed Scheme on receptors at Crossness Local Nature Reserve (LNR). The assessment in **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** considers the significance of effect on users of the Accessible Open Land (AOL) (parts of which fall within the CLNR) in accordance with GLVIA3 guidance. The assessment considers the scale and nature of the whole of the Proposed Scheme along with embedded and additional mitigation such as a visually coherent design of built form and material selection and planted boundaries. Within the AOL, embedded mitigation as detailed in the **Outline LaBARDS (REP1-012)** includes tree planting screening, enhanced grazing marsh, wetland habitat, and improved footpath construction. As set out in **Paragraphs 10.7.62** and **10.7.63** of **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)**, the assessment has identified that the magnitude of impact on users of the AOL during operation would likely be major during operation year 1 and reduce to moderate-major at operation year 15 following establishment of the proposed mitigation planting. As set out in **Table 10-8** of the chapter, the assessment concludes that the effects experienced by users of the Accessible Open Land would likely be significant during construction and operation (Year 1 and Year 15).

Doc ref	Summary of issue raised	Applicant's response
REP1-047	122. In considering the nature of the impact, it is important to note that Crossness Nature Reserve is protected open space. LBB's assessment confirms it has "strong openness" and is of "high quality" and "high value" (as per LBB assessment in Appendix 2). It is a place where many can go to escape the city and urban areas to enjoy the natural environment. The area is peaceful and tranquil. The Applicant's assessment fails to reflect the sensitivity of the Site to visual amenity impacts or to give sufficient weight to these factors in the analysis.	The assessment in **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** considers the sensitivity of the users of the Accessible Open Land (AOL), as described in **Section 10.4** of the chapter. The value of the Accessible Open Land is identified as medium as it is an area of high local value (and not of high value nationally or regionally), reasonably attractive, and with moderately valued views for the users of the space. The area is not considered to be particularly tranquil due to the proximity to industrial development, marine engineering and transport infrastructure. The susceptibility to change for users of Accessible Open Land is identified as medium-high as the nature of the surroundings is a contributor but not a significant factor in the enjoyment of the activity undertaken by users of the Accessible Open Land. The sensitivity of the users of Accessible Open Land, where recreation and enjoyment of the setting is important, is concluded to be medium-high. This sensitivity rating has then been taken forward into the assessment of effects.
REP1-047	123. Any further build-up and addition to the built environment will have a cumulative visual impact (see EN-1 5.10.16 and Section 4.3). Insufficient weight has been given to negative the cumulative visual impacts from the Proposed Scheme as a whole.	An assessment of the potential cumulative effects on the users of Accessible Open Land is presented in **Chapter 21: Cumulative Effects of the Environmental Statement (Volume 1) (APP-070)**. As presented in **Table 21-13** of the chapter**,** the assessment concluded there would be a significant effect on the users of Accessible Open Land during the construction and operation phase, with all practicable mitigation measures in place.
REP1-047	124. The proposed mitigation of tree planting is not an adequate mitigation measure as the trees will obstruct the currently available long-distance and sweeping views of this grazing marsh.	A sparse collection of trees along the eastern edge of Norman Road Field as a buffer to the western edge of the Carbon Capture Facility to, in part, screen views of the Proposed Scheme from the Accessible Open Land (AOL) (parts of which fall within the Crossness Local Nature Reserve (LNR)). The tree planting is part of wider environmental proposals for the area set out in the **Design Approach Document (APP-044 to APP-046)** to enhance biodiversity, protect and enhance habitat, improve damaged or derelict land, and promote public access and recreation. This would, to some extent, mitigate the impact the Proposed Scheme would likely have on users of the LNR. The current views across the Site are short to medium distance and largely retained from within the LNR. Please also see the response to item 2-9-3-15 below.

2.6 WATER AND FLOOD RISK

Table 2-6-1 – Ridgeway Users Group

Doc ref	IP Name	Summary of issue raised	Applicant's response
REP1-069	Ridgeway Users	PFAS were identified within a water sample on a ditch that is adjoined to the Applicant's site (a secondary outflow) at a total detectable concentration of around 59.1ng/l with several chemicals breaching the individual 10ng/l per chemical limit put forward by the Royal Society of Chemistry, one of these chemicals (PFOAs) fits under POPS regulation or Persistent Organic Pollutants. It is suggested that the Applicant undertakes monitoring of PFAS locally in line with their legal obligations.	PFAS are commonly referred to as 'forever chemicals' because of their persistence in the environment. The Applicant does not believe that the identified PFAS originated from the Riverside Campus. Riverside 1 is operated in compliance with its Environmental Permit. Only uncontaminated roof and surface water is discharged to local ditches; having first passed through full retention oil and water separators. Process water from the facility is not discharged off-site. The email comment relating to ditches used by Cory (presented at **Figure 4** of the **Ridgeway Users' Written Representations (REP1-069)**) is not correct. The Applicant can confirm that uncontaminated water discharge is only made into the ditch on the west side of Norman Road. Other potential sources of PFAS have been identified within **Appendix 17-1: Preliminary Risk Assessment** of the **Environmental Statement (Volume 1) (APP-113)** both within and outside of the Site. Testing and analysis of PFAS will be included within the design of a future ground investigation (as described in the **Outline CoCP (as updated alongside this submission)** and will inform a chemical testing suite within the Site. In accordance with the **Outline Drainage Strategy (AS-027),** the surface water runoff will be subject to treatment appropriate for the proposed site activities prior to discharge to the local watercourses at a controlled rate. The proposed development, its activities during the operational phases, the pollution prevention measures, and associated maintenance will ensure that the surface water drainage will not increase pollution into the receiving waterbodies. The Proposed Scheme will not release per-and poly fluoroalkyl substances (PFAS) in the surrounding environment during the construction or operational phase. All waste arisings will be disposed in accordance with the waste hierarchy, in accordance with the **Outline Site Waste Management Plan (APP-130)** during the construction phase and Operational EMP (prepared prior to the Proposed Scheme becoming operational), both requirements of the **Draft DCO (updated alongside this submission)**.

Table 2-6-2 –Environment Agency

Doc ref	Summary of issue raised	Applicant's response
Flood Risk		
REP1-035	Flood Risk "We have still yet to agree the spatial extent of the Order Land, both the freehold and leasehold to be compulsorily acquired and where easements, servitudes, and other private rights are to be extinguished, the breach flood modelling, the fluvial modelling, the offsets relative to the flood defences, offsets relative to watercourses, the adequacy of fluvial flood risk mitigation, proposed land raising, engineering designs, acceptable proximity to the great breach pumping station and the access route to it and the open channels discharging to it and the rising mains and culvert discharging from it, the sedimentation modelling and any needed mitigation. This is needed to ensure that there is no increased risk to third parties through loss of flood storage and flood flow capacity, impact on the flood defences, impact on the maintenance of, upgrading of and discharging from the great breach pumping station."	Matters regarding the spatial extent of the Order Land; freehold and leasehold to be acquired; and where easements, servitudes, and other private rights are to be extinguished are covered within **Section 2.2** of this report. The Applicant submitted the Cory Thames Estuary Breach Model to the Environment Agency on 13th September 2024 for review, with further details provided on 31st October 2024 and 25th November 2024 to answer queries raised by the Environment Agency. The Applicant awaits any further queries that the Environment Agency's Evidence and Risk Team has regarding this model. The Applicant has used the Environment Agency's Marsh Dykes Model (2020) as the basis for the fluvial flood risk modelling. The Applicant has identified anomalies in this model as notified to the Environment Agency on 5th November 2024 and 25th November 2024. The Applicant is investigating these anomalies and will send the model to the Environment Agency for review as soon as practicable. Proposed temporary and permanent works in close proximity to the Environment Agency's flood defences are discussed in **Section 11.3** of **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)**. Details of these works will be subject to the Environment Agency's approval through the Protective Provisions. The Applicant is not aware of further information that is required at this stage and requests the Environment Agency to clarify what further information is required prior to DCO approval. Works in close proximity to watercourses are discussed in **Section 10.1** of **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)**. Works within areas at fluvial flood risk and the proposed approach to the provision of fluvial floodplain compensation are discussed in **Section 8.6** of **Appendix 11-2: Flood Risk Assessment of the Environmental Statement (Volume 3) (AS-023)**. Proposed offsets to watercourses are discussed in the **Design Principles and Design Code (AS-020)**. The **Design Principles and Design Code (AS-020)** will form the basis of design development for the Proposed Scheme as the detailed design comes forward through requirement discharge; a Compliance Statement would be submitted to support the discharge of the detailed design DCO Requirements which will report on compliance with both the Design Principles and the Design Code. The Applicant is not aware of further information that is required at this stage and requests the Environment Agency to clarify what further information is required prior to DCO approval. The **Design Principles and Design Code (AS-020)** states the intention to minimise, where practicable, raising ground levels in the creation of the development platform for the Carbon Capture Facility. As stated above, this will form the basis of design

Doc ref	Summary of issue raised	Applicant's response
		assessment for the development of the Proposed Scheme. The Applicant is assessing the benefits of lowering the development platform for the Carbon Capture Facility to residual flood risk in the event of a breach of the River Thames flood defences and the findings of this review will be shared with the Environment Agency in due course. No works are proposed that would directly affect the Great Breach Pumping Station, the open channels discharging to it or the rising mains and culvert discharging from it. Access to the Great Breach Pumping Station will be maintained during construction and operation of the Proposed Scheme. Details of these works will be subject to the Environment Agency's approval through the Protective Provisions. A meeting was held with the Environment Agency on 9th September 2024 to discuss the sedimentation and coastal processes assessment. The Applicant shared a Technical Note on 12th December 2024, which is also included as **Appendix A** of this report, with the Environment Agency in response to queries received form the Environment Agency on 30th October 2024. The results and information presented in this Technical Note show that bed shear stresses around the Great Breach Outfall are not expected to reduce significantly in comparison to the baseline scenario. Therefore, a negligible increase in sediment deposition at the Great Breach Outfall would be expected.
REP1-035	"The hydraulic flood modelling of breach flood events to assess the increased risk of flooding offsite is being reviewed by the Environment Agency Evidence & Risk team. We disagree with the applicant's assertion that their worst-case assessment shows no significant offsite impact. The applicant has not responded to the comment in our Relevant Representations that the carbon cost of the ground raising could be greater than that saved by avoiding the equipment being temporarily out of action due to flooding caused by a breach in the flood defences. We believe a more sophisticated assessment can and should be produced of the equipment and its spatial extent warranting ground raising to protect it from flooding; to better demonstrate that the ground raising is justified and kept to a minimum. That would allow the upper bound limits of ground raising required to be properly considered as part of the DCO process. We are also opposed to the lack of adequate quantification or constraint on the amount of ground raising under the proposed Design Principles and Design Code. We are unfamiliar with the use of Design Principles and ask whether including suitable wording into Requirements would not be more robust. We with discuss the wording of the design principles and codes with the applicant to better address the concerns above. The applicant has stated that they are unable to undertake a more granular assessment of the need for ground raising at this stage. If the Planning Inspectorate agree that this is the case stronger wording should be included within the Design Principles and the Requirements restricting ground raising to where it is only really necessary should be	**The Design Principles and Design Code (AS-020)** states the intention to minimise, where practicable, raising ground levels in the creation of the development platform for the Carbon Capture Facility. The **Design Principles and Design Code (AS-020)** will form the basis of design assessment for the development of the Proposed Scheme as the detailed design comes forward through Requirement discharge; a Compliance Statement would be submitted to support the discharge of the detailed design Requirement (Requirement 4(3) of the **Draft DCO (REP1-002)**) which will report on compliance with both the **Design Principles and Design Code (AS-020)**. The Applicant welcomes the opportunity to discuss the wording of the **Design Principles and Design Code (AS-020)** with the Environment Agency as suggested. The Applicant is currently considering scenarios to lower the development platform for the Carbon Capture Facility to improve residual flood risk in the event of breach of the River Thames flood defences and the findings of this review will be shared with the Environment Agency in due course and submitted into the Examination at Deadline 3. The Applicant does not consider it viable to offset the modelled impact to residual flood risk in the event of flood defence breach by lowering ground levels elsewhere or pumping to discharge the water to the River Thames, as the nature of the changes to residual flood risk are associated with the flood flow routing following a breach in the tidal flood defences that affects peak flood levels. As the Environment Agency notes, the area within and surrounding the Proposed Scheme is relatively flat with no obvious areas of higher ground that could be lowered to reduce the change in peak flood levels. Pumping would also only be effective if associated with removal of water from the watercourse network, as is currently provided and operated by the Environment Agency at the Great

Doc ref	Summary of issue raised	Applicant's response
	included that control the ground raising and encroachment into the watercourse buffer strips. We disagree with the applicant's assertion that the flood risk impacts should not be considered to be significant and do not increase the probability or consequence of flooding to nearby existing development. That is not only about the increased breach flood levels impacting residential property but also the existing commercial development to the east as noted in our comments about the Flood Risk Assessment below. We therefore also disagree with the applicant's rejection (other than some possible reduction of the areas of ground raising) of the mitigation measures we suggested in our Relevant Representations: - • Reducing the area of ground raising. • Lowering ground levels elsewhere as floodplain compensation, although it is unclear if other high ground exists where it would be needed. • Pumping to discharge flood water to the Thames to reduce residual risk flooding. • Improvements to the flood defences, although that is difficult including due to much of the run of the defences being outside the current proposed site extent."	Breach Pumping Station and Green Levels Pumping Station. Additional pumping would likely have relatively limited benefit to the reduction on peak flood levels (with the greatest benefit instead only recognised for the removal of flood waters over a longer duration once the peak of the breach has passed). The Applicant has completed an inspection and completed all bar one of the required subsequent improvements, to the existing River Thames Flood Defences to the north of Riverside 1 and Riverside 2, along a total length of 420m, to bring the defences up to a 'good' standard in accordance with the Environment Agency's condition grades. The final improvement is being progressed and intended to be completed in 2025 (the Environment Agency has been kept informed on this matter). A summary of the inspection and recommended improvements is provided within the Riverside Energy Park River Wall Condition Survey (undertaken pursuant to Requirement 20, Schedule 2, of the Riverside Energy Park Order (2020) as amended[11], and which has been seen by the Environment Agency). That report states that the residual design life of the flood defence wall (subject to ongoing maintenance and inspections to monitor the rate of deterioration) is expected to be between 95 and 130 years (and so well within the lifetime of the Proposed Scheme) following the implementation of remedial works proposed within the report (which are the improvements referred to above). The Applicant has committed to undertaking a similar exercise for where the Proposed Jetty interacts with the flood defence walls (see Requirement 17 of the **Draft DCO (updated alongside this submission)**. The extent to which carbon capture equipment could be out of action due to flooding has not been determined but the following contextual information is provided to compare the embodied carbon for the Proposed Scheme relative to emissions avoided by the Proposed Scheme. The annual GHG emissions savings identified for the Proposed Scheme are 1,620,603 tCO_2e/yr (**Table 13-10** in **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**, which is equivalent to 4,440 tCO_2e/day. The total carbon identified for construction of the Proposed Scheme is 98,332 tCO_2e (**Table 13-8** in **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**, which would be equivalent to 22 days of avoided GHG emissions (or approximately half a day per year over the lifetime of the Proposed Scheme). It is also noted that only a proportion of the total construction GHG emissions would be attributed to ground-raising (primarily aggregate material used in earthworks), which based on GHG emissions for key construction materials used in the Proposed Scheme (**Table 13-9** in **Section 13.8** of **Chapter 13: Greenhouse Gases of the Environmental Statement (Volume 1) (APP-062)**, would represent less than 5% of the total construction emissions, equivalent to approximately one day of avoided emissions in total over the lifetime of the Proposed Scheme.

11 Schedule 2 Requirement 20 of The Riverside Energy Park Order 2020 – available at: https://www.legislation.gov.uk/uksi/2020/419/contents

Doc ref	Summary of issue raised	Applicant's response
REP1-035	"The Applicants response did not provide the raw results requested from the hydraulic flood modelling, but instead refers to 10mm bands having been reviewed. Our previous request for more granular information remains outstanding. That request is in line with the current guidance set out on gov.uk."	The Applicant submitted the Cory Thames Estuary Breach Model to the Environment Agency on 13th September 2024 for review that includes the raw results, with further details provided on 31st October 2024 and 25th November 2024 to answer queries raised by the Environment Agency as described within the SoCG (updated alongside this submission). The Applicant awaits any further queries that the Environment Agency's Evidence and Risk Team has regarding this model. **Figure 8.8a** and **Figure 8.8b** of **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement Rev B (Volume 3) (AS-023)** illustrate the –10mm to –5mm, –5mm to 0mm, 0mm to +5mm, and +5mm to +10mm depth difference bandings of peak flood levels following a breach in the Thames Tidal Defences. The Applicant considers this addresses the Environment Agency's request to understand smaller changes in flood depth of less than 10mm. It is not considered practicable to present all results using a 10mm banding and the Applicant does not interpret this as a requirement on GOV.UK.
	"The largest increase in flood depth of 0.67 metres is shown at location point 24, to the east of Norman Road where warehousing and light industrial uses are located. See comment on the Flood Risk Assessment (FRA) below. It is unreasonable to increase even breach flood levels to receptors sensitive to flooding as shown by the modelling, furthermore the need for the ground raising causing that offsite impact has not been justified as substantive. If any amount of ground raising in the residual risk floodplain is acceptable then the risk to existing developments will accumulatively increase. The applicant has asserted why they consider their assessment of the off-site impacts of the large-scale ground raising in the floodplain to be conservative, including that the beneficial effect of the pumping stations discharging some of the flood water to the River Thames during a flood. Please note that over the long term there are uncertainties over funding for the pumping stations. The Environment Agency and the Applicant's positions have not changed, and the difference is unresolved over the significance of the flood risk impacts of the proposed ground raising. The wholesale ground raising approach with any reduction in extent at detailed design stage being effectively at the discretion of the Applicant is unreasonable. The issue over the impact of a possible breach between Riverside 1 and Riverside 2 shows that even the ground raising proposed does not fully protect the CCF equipment. The benefits do not outweigh the disbenefits."	The results of the Cory Thames Estuary Breach Model that assumes a 'glass wall' worst-case approach to the development platform for the Carbon Capture Facility (i.e. setting the platform at a level that will always be above the highest modelled flood level) indicates baseline peak residual risk flood depths (i.e. following a breach of the Thames Tidal Defences) immediately to the east of the Asda Distribution Centre that are greater than the modelled peak residual risk flood depths that could occur with the construction of Proposed Scheme. On the western side of the Asda Distribution Centre, peak flood levels at location no.24 (with reference to **Figure 8-12** in **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)**) are modelled to increase from 2.12m AOD to 2.69m AOD (as identified by the Environment Agency in their response). However to the north and east of the Asda Distribution Centre at locations 21, 22 and 28 (with reference to **Figure 8-12** in **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)**) peak flood levels are not predicted to increase, with baseline peak flood depths of 3.47m AOD, 4.32m AOD and 4.34m AOD respectively, and corresponding peak flood depths of 1.10m, 2.11m and 2.47m respectively. The results of the residual risk flood modelling as presented in **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)** are considered conservative as the 'glass wall' approach assesses the greatest impact to peak flood depths that could occur following a breach of the River Thames Flood Defences, also noting that the breach scenario assumes an instantaneous breach (i.e. an immediate opening in the defences of 20m rather than a more realistic slower progression of a flood defence failure) that occurs at the peak tidal flood level during a 1 in 200 annual probability event with climate change applied to a design year of 2081. Furthermore, the Cory Thames Estuary Breach Model does not take the operation of the Environment Agency's pumping stations into account.

Doc ref	Summary of issue raised	Applicant's response
		The Applicant is currently considering scenarios to lower the development platform for the Carbon Capture Facility to reduce residual flood risk in the event of breach of the River Thames flood defences and the findings of this review will be shared with the Environment Agency in due course and submitted into the Examination at Deadline 3.
REP1-035	"We have not received all if the information needed to allow the Environment Agency to review all the different computer based hydraulic flood models and it has not been possible to review that evidence before Deadline 1 on 26/11/2024."	The Applicant submitted the Cory Thames Estuary Breach Model to the Environment Agency on 13th September 2024 for review, with further details provided on 31st October 2024 and 25th November 2024 to answer queries raised by the Environment Agency. The Applicant awaits any further queries that the Environment Agency's Evidence and Risk Team has regarding this model. The Applicant has used the Environment Agency's Marsh Dykes Model (2020) as the basis for the fluvial and pluvial flood risk modelling, and to inform an alternative assessment for residual risk in the event of breach of the River Thames Flood Defences at the Great Breach Pumping Station and Green Levels Pumping Station. The Applicant has identified anomalies in this model as notified to the Environment Agency on 5th November 2024 and 25th November 2024. The Applicant is investigating these anomalies and will send the model to the Environment Agency for review as soon as practicable.
REP1-035	"We have reviewed the revised FRA dated September 2024….We do not understand this distinction and would welcome further clarification on what the applicant is trying to achieve through partial disapplication of The Metropolis Management (Thames River Prevention of Floods) Amendment Act 1879)." Paragraph 8.3.2 Can be seen as misleading because funding to implement the TE2100 plan which is the strategic plan to raise flood defences and protect London and the Thames Estuary from tidal flooding over the next 100-years are yet to be secured for future improvement works. It should be noted that the primary responsibility for the maintenance of the flood defences rests with the landowner. On page 51 Table 8-4 includes 'Baseline' and 'With Proposed Scheme' modelled peak breach water levels at various locations from the Cory Thames Tidal breach modelling. The largest increase in flood depth of 0.67 metres is shown at location point 24, to the east of Norman Road where warehousing and light industrial uses are located. That breach modelling is being QAed by the Environment Agency.	The position of the Applicant on the 1879 Act is that it is disapplied in respect of its application to the works authorised by the DCO, but that is the extent of its disapplication. The general duties and obligations imposed on the Applicant as a riparian owner to the Thames by that Act are retained. The Applicant understands that the funding required to fully implement TE2100 plan is not yet secured, although the Applicant also understands that it is the intention of the Environment Agency to develop a strategy to cover the gap between government funds and projected costs. Given the size of the flood cell and expanse of existing infrastructure and residential development that would be at risk if the River Thames Flood Defences were not maintained, the Applicant does not consider it unreasonable or misleading to assume the implementation of the TE2100 plan as part of **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)**. The Applicant agrees and acknowledges that the maintenance of the River Thames Flood Defences rests with the relevant landowners located along the frontage of the River Thames. It is the Applicant's understanding that the Environment Agency is responsible for the maintenance and operation of the Great Breach Pumping Station and the Green Levels Pumping Station; the Applicant requests clarification if this understanding is incorrect. The Applicant acknowledges the reference to **Table 8-4** of **Appendix 11-2: Flood Risk Assessment** of the **Environmental Statement (Volume 3) (AS-023)**. The Applicant is currently undertaking additional modelling as part of the developing design to assess the benefits of lowering the development platform for the Carbon Capture Facility to residual

Doc ref	Summary of issue raised	Applicant's response
		flood risk in the event of breach of the River Thames flood defences and the findings of this review will be shared with the Environment Agency in due course. This additional modelling does not change the Cory Thames Estuary Breach Model that was submitted to the Environment Agency on 13.09.2024 and therefore the review of this model by the Environment Agency can continue.
Drainage		
REP1-035	"The minimum offsets between the relevant parts of the proposals and the flood defences and the Great Breach pumping station and the associated culverts and channels is unclear. Cross section drawings with plenty of dimensions showing the worst-case relationship between the flood risk infrastructure and the relevant part of the proposal would assist the Environment Agency in being able to assess impacts due to proximity."	The detailed design of the Proposed Scheme, including the configuration of the development platform for the Carbon Capture Facility, will be progressed following determination of the DCO application. **Design Principles and Design Code (AS-020)** states the intention to allow for a minimum 5m offset, up to 8m or greater where practicable, from the top of bank on existing retained watercourses to allow for maintenance, to protect habitats and for the delivery of flood compensation. Works within the watercourse corridors will be defined in the full Landscape, Biodiversity, Access, and Recreation Delivery Strategy and the full Code of Construction Practice, both of which will be prepared in substantial accordance with the **Outline LaBARDS (REP1-012)** and the **Outline CoCP (as updated alongside this submission)**. The Environment Agency will be able to agree the extent of the no-development zone pursuant to their Protective Provisions. The proposed development platform for the Carbon Capture Facility may require crossing of a short section (<50m) of the culverted section of Norman Road Stream (immediately downstream of the open section of watercourse). Norman Road Stream may require diversion or protective measures due to the location of the platform as part of the detailed design. The details of this would be secured pursuant to the Environment Agency's Protective Provisions. The **Design Principles and Design Code (AS-020)** will form the basis of design assessment for the development of the Proposed Scheme as the detailed design comes forward through requirement discharge; a Compliance Statement would be submitted to support the discharge of the detailed design DCO Requirement (Requirement 4(3) of the **Draft DCO (REP1-002)**) which will report on compliance with both the **Design Principles and Design Code (AS-020)**. A typical cross section of the development platform for the Carbon Capture Facility adjacent to Norman Road Stream is provided in Annex C of **Appendix 11-2: Flood Risk Assessment of the Environmental Statement (Volume 3) (AS-023)**. Given the current draft nature of the design and the information presented in the **Design Principles and Design Code (AS-020)**, further cross sectional drawings are not considered to add additional value at this stage. A typical cross section of the R2 flue gas ductwork and supporting structure is provided at **Figure 5.12**, Sketch section south of Riverside 2 in the **Design Approach Document (APP-045)**.The detailed design of this structure will be progressed following determination of the DCO application, in consideration of the constraints due to proximity to the Great Breach pumping station and

Doc ref	Summary of issue raised	Applicant's response
		associated infrastructure. Minimum offsets and other considerations in relation to the proximity of the proposals to flood defences are discussed above. The **Outline Drainage Strategy (AS-027)** provides an indicative layout for the location of outfalls to the adjacent watercourse network. The full drainage strategy will be prepared to align with the developing detailed design of the Proposed Scheme, in substantial accordance with the **Outline Drainage Strategy (AS-027)**, as secured by a requirement within the **Draft DCO (as updated alongside this submission)**. Outfall design will comply with standard good practice. At this stage of design, cross sectional drawings of a typical outfall are not considered to add additional value at this stage.
REP1-035	"The Applicants response acknowledges that surface water runoff could create overland flow into the watercourses. The point is that the landscaping should be designed to prevent such by-passing."	The **Outline Drainage Strategy (AS-027)** assumes that runoff from the entire proposed development will be captured by the proposed drainage network and routed through the SuDS features (which include landscape style features) and proprietary treatment units at a controlled rate based on the design criteria, including allowances for climate change, before discharging into the watercourse network. No surface water overland flow bypassing the drainage system is anticipated for the design criteria. It is noted that the **draft DCO (updated alongside this submission)** also makes provision for the detailed Drainage design and the detailed LaBARDS be consistent with each other (Requirement 13(2)), which will ensure that the impacts the EA are concerned about will not arise. It is also noted that the **Design Principles and Design Code (AS-020)** seek to ensure that the Mitigation and Enhancement Area proposals dovetail with the drainage proposals - DP_CL 1.1 states that the Proposed Scheme should "*Direct site drainage from the main operational area hard standing areas to support local ground water levels and to enhance grazing marsh and existing and proposed wetland habitat. Attenuate and treat surface run-off from the main operational areas onsite before releasing into the local ditch network to support wetland water quality site wide".*
REP1-035	"Contrary to the Applicants response the Design Principles and Design Code are proposing zero buffer zone on one side of the Main River open channel at the northern end of Norman Road. A stronger onus to maximise the width of the buffer zones is required than included in the Applicants proposed Design Principles and Design Codes wording. Including that need in the wording of a Requirement would be more robust."	The detailed design of the Proposed Scheme will likely need to reduce the existing byelaw buffer strip (i.e. no development zone) alongside Norman Road Stream of 9m due to the need for the development of the Carbon Capture Facility in this area. The **Design Principles and Design Code (AS-020)** states the intention to allow for a minimum 5m offset, up to 8m or greater where practicable, from the top of bank on existing retained watercourses to allow for maintenance, to protect habitats and for the delivery of flood compensation. The provision of offsets from the retained watercourse in the finished scheme will be dependent on the plant layout that will be determined at detailed design stage, to reflect final equipment selection and layout including space required for safe construction, operation and maintenance. Offsets from existing retained watercourses will be maximised within the constraints of the detailed design of the plant, and to reflect the constraints identified above. Works within the watercourse corridors will be defined in the **Outline Drainage Strategy (AS-027),** the full Landscape, Biodiversity, Access, and Recreation Delivery Strategy and Code of Construction

Doc ref	Summary of issue raised	Applicant's response
		Practice, both of which will be prepared in substantial accordance with the **Outline LaBARDS (REP1-012)** and the **Outline CoCP (as updated with this submission)**. In accordance with the **Outline Drainage Strategy (AS-027),** there will be provision for a maintenance access for the northern end of the Norman Road Stream from the adjacent Norman Road which then reduces the requirement for the buffer zone for maintenance from the west of the watercourse.

2.7 SOCIO-ECONOMICS

Table 2-7-1 – London Borough of Bexley

Doc ref	Summary of issue raised	Applicant's response
Socio-economics		
REP1-032	No response was made in response to the London Borough of Bexley's previously submitted Relevant Representation **(RR-124)** regarding socio economic matters.	The London Borough of Bexley, requested as part of its Relevant Representation **(RR-124)** *"An employment and skills plan would need to be agreed that optimised the benefits of the opportunities associated with the development. Further details on the Schedule of Works would be needed to fine tune plans for apprenticeship, placements for schools and other outcomes".* The Applicant has submitted an **Outline Skills and Employment Plan (SEP) (Document Reference 9.15)** at Deadline 2. The Applicant will seek the London Borough of Bexley's agreement on the content of the **Outline SEP (Document Reference 9.15**) through the SoCG between the Parties.
REP1-034	50-54 highly skilled jobs at Munsters Joinery would be lost and replaced with circa 27 full time jobs which are not considered to be "skilled". This would result in the net loss of circa 27 jobs.	The socio-economic effects of the Proposed Scheme, including employment, are assessed in **Chapter 15: Socio-economics** of the **Environmental Statement** (**APP-064**) and **Appendix 15-1: Munster Joinery** (**Volume 3**) of the **Environmental Statement** (**APP-112**). As set out in **Chapter 15: Socio-economics** the Proposed Scheme would lead to the loss of jobs at Munster Joinery UK Limited due to the loss of the Munster Joinery Norman Road premises (if a relocation site is not agreed) as well as generation of long term jobs associated with the operation and maintenance of the Proposed Scheme. As set out in **Paragraph 15.8.20** of **Chapter 15: Socio-economics** of the **Environmental Statement** (**APP-064**), when taking leakage, displacement and multiplier effects into account there is the potential for a net loss of 29.5 FTE jobs as a worst case in terms of employment generation as a result of the Proposed Scheme. This is due to the estimated 63.9 Full Time Equivalent (FTE) jobs at Munster Joinery UK Limited that could be lost (if a relocation site is not agreed) and the 34.4 FTE jobs that could be generated as part of the Proposed Scheme. However, as detailed in **Paragraph 15.8.21**, if Munster Joinery UK Limited was to be relocated within an area that would support existing business operations, the Proposed Scheme would lead to the generation of operational employment opportunities of 34.4 FTE jobs. The Applicant is clear within **Chapter 15: Socio-economics** of the **Environmental Statement** (**APP-064**) that it had not been possible to ascertain the exact number of jobs at Munster Joinery's premises on Norman Road; despite being requested, the business has not provided this information. Further, the Applicant makes no comment on the type of job that is provided at Munster Joinery, either within the Environmental Statement or in any other Application document. Neither, it is noted, does either Landsul Ltd or Munster Joinery (UK) Ltd in their Deadline
REP1-034	Net loss of 23-27 permanent jobs for the area.	

Doc ref	Summary of issue raised	Applicant's response
		1 submissions, particularly within Appendix E, Lichfields Report: Socio-economic Impact Assessment for Munster Joinery (REP1-059 and REP1-060) beyond noting (at paragraph 2.49) that the business requires *'a highly specialist skillset*' and at paragraphs 3.19 and 3.32 reflecting on the '*highly specialised activities'*. At paragraph 1.5 of the Lichfields Report: Socio-economic Impact Assessment, and confirmed at Table 3.4, the Munster Joinery premises at Norman Road are described as constituting '*distribution hub, office, and showroom'*. The type of jobs expected to be available at the Proposed Scheme are typically highly skilled and with good potential both for entry through apprenticeship and for career development. They are: • Managerial roles - across the Plant; Operations, Engineering and Maintenance; Safety, Health and Environment. • Operators and Technicians – within the Shift Control Room and across the Plant; Mechanical; and Laboratory. • Engineers – Process; Electrical, Control & Instrumentation; Mechanical and EC&I. • Gatehouse, Security and Administration staff. The Applicant does not consider these employment opportunities to be a downgrading in jobs skill level. An **Outline Skills and Employment Plan** has been submitted (**Document Reference: 9.15**, alongside this response) not least responding to LBB's requests as made within its edits to the draft DCO (REP1-033).
REP1-034	The documentation provided to date by the Applicant has excluded an assessment of potential impacts on tourist sectors, although this is considered to be a negligible impact	As detailed in Section ID 3.10.5 of **Appendix 4-2: Scoping Opinion Responses** of the **Environmental Statement (APP-076)**, a separate tourism economy assessment has not been included in **Chapter 15: Socio-economics** of the **Environmental Statement (Volume 1) (APP-064)** as those businesses affected are not tourism related businesses due to the industrial location of the Proposed Scheme. However, as set out in **Paragraph 14.6.2** of **Chapter 14: Population, Health and Land Use** of the **Environmental Statement (Volume 1) (APP-063)**, the England Coast Path, NCN1, FP1, FP2, FP3, FP4 and FP242, recreational activities along the River Thames and terrestrial recreation (such as Crossness Local Nature Reserve) were considered to be tourism receptors. **Section 14.8** of **Chapter 14: Population, Health and Land Use (APP-063)** sets out the likely impacts of the Proposed Scheme on these receptors and **Section 14.11** the anticipated residual effects.
REP1-032	Requirement 14 of the draft DCO sets out that a skills and employment plan would be submitted and include the measures set out in item 11.3 of the mitigation schedule. Item 11.3 of the mitigation schedule sets out that "The Applicant would recruit locally, wherever practicable, and enable access to training and career development. A Skills and Employment Plan will be prepared prior to the Proposed Scheme commencing	An **Outline Skills and Employment Plan** is submitted (**Document Reference: 9.15**, alongside this document) to enable LBB's requests (as made within its edits to the **draft DCO (REP1-033)**) to be achieved. Further, Requirement 15 has been updated in the **draft DCO (as updated alongside this report)** to provide both: that the skills and

Doc ref	Summary of issue raised	Applicant's response
	operation and secured by DCO requirement". Whilst this is considered reasonable in so far as job creation once the development is operational, given the net loss of jobs (once completed) it is considered that local residents should be considered for employment for the construction of the development as well. This would mean that the trigger point for the submission of a Skills and Employment Plan would need to be altered so that the requirement is satisfied before the commencement of the development. An Employment and Skills Plan should be agreed between the Applicant and the London Borough of Bexley in order to optimise local employment, skills and economic development benefits from the proposed development and secured through DCO requirement 14. However, this requirement should be amended in order to make sure that local residents have preferential treatment	employment plan must now submitted to LBB at pre-commencement, rather than pre-commissioning, and must be in substantial accordance with that outline plan. The Outline Skills and Employment Plan does not give preferential treatment in terms of local residents gaining employment, as that decision would be based upon their skills and experience as relevant to the job on offer. However, it does extend the practice committed within the Employment and Skills Plan approved under the Riverside Energy Park Order, to advertise any posts locally, i.e. within the London Borough of Bexley, before advertising more widely.

2.8 TRANSPORT MATTERS

Table 2-8-1 – Port of London Authority

Doc ref	Summary of issue raised	Applicant's response
REP1-039	"8.3 The Applicant has failed to illustrate how use of the river will be maximised in the policy context of The London Plan 2021 Policy 7.26: Increasing the use of the Blue Ribbon Network for freight. Both the TA [APP 114] and the oCoCP [APP-124] focus heavily on land side road-based construction and delivery. The references to potential use of the river are only in the context of the materials required to construct the proposed jetty and even this is not guaranteed (see below). The PLA therefore reiterates its point made in its Relevant Representation [RR 162] that there needs to be much more consideration and commitment to the use of the river. This consideration should include clarification on why the Applicant believes that the effectiveness of Middleton Jetty operations for Riverside 1 and 2 (when operational) will be compromised if it were used for the delivery of construction materials and plant."	The use of the River Thames to export some 1.3 million tonnes of LCO2 each year throughout the operational lifetime of the Proposed Scheme, from a new, bespoke jetty is a fundamental element of the project. By contrast, the construction phase is a relatively short, temporary period of time (maximum 60 months). **Chapter 18: Landside Transport of the Environmental Statement (Volume 1) (APP-067)** assumes a worst-case approach that, for the landside elements, all construction traffic will be road-based. **Table 18-24** of the chapter demonstrates that the anticipated environmental effects of construction traffic on the local highway network are minor adverse or negligible (not significant) for all categories assessed during the estimated peak construction period, and no significant effects are reported. Consequently, there is no requirement for increased use of river transport during the construction phase to be further assessed than as already set out in **Paragraphs 2.4.52 to 2.4.53** of **Chapter 2: Site and Proposed Scheme Description of the Environmental Statement (Volume 1) (APP-051)**. Further, the Applicant remains in discussion with relevant Interested Parties over the content of the **Framework Construction Traffic Management Plan (CTMP) (REP1-008)**. In its **Response to Relevant Representations (AS-043) (Table 6-1, reference 6.1.4)** the Applicant explains the marine elements of the Proposed Scheme that are expected to use the River Thames during the construction phase and why this approach is not appropriate to extend to the terrestrial elements of the project. That response also sets out the difficulties that would arise if other jetties were to be used for river transport of terrestrial construction materials. It is not possible for Middleton Jetty to be used for construction transport for terrestrial elements as the movements required would cause unacceptable disruption to the operation of Riverside 1 and Riverside 2. Middleton Jetty will be at peak capacity with both energy from waste facilities operating (expected from 2026, before construction of the Proposed Scheme). The delivery and handling of construction materials and plant via Middleton Jetty would disrupt the 24/7 delivery of residual waste and the onward movement of incinerator bottom ash; the primary functions for which Middleton Jetty was designed, and is used, for.
REP1-039	"8.4 The lack of certainty within the oCoCP is a matter of concern for the PLA, especially as this document will be a certified document. An example of this can be seen at paragraph 2.12.7 (emphasis added): "transport of construction plant and materials for the Proposed Jetty (i.e. steel piles, precast concrete units and marine equipment such as fenders) will, where feasible, be via the River Thames"	For the Proposed Jetty (i.e. steel piles, precast concrete units and marine equipment such as fenders), transport will primarily be via the River Thames as set out in the **Chapter 2: Site and Proposed Scheme Description of the Environmental Statement (Volume 1) (APP-051).** The river transport is viable to build the Proposed Jetty as it involves primarily marine based construction activities. There is limited land access to enable construction of the Proposed Jetty from the land, making land construction less viable in addition to the

Doc ref	Summary of issue raised	Applicant's response
	8.5 This provides no certainty that river transport will occur, and it is not clear what factors will influence whether river transport is feasible."	disruption that would be caused to Middleton Jetty. Several jetties in the River Thames can support the marine based construction activities to load the various construction materials onto the material feeding barges such as steel piles, precast concrete units and marine equipment such as fenders. There is no direct land access with the Proposed Jetty, therefore the main elements will need to be transported and installed via the River Thames. At this stage, the Applicant cannot be more definitive on the extent of river transport during construction as there are no specific details on construction logistics, as these will be developed with the EPC contractor at FEED stage.
REP1-039	"8.6 Evidence in the TA which heavily influences the oCoCP also includes deep uncertainty that affects the robustness of the oCoCP. For example, at paragraph 6.2.7 it is stated: "The origin of the construction related vehicles is currently unknown"	At this stage of development, a Contractor(s) for the Proposed Scheme has not been appointed. Hence the origin of construction-related HGV and the construction workforce is currently unknown, as this will be dependent on the specific Contractors' supply chains. The construction vehicle trip assignment methodology adopted within the **Appendix 18-1: Transport Assessment of the Environmental Statement (Volume 3 (APP-114)** replicated the approach used within the Riverside 2 Transport Assessment (which was developed with input and approval from the relevant highway authorities). During the peak construction period, construction staff are assumed to travel to/from Yarnton Way (10%); the B253 Picardy Manorway (37%); the A2016 Bronze Age Way (47%) and the A2016 Eastern Way (6%). For HGVs, it has been assumed that 25% would be from the north/west via the A2016 Eastern Way, whilst the remaining 75% would be from the south/east (75%) via the A2016 Bronze Age Way and A206. These assumptions result in a robust highway impact assessment as the majority of vehicles are assigned towards the Strategic Road Network (SRN) – M25 – via the urban dual carriageway network (which forms part of the London Lorry Control Scheme – LLCS).
REP1-039	8.7 Both the TA and oCoCP cite 50 construction related two way HGV movements (over the course of the day) during the peak of construction. The TA states that these figures are based on professional judgement and knowledge of similar schemes. In addition, the oCoCP states: "During Site establishment and groundworks, particularly when the ground raising exercise for flood risk purposes will be undertaken, there will be an estimated peak of 72 HGV movements per day (resulting in 144 two-way movements), for a period of approximately three months, depending on the construction programme" (para 2.12.2)". "8.8 The PLA seeks further clarification on the assumptions used by the applicant for both the construction HGV quantum and the site establishment and groundwork HGV quantum. It also seeks to understand from the Applicant why the origin of the construction related vehicles is currently unknown".	**Appendix 18-1: Transport Assessment of the Environmental Statement (Volume 3 (APP-114)** provided a peak construction period assessment that included a forecast worse-case scenario for combined HGV and construction worker vehicle movements on the highway network (i.e. the highest vehicular volumes when combining construction HGVs and anticipated construction workforce). It is acknowledged that the site establishment and groundworks element of the construction phase may result in a larger number of HGV movements; however, it is coincident with very low construction worker numbers. At this stage of development, a Contractor(s) for the Proposed Scheme has not been appointed. Hence the origin of construction-related HGVs and the construction workforce is currently unknown, as this will be dependent on the specific Contractors' supply chains. The HGV quantum for site establishment and groundwork was based on an estimate of the total volume of materials required to be brought to the Site for ground raising, and the estimated programme duration for this work based on in-house knowledge of earthworks productivity rates. The HGV quantum for the main construction phase was based on in-

Doc ref	Summary of issue raised	Applicant's response
		house knowledge and experience of construction and installation works for similar sized schemes. These figures were also benchmarked against the HGV traffic movements anticipated for the adjacent Riverside 2 construction and public-domain data for other carbon capture projects, scaled to reflect the size and scale of the Cory Decarbonisation Project, and advice from potential EPC contractors.

Table 2-8-2 – National Highways

Doc ref	Summary of issue raised	Applicant's response
REP1-037	1. National Highways has concerns regarding insufficient information presented within the Transport Assessment, relating to the development's construction phase and its traffic impact on the SRN, specifically M25 (A282) J1a. This junction forms one of the most congested junctions on National Highways' network. Without further information from the Applicant, we are unable to accept that the construction of the proposals would not affect the safety, reliability and/or operation of the SRN (the tests set out in DfT Circular 01/2022 and NPPF para 115). Figures for vehicle movements and types are presented. National Highways has been in discussions with the applicant's transport consultants regarding further assessment of the construction traffic impacts on the SRN, in particular at M25 (A282) J1A. These discussions are ongoing and we are working towards an agreement on the content of the Framework Construction Traffic Management Plan (FCTMP) and an updated Statement of Common Ground (SoCG). At present, however, there is still the potential for significant ongoing impacts on the National Highways network, which we do not yet have sufficient information to understand.	It is recognised that there is an existing peak period traffic congestion issue at the Dartford Crossing and at the M25/A282 Junction 1a. This existing and well known issue, combined with a targeted communication strategy (outlined within Section 3.4 of the **Framework CTMP (REP1-008)**), will positively influence the travel behaviour of any construction staff that would potentially have to route through this section of the transport network to and from the Site during the construction period. It is considered that any potential construction vehicle impacts on the operation of the M25/A282 Junction 1a can be cost effectively mitigated to an acceptable degree through the implementation of the full Construction Traffic Management Plan and Construction Workforce Travel Plan. These documents will include measures such as encouraging the use of alternatives to single occupancy cars and travelling outside of the highway peak hours, and will be prepared in substantial accordance with the **Framework CTMP (REP1-008)**. Discussions with regard to the forecast construction traffic impacts on the M25/A282 Junction 1a are ongoing with National Highways following submission of a Technical Note that the Applicant has shared with National Highways, as described within the **SoCG (PDA-011)**.
REP1-037	The Applicant should provide certainty that a full CTMP and a Construction Workers' Travel Plan will be submitted to and agreed with National Highways prior to on-site works commencing. As a statutory consultee, National Highways should have consideration of these documents regarding the impacts on the SRN to ensure they adequately address National Highways' concerns.	Consultation with National Highways on the full Construction Traffic Management Plan (CTMP) prior to commencement is included within Requirement 9 of the **Draft DCO (REP1-003)**. That Requirement requires that a CWTP is provided as part of that CTMP, and so National Highways will be consulted on that also.

Table 2-8-3 – London Borough of Bexley

Doc ref	Summary of issue raised	Applicant's response
Landside Transport		
REP1-032	Impact of construction generated traffic from HGV and workforce movements on the local network.	**Table 18-24** of **Chapter 18: Landside Transport of the Environmental Statement (Volume 1) (APP-067)** demonstrates that the anticipated environmental effects of construction traffic on the local highway network are minor adverse or negligible (not significant) for all categories assessed during the estimated peak construction period. The **Framework Construction Traffic Management Plan (REP1-008)** identifies measures that could be implemented to control the routeing and timing/scheduling and minimise, where practicable, the effects of HGV on the surrounding road network, local communities, and the environment during construction of the Proposed Scheme. It also contains a framework for the implementation of travel planning measures for the movement of construction staff to and from the Site over the duration of the construction works, encouraging construction staff to use active modes, public transport or car/van share in order to minimise the impact of the movement of construction-related vehicles on the local community and road network.
REP1-032	Poor management of deliveries during construction may lead to backing up of traffic onto Norman Road.	**Paragraph 3.2.9** of the **Framework Construction Traffic Management Plan (REP1-008)** states that *"To minimise disruption, HGV deliveries could be scheduled to arrive/depart the Site to avoid the network peaks, whilst still occurring during the construction operating hours. HGV deliveries will be made during the standard working hours, unless agreed in exceptional circumstances in advance with the relevant local highway authorities".* Under **Section 3.5** of **Framework Construction Traffic Management Plan (REP1-008)**, the Applicant has committed to collecting data on the number of HGV movements to/from the Site, including the arrival and departure times and the total time spent on site as a part of the Full CTMP(s). Should this monitoring indicate any issues, alternative and additional remedial measures will be discussed, developed and implemented with the agreement of LBB. The Applicant notes that there has been no incidence of any of the vehicles associated with construction of Riverside 2 (underway since January 2022) backing up traffic onto Norman Road. This project is similarly implemented in accordance with a CTMP.
REP1-032	Potential overspill into the surrounding highway from private workforce vehicles.	The **Framework Construction Traffic Management Plan (REP1-008)** contains a framework for the implementation of travel planning measures for the movement of construction staff to and from the Site over the duration of the construction works, encouraging construction staff to use active modes, public transport or car/van share in order to minimise the impact of the movement of construction-related vehicles on the local community and road network.

Doc ref	Summary of issue raised	Applicant's response
		Under **Section 3.5** of the **Framework Construction Traffic Management Plan (REP1-008)**, the Applicant has committed to collecting construction compound car park occupancy data, details of staff travel modes, travel times and staff postcodes as part of Workforce Travel Surveys (to be implemented as a part of the full CTMP(s)). Should this monitoring, or any feedback received through alternative communication channels, indicate any overspill construction workforce parking issues into the surrounding highway, additional remedial measures will be discussed, developed and implemented with the agreement of LBB. The **Framework Construction Traffic Management Plan (REP1-008)** includes a commitment to implement a Construction Workforce Travel Plan (CWTP) alongside the full CTMP, outlining potential measures and targets in relation to reduced private vehicle movement. The CWTP will also be approved by the relevant planning and highway authorities, which would include National Highways. The Applicant notes that there has been no incidence of overspill into the surrounding highway from private workforce vehicles associated with construction of Riverside 2 (underway since January 2022). This project is similarly implemented in accordance with a CTMP.
REP1-032	Localised impact on Norman Road on pedestrians, cyclists and public transport users travelling to and from these nearby developments.	**Table 18-24** of **Chapter 18: Landside Transport of the Environmental Statement (Volume 1) (APP-067)** demonstrates that the anticipated environmental effects of construction traffic on the local highway network is minor adverse or negligible (not significant) for all categories assessed during the estimated peak of construction. Traffic flows on Norman Road are estimated to increase by 41% during the construction peak (**Table 18-21** of **Chapter 18: Landside Transport of the Environmental Statement (Volume 1) (APP-067)**); however, Norman Road functions primarily as an industrial access road and not a major pedestrian / cycling thoroughfare. Norman Road has segregated pedestrian and cyclist infrastructure adjacent to the carriageway, with appropriate crossing facilities along the key desire lines. The Applicant notes that there has been no incidence of impacts on Norman Road with pedestrians or cyclists (public transport does not stop on Norman Road) with vehicles associated with construction of Riverside 2 (underway since January 2022). This project is similarly implemented in accordance with a CTMP
REP1-032	The Council would require the imposition of both requirements 9 and 24 of the draft DCO. A requirement should also be added requiring that the applicant to work in conjunction with the Council in relation to any works to footpaths (including the creation of any new paths) and a requirement that the applicant to enter into an appropriate agreement (S278 of the Highways Act 1980) which offers a guarantee of temporary and permanent changes to highway are complete to an acceptable standard and thus reduce the risks to the Council	The construction of new footpaths cannot happen until LBB has approved the detailed LaBARDS pursuant to article 17(4) of the **draft DCO (as updated alongside this report)**. The detailed LaBARDS (required to be submitted to and approved by LBB prior to the commencement of development under Requirement 12) will provide for the detailed routing and surfacing of the footpath, as well as maintenance obligations. Article 17(7) and (8) appropriately deal with the legal requirements for the footpath to be created legally. Consequently, LBB already has all appropriate mechanisms within the draft DCO to influence the location of public rights of way.

Doc ref	Summary of issue raised	Applicant's response
REP1-032	May be transportation issues generated within the region, linking to congestion and associated economic impacts caused.	Please see the response to the **first row of table 2-8-3** above.

2.9 OPTIONEERING MATTERS

Table 2-9-1– London Borough of Bexley

Doc ref	Summary of issue raised	Applicant's response
Land Use and Consideration of Alternatives		
REP1-032	Land use and consideration of alternatives are an important issue with little additional information provided to demonstrate that a thorough consideration of alternative sites has been undertaken. In principle, the Council considers other sites are likely to be more suitable for the Carbon Capture Project, which would result in significantly less ecological and economic impacts compared to the current proposal and could be compliant with Local and Regional policy.	It is noted that much of LBB's written representation is a repeat of its Relevant Representation, which has been addressed in the **Applicant's Response to Relevant Representations (AS-043)**. The Applicant considers that the site assessment process has been undertaken following a rigorous, iterative and proportionate approach, that delivers the policy requirements of NPS EN-1. In addition to the **TSAR (APP-125)**, and the **TSAR Addendum (AS-044)** the Applicant provided the further information sought by the Examining Authority (including impacts on FP4 and explanation of the economic assessment) in its **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024),** particularly at **Appendices B, D and E (REP1-025).** The East Zone has not been ruled out prematurely, it has been robustly, and continuously, demonstrated not to be a reasonable alternative. The Applicant has considered all of the other locations suggested by LBB to date and demonstrated that they do not meet the Project Objectives and are not reasonable alternatives. On 9 December 2024, the Applicant and LBB met to discuss LBB's Written Representations, particularly its comments on the site assessment work that has been undertaken. The parties will continue to discuss this matter, with the latest position set out in the **SoCG Rev B (Document Reference: 8.1.1**, as submitted alongside this response).
REP1-032	Iron Mountain facility is a general industry B8 use that does not need to be located on a site adjacent to the River Thames. The applicant should provide a design solution that shows how their scheme could be accommodated on the Iron Mountain and other sites. Can the applicant confirm if the development could be accommodated fully within the Iron Mountain site? If a larger land area is needed, additional configurations including the Iron Mountain site should be explored. It is not clear why the applicant has only considered two alternative scenarios for the Iron Mountain site, being East and North 1. At CAH1 it was raised that the Iron Mountain had been for sale recently. A thorough assessment of the costing of compulsory purchasing any buildings within the East and North 1 areas should be provided.	**Appendix D of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** presented further information on why the East Zone is not an appropriate location for the Carbon Capture Facility. **Annex A** to that Appendix shows the Indicative Equipment Layout of the Carbon Capture Facility located on the land currently occupied by Iron Mountain, and Lidl. This Annex shows clearly that the Iron Mountain plot alone is not sufficient to accommodate the Carbon Capture Facility; it does not need further configurations to confirm that fact. The Iron Mountain plot of land has been considered as both East Zone, with Lidl (in the **TSAR (APP-125)**) and as North Zone 1, extending into the River Thames (in the **TSAR Addendum (AS-044)**). The only other combination that could be considered would be the Iron Mountain plot and East Zone 1, which is currently occupied by the ASDA CDC distribution facility and estimated to support 600 employees. All of these plots have been considered in the site assessment process that has been undertaken, and all have been found to not deliver the Project Objectives and so not be a reasonable alternative to the selected site.

		Appendix E of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025) provides further explanation of the proportionate assessment given to Optioneering Principle 6. The costing exercise sought by LBB is not considered to be appropriate or necessary. At the meeting on 9 December 2024, the Applicant and LBB discussed the skill level of jobs at both Iron Mountain and Munster Joinery premises on Norman Road. It was agreed that the skill level of jobs at Munster Joinery are no different to those at Iron Mountain (ASDA or Lidl). The Applicant understands that Realty Income (which owns the freehold of the Iron Mountain site and is Iron Mountain's landlord) acquired the Iron Mountain site in March 2021 with Iron Mountain as the sitting tenant. Realty Income has confirmed to the Applicant that it has not marketed the site since (nor has the Applicant seen any evidence to support such propositions), nor does it intend to market or dispose of the site in future following its acquisition of it approximately four years ago. Further, the Applicant has established through its own due diligence that Iron Mountain obtained planning consent for the facility in 2001 (Application Reference 99/02838/OUT) and has a protected 25 year lease (subject to security of tenure) until 2031, the implication being that Iron Mountain can seek a statutory renewal of its leasehold interest through to 2046.
REP1-032	LBB considers the visual impact of ductwork and vehicular movement across FP4 to not be showstoppers to development at the Iron Mountain site. LBB points out that both Middleton Jetty and the Belvedere Power Station Jetty project over the Thames Pathway, and in this context the notion of ductwork over the footpath would not be out of character.	**Appendix D of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** provides further information on the likely impacts to FP4 if the Carbon Capture Facility were to be located in the East Zone. This Appendix also considers the potential to use the private spine road that currently leads to ASDA and the Iron Mountain premises. The Applicant reminds LBB, and the ExA that this is not the only reason why the East Zone would not be a reasonable alternative (as is discussed in the **TSAR (APP-125)** and **TSAR Addendum (AS-044)**). The Applicant is pleased to acknowledge that LBB does not object to temporary closure of FP4.
REP1-032	The Council would like to see further detail and consideration of the technical issues that prevents Veridion Park coming forward as an alternative. The routing of the ductwork would likely follow the route of the proposed District Heating Network along Yarnton Way, alternatively along Eastern Way. Peabody is looking to sell Veridion Park and a thorough assessment of the costing of compulsory purchasing Veridion Park should be made.	First, the Applicant notes that the suggestion of the Veridion Park alternative (as illustrated on **Appendix C to this response**) by LBB, and by TWUL should be seen in the context of paragraphs 4.3.27 to 4.2.39 of NPS EN-1: *Alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.* *Alternative proposals which are vague or immature can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.* *It is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the Secretary of State (so as to*

allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore, where an alternative is first put forward by a third party after an application has been made, the Secretary of State may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the Secretary of State should not necessarily expect the applicant to have assessed it.

The Applicant considers that the suggestion of Veridion Park is:

- a vague and immature proposal given its distance from the Proposed Scheme meaning that simply suggesting a 'box' of land cannot be properly considered without detailed assessment;
- for the reasons set out below, not a physically suitable site; and
- is clearly an alternative put forward post-application. It is for LBB and TWUL to provide the evidence that this site is suitable and they have failed to do so.

Veridion Park is clearly therefore not an important and relevant consideration for the Secretary of State to take into account moving forward.

The following key points demonstrate why this site is unsuitable in general terms:

- the whole area is in Flood Zone 3b, so the Sequential Test would be failed;
- the site would be located adjacent/close to a nursery, secondary school, park and residential areas, meaning there would be highly likely to be significant air quality and noise effects, policy compliance issues (e.g. 'minimising' impacts to health from noise effects) and issues around public safety;
- the site is significantly closer to Lesnes Abbey, visual receptors and would not be located in an industrial area. The Applicant has prepared a visualisation **(Appendix D to this response)** to demonstrate this; and
- the site is surrounded by MOL and SINC, a significant amount of which would need to be crossed by ductwork and pipework to connect the site back to the Riverside Campus.

The site is physically unsuitable as:

- It would be impracticable, and operationally inefficient, to locate all the flue gas ductwork, steam and condensate pipework, LCO2 pipework, and utilities that are required between the Riverside Campus, the Carbon Capture Facility and the new Jetty using the route suggested by LBB. This would require all this infrastructure to be routed down Norman Road and then along either Eastern Way or along Yarnton Way (an even more circuitous route).
- The shortest distance, measured from the southern boundary of the Riverside Campus to the northern boundary of Veridion Park (which is developed and occupied) is some 940m. The distance to the land to the west of the occupied Veridion Park, which is not currently built out, is some

		970m. Even if the shortest route were followed, this would entail all the flue gas ductwork, steam and condensate pipework, LCO2 pipework, and utilities being laid across the Crossness Local Nature Reserve, MOL and SINC designations as well as the A2016 Eastern Way, a part of the strategic road network (due to scale, pressure and temperature constraints the connections cannot be undergrounded) and several public rights of way. This would likely cause significant disruption. • In addition to the above constraints, the shortest route to this location for ductwork, pipework and utilities would also cross the operational area of the Crossness Sewage Treatment Works. Even if Peabody (the landowners of the alternative site) was looking to sell the land at Veridion Park, this option would still require substantial engineering works (and thus land take) across other 3rd party land north of Eastern Way and the public highway. Veridion Park is therefore clearly an unsuitable site for the Carbon Capture Facility. The Applicant therefore welcomes that at the meeting on 9 December 2024, LBB agreed that the SIL at Veridion Park was unlikely to be a reasonable location and this has been agreed in the **SOCG (Rev B, Document Reference: 8.1.1**, as submitted alongside this response).
REP1-032	The development proposals are not considered compliant with the Bexley Local Plan from a land use and consideration of alternatives perspective.	The Applicant notes that some 70% of the Carbon Capture Facility is located on land allocated as SIL. It is agreed with London Borough of Bexley in the **SoCG (Rev A (REP1-014)**) that development of the Proposed Scheme on the Strategic Industrial Location (SIL) allocation is policy compliant in land use terms. At the meeting on 9 December 2024, LBB confirmed this matter to be agreed between the parties.

Table 2-9-2 – James Hewitt

Doc ref	IP Name	Summary of issue raised	Applicant's response
REP1-065	James Hewitt	Sizing Further to the hearings between the 5th and 7th of November, the following chart reinforces the view that the land-take sought by the Applicant is well in excess of need. If the proposed project were to capture 1.7 million tonnes of CO2 in a year [see Note 1 below], the chart indicates that the land take required is unlikely to exceed three hectares – less than half the eight hectares which the Applicant asserts is needed (Clause 6.6.2 in "Statement of Reasons").	As set out in the Application documents, not least in the **Applicant's Response to Landsul and Munster Joinery's Deadline 1 Submissions (Document Number 9.14)** the Applicant has set out its basis of design, an **Indicative Engineering Layout (AS-054), Design Principles and an indicative masterplan (APP-044)**, all of which demonstrate the need for the totality of the selected site. There is nothing for the Applicant to gain by taking more land than is necessary. The site of the Carbon Capture Facility is appropriate to accommodate the necessary plant and equipment, including access and maintenance areas, with supporting facilities and to provide the requirements of the Outline Drainage Strategy and the Outline LaBARDS. The report referenced by Mr Hewitt OIES Paper: CM09, Carbon Capture from EfW: A low-hanging fruit for CCS deployment in the UK? (Carbon Capture from EfW) is provided at **Appendix E** to this response.

The study reported in Carbon Capture from EfW has three objectives. In summary these are: to evaluate the business case for CCS in the UK EfW sector; to assess the technical feasibility of physically installing carbon capture technology at UK EfW facilities; and to identify different methods to transport CO2 from EfW facilities to their nearest storage site.

To address Figure 3 as referenced in Mr Hewitt's Written Representation first. Section 3.2 of Carbon Capture from EfW considers, briefly, *'on-site space availability for CCS*'. The paragraph preceding Figure 3 in the report states:

'Each facility meeting the minimum capacity criteria was screened for physical on-site space availability for CCS equipment using satellite imagery (Google Earth). Note that physical space requirements for a particular CCS facility will vary significantly based on the CO2 capture capacity and site-specific factors such as facility design philosophy and the extent to which existing utility systems can be utilised. Minimum and maximum correlations for space required for the CCS equipment as a function of capacity were developed using existing CCS facilities and detailed front-end engineering design studies for upcoming CCS facilities, as shown in Figure 3.'

It is noted that the measurements were taken from Google Earth, rather than detailed design information, and the report notes that space requirements will be project, and site specific. The site of the Carbon Capture Facility is sized to accommodate project-specific elements required by the project, that are not required by other carbon capture projects. These include the requirement for CO_2 liquefaction and liquid CO_2 buffer storage associated with the export of CO2 by ship, rather than by pipeline, the inclusion of the Heat Transfer Station to facilitate heat integration into a district heating scheme, and the need for the Water Management Area to deal with diurnal restrictions in the available water supply from Thames Water. These factors mean that a comparison against a generic indicative footprint is not appropriate.

The paragraph following Figure 3 in Carbon Capture from EfW then sets out how the data is used in the report.

'• If available space at an EfW facility exceeded the maximum space requirement, we consider that space would be unlikely to constrain CCS installation at that facility;

• If available space at an EfW facility exceeded the minimum space requirement but was less than the maximum space requirement, we consider that there may be sufficient space available, but site specific investigation would be required to confirm. Facilities in either of the first two categories were included in the following transportation analysis;

• If available space for an EfW facility was less than the minimum space requirement, we assume that space is likely inadequate to support CCS installation with current commercially available amine-based technology and

			thus the facility was not considered further in the analysis. The spatial analysis was considered independently for each CO2 emission factor.' It is clear that Figure 3 is not presented as a guide of suitable site size for carbon capture projects. It is being used simply as a way of shortlisting projects to consider further in the study. Carbon Capture from EfW makes clear (not least in the Executive Summary) that: *'In fact, the significance of EfW+CCS in meeting climate objectives cannot be overstated, as the practice can contribute at least three different climate benefits. ...'* This report clearly demonstrates that carbon capture at energy from waste facilities should be supported and will be an important and relevant contributor to meeting policy. The full report is provided at **Appendix E** to this response.
REP1-065	James Hewitt	Land Acquisition 2.1 Obtaining nationally significant infrastructure status may serve to facilitate land acquisition by the Applicant. Subject to the content of the DCO, the Applicant may be under no obligation to proceed with the proposal and may opt instead to profit by developing the land acquired or from its disposal to other not bound by the DCO. 2.2 The Applicant (or its successor) might justify doing so as compensation for having been misled by the Government into the need for the (currently) proposed works. 2.3 Due diligence might already suggest that such assumptions are untenable.	Mr Hewitt raised this matter at CAH1, to which the Applicant's response is set out from page 22 of the **Written Summary of the Applicant's Oral Submissions at CAH 1 (REP1-027)**.
REP1-065	James Hewitt	Temporary LCO_2 Storage 6 – If the temporary storage spheres/cylinders for liquified CO2 were constructed to the north of R1 and R2, they would be close to where that CO2 would be loaded on ships for transport to a site for permanent disposal. Being closer to or on the River Thames might be cooler than where currently proposed – helping minimise the cost of keeping the CO2 liquified. They might not be visible from much of Norman Road. Being on piles, they would have less impact on CO2 sequestration and soil carbon than if constructed as currently proposed.	Any difference in ambient temperature between the riverside and the proposed location for the LCO_2 storage tanks will be minimal, and will have no impact on the design of the storage tanks and their insulation requirements. The Applicant's response to Mr Hewitt's suggestion (during ISH1) that buffer storage should be placed in the River Thames is proved from page 10 of the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**.

Table 2-9-3– Thames Water Utilities Limited

Doc ref	Summary of issue raised	Applicant's response
Optioneering - General		
REP1-057	2.10 As a carbon capture facility, the Project falls within the category of CNP Infrastructure, for the purposes of the EN-1	The Applicant welcomes this confirmation.
REP1-057	2.13 As such, section 3.2.17 of the Applicant's Planning Statement (APP-040) is not correct where is states: "As a starting point therefore, the CNP infrastructure status of the Proposed Development means that this test can be assumed to be made out". The 'real' starting point for decision-making in relation to CNP Infrastructure is an assessment of whether the Application satisfies section 4.2.10; then – and only then – can the CNP presumptions be applied. It is TWUL's position that the Application does not satisfy section 4.2.10 of the NPS, in that the mitigation hierarchy has not been correctly applied – in particular, that it is possible to avoid the loss of any part of the LNR entirely without compromising the Project's objectives by relocating the Project to an alternative site.	Paragraph 3.2.16 of the **Planning Statement (APP-040)** simply quotes paragraph 4.2.16 of NPS EN-1, that critical national priority infrastructure, such as the Proposed Scheme, will be determined from a starting point *'that such infrastructure is to be treated as if it has met any tests which are set out within the NPSs, or any planning policy, which requires a clear outweighing of harm, exceptionality or very special circumstances*.' Paragraph 3.2.17 of the Planning Statement, simply acknowledges that paragraph 4.2.17 of NPS EN-1 specifically applies that approach to development in the Green Belt, which for the Proposed Scheme, would also apply to Metropolitan Open Land. However, contrary to Thames Water's assertions, NPS EN-1 paragraph 4.2.10 is not forgotten; indeed, it even appears in the Executive Summary and section 4 of the Planning Statement: *Paragraphs 4.2.10 and 4.2.11 make clear that this level of policy support does not negate the need to follow the requirements of the NPS, or any other relevant legal and regulatory requirements. In particular 'applicants must apply the mitigation hierarchy and demonstrate that it has been applied. … Applicants should demonstrate that all residual impacts are those that cannot be avoided, reduced or mitigated.*'. NPS EN-1 paragraph 4.2.10 is addressed at Table 1, and in some detail both at paragraphs 4.2.16 to 4.2.27 and at section 4.7 of the Planning Statement. The application documents both appropriately apply the mitigation hierarchy and demonstrate that it has been satisfied. Further, this point is explicitly addressed at **in row 1 of table 2-4-1 and row 4 of table 2-9-3 of this response**. Consequently, the starting point for the Secretary of State's decision making, is correctly to be from the assumption that the Proposed Scheme has met the relevant tests. They demonstrate that no residual HRA or MCZ impacts remain and there are no residual impacts which present an unacceptable risk to, or unacceptable interference with, those matters identified in NPS EN-1 paragraph 4.2.15[A]. Consequently, the Secretary of State can have confidence that there is demonstrated a clear outweighing of harm. [A] Being residual impacts onshore and offshore which present an unacceptable risk to, or unacceptable interference with, human health and public safety, defence, irreplaceable habitats or unacceptable risk to the achievement of net zero
REP1-057	2.16 At Issue Specific Hearing 1 (ISH1), it was confirmed by the Applicant that there was no technical limit as to the length of flue gas ductwork required to connect the existing energy from waste facilities to the Project. There is land within the vicinity of the Riverside	The Applicant did not say there was no technical limit to the flue gas ductwork length, but that such a limit had not been determined; they are quite different reflections. The Applicant has sought to minimise the length of large-diameter flue gas ductwork to

Doc ref	Summary of issue raised	Applicant's response
	Campus which has been allocated as employment development for a number of years and which is not part of the Erith Marshes SINC and nor is it MOL, being Veridion Park, situated between Eastern Way and Yarnton Way. TWUL considers that the protection of MOL, SINC and open space land should take precedence over any cost implications. 2.17 Given that this location would overcome a number of the policy constraints, is within the vicinity of the existing EfW facilities, appears to be of sufficient size when compared to the Applicant's preferred site, and no evidence has been presented by the Applicant that use of the Veridion Park site would mean the Project would not be deliverable in a timely manner, TWUL considers that this site is an appropriate and proportionate alternative, and should have been considered as part of the Applicant's site selection process.	minimise visual impact and pressure drop. The longer the length of flue gas ductwork, the greater the pressure drop from the start to the end point, and additional compression of the flue gas would consequently be required to provide sufficient pressure driving force to maintain its progression along the ductwork and into the receiving equipment. The Applicant notes that the suggestion of the Veridion Park alternative (as illustrated on **Appendix C to this response**) by TWUL should be seen in the context of paragraphs 4.3.27 to 4.2.39 of NPS EN-1: *Alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable or alternative proposals for sites would not be physically suitable, can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.* *Alternative proposals which are vague or immature can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision.* *It is intended that potential alternatives to a proposed development should, wherever possible, be identified before an application is made to the Secretary of State (so as to allow appropriate consultation and the development of a suitable evidence base in relation to any alternatives which are particularly relevant). Therefore, where an alternative is first put forward by a third party after an application has been made, the Secretary of State may place the onus on the person proposing the alternative to provide the evidence for its suitability as such and the Secretary of State should not necessarily expect the applicant to have assessed it.* The Applicant considers that the suggestion of Veridion Park is: • a vague and immature proposal given its distance from the Proposed Scheme meaning that simply suggesting a 'box' of land cannot be properly considered without detailed assessment; • for the reasons set out below, not a physically suitable site; and • is clearly an alternative put forward post-application. It is for LBB and TWUL to provide the evidence that this site is suitable and they have failed to do so. Veridion Park is clearly therefore not an important and relevant consideration for the Secretary of State to take into account moving forward. The following key points demonstrate why this site is unsuitable in general terms: • the whole area is in Flood Zone 3b, so the Sequential Test would be failed; • the site would be located adjacent/close to a nursery, secondary school, park and residential areas, meaning there would be highly likely to be significant air quality and noise effects, policy compliance issues (e.g. 'minimising' impacts to health from noise effects) and issues around public safety;

Doc ref	Summary of issue raised	Applicant's response
		• the site is significantly closer to Lesnes Abbey, visual receptors and would not be located in an industrial area. The Applicant has prepared a visualisation (Appendix D to this response) to demonstrate this; and • the site is surrounded by MOL and SINC, a significant amount of which would need to be crossed by ductwork and pipework to connect the site back to the Riverside Campus. The site is physically unsuitable as: • It would be impracticable, and operationally inefficient, to locate all the flue gas ductwork, steam and condensate pipework, LCO2 pipework, and utilities that are required between the Riverside Campus, the Carbon Capture Facility and the new Jetty using the route suggested by LBB. This would require all this infrastructure to be routed down Norman Road and then along either Eastern Way or along Yarnton Way (an even more circuitous route). • The shortest distance, measured from the southern boundary of the Riverside Campus to the northern boundary of Veridion Park (which is developed and occupied) is some 940m. The distance to the land to the west of the occupied Veridion Park, which is not currently built out, is some 970m. Even if the shortest route were followedi, this would entail all the flue gas ductwork, steam and condensate pipework, LCO2 pipework, and utilities being laid across the Crossness Local Nature Reserve, MOL and SINC designations as well as the A2016 Eastern Way, a part of the strategic road network (due to scale, pressure and temperature constraints the connections cannot be undergrounded) and several public rights of way. This would likely cause significant disruption. • In addition to the above constraints, the shortest route to this location for ductwork, pipework and utilities would also cross the operational area of the Crossness Sewage Treatment Works. Even if Peabody (the landowners of the alternative site) was looking to sell the land at Veridion Park, this option would still require substantial engineering works (and thus land take) across other 3rd party land north of Eastern Way and the public highway. Veridion Park is therefore clearly an unsuitable site for the Carbon Capture Facility. The Applicant disagrees that Veridion Park is 'in the vicinity' of the Riverside Campus and does not agree that development of the Carbon Capture Facility at Veridion Park '*would overcome a number of the policy constraints'*. The site is therefore plainly not a reasonable alternative and should not be considered as an important and relevant consideration moving forward. The Applicant notes that at the meeting on 9 December 2024, LBB agreed that the SIL at Veridion Park was unlikely to be a reasonable location and this has been agreed in the **SOCG (Rev B, Document Reference: 8.1.1**, as submitted alongside this response).

Doc ref	Summary of issue raised	Applicant's response
REP1-057	2.18 Further, considerable time was spent at ISH1 discussing the potential for the Project to be located in the "East Zone", as detailed in the TSAR. Having reviewed the Applicant's responses to relevant representations (AS-043) and heard the Applicant's submissions at ISH1, it remains TWUL's position that the East Zone has been ruled out prematurely and without full assessment. This is supported by the Applicant's concession at ISH1 that its assessment of the economic impact of the Project being located in the East Zone was undertaken at a very high level only and, following questions from the Examining Authority, its commitment to provide additional information and analysis relating to the East Zone assessment (although TWUL considers that relevant information and analysis should already have been provided and undertaken). 2.19 The Applicant also confirmed at ISH1 that it would not be technically difficult to connect the flue gas ductwork from the existing EfW facilities to the East Zone, but that this would have an adverse impact on Footpath 4, which would either require stopping up or would be "substantially disadvantaged" due to the equipment that would be required to cross the footpath. It is difficult to reconcile the Applicant's stated concern about impacts on Footpath 4 and the powers sought in relation to Footpath 4 under article 14 and Schedule 7 of the draft development consent order (and the requirement to provide an alternative route to pedestrians in certain circumstances in any event). Notwithstanding that, TWUL considers that impacts to a footpath (which may, at worst, relate to visual amenity) cannot be compared to the adverse impact which would result from the permanent loss of MOL, open space and SINC land. 2.20 As such, it is TWUL's view that the real reason for the Applicant ruling out the East Zone is because it assumed it would cost too much to relocate and/or acquire the existing businesses. However, reaching this conclusion is the result of insufficient analysis and is therefore unreliable. The Applicant has, by its own admission, not undertaken a full assessment of the economic implications of locating the Project in the East Zone. This failure to adequately assess the site options in the East Zone was vividly demonstrated by the confirmation during Compulsory Acquisition Hearing 1 (CAH1) that one of the businesses in the East Zone was a willing seller and another had marketed the freehold of its site at an early stage of the Project proposals being finalised. 2.21 The Applicant should have been aware of this and should have incorporated such significant information into its analysis; had it done so, TWUL considers that the East Zone could not reasonably have been discounted by the Applicant as a viable location for the Project. In TWUL's view, the East Zone remains a viable option which would both meet the Project's objectives and avoid the loss of MOL, SINC and open space. The lack of thorough assessment of the East Zone is a clear defect in the Applicant's optioneering process.	The site assessment process has been undertaken following a rigorous, iterative and proportionate approach, that delivers the policy requirements of NPS EN-1. In addition to the **TSAR (APP-125)**, and the **TSAR Addendum (AS-044)** the Applicant provided the further information sought by the Examining Authority (including impacts on FP4 and explanation of the economic assessment) in its **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, particularly at **Appendices B, D and E (REP1-025)**. The East Zone has not been ruled out prematurely, it has been robustly, and continuously, demonstrated not to be a reasonable alternative. Thames Water's assertions regarding the Applicant's decision-making being cost driven is unsubstantiated. It is demonstrated to be incorrect by the extent of analysis submitted by the Applicant, which confirms the East Zone to not be a reasonable alternative. Thames Water's assertion that the Applicant has taken a different approach in relation to FP4 fails to recognise that the provisions set out within the draft DCO are to ensure public safety during the temporary construction period only. It is entirely correct for the Applicant to be concerned about the permanent adverse effects that would likely impact FP4 if the Carbon Capture Facility were to be developed at the East Zone. The Applicant understands that Realty Income (which owns the freehold of the Iron Mountain site and is Iron Mountain's landlord) acquired the Iron Mountain site in March 2021 with Iron Mountain as the sitting tenant. Realty Income has confirmed to the Applicant that it has not marketed the site since (nor has the Applicant seen any evidence to support such propositions), nor does it intend to market or dispose of the site in future following its acquisition of it approximately 4 years ago. Further, the Applicant has established through its own due diligence that Iron Mountain obtained planning consent for the facility in 2001 (Application Reference 99/02838/OUT) and has a protected 25 year lease (subject to security of tenure) until 2031, the implication being that Iron Mountain can seek a statutory renewal of its leasehold interest through to 2046.
REP1-057 **REP1-057**	2.22 A further defect in the Applicant's assessment of site alternatives was identified during ISH1. As set out in the Environmental Statement, the Applicant's preliminary feasibility studies concluded that the site area required for the Project was estimated to	There is no defect in the Applicant's assessment of alternative sites. The evolution of land requirements, and representation of the 'compressed layout' is explained in the

Doc ref	Summary of issue raised	Applicant's response
	be around 4 hectares. However, this increased to 7 hectares in the PEIR and later to 8 hectares3. At ISH1, it was confirmed that the area of land required for the Project's 'compressed layout', as shown on the Alternative Layouts plan4 , was measured to be around 5.5 hectares, and the expanded layout 7.4 hectares. As submitted on behalf of Landsul Limited and Munster Joinery (UK) Limited, if the actual land requirement for the Project is less than the original 8 hectares, then the alternatives process might need to be revisited: if the land requirement has reduced, this indicates that the conclusion in the site selection report in the TSAR is not right; it should have been revisited when the actual land requirement was established. This further demonstrates incorrect application of the mitigation hierarchy. 2.23 For these reasons, TWUL considers that the Applicant has not applied the mitigation hierarchy and therefore the CNP presumptions at sections 4.2.16 and 4.2.17 of the NPS should not be applied to the Project.	**TSAR (APP-125)** and in the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, particularly at **Appendix B (REP1-025)**. **Appendix B of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** explains how the Proposed Scheme evolved over time and how this was considered within the optioneering undertaken by the Applicant, focussing on site location and layout options. It explains consideration of different site layouts, with the Compressed/Compact Layout selected for the Carbon Capture Facility, noting at paragraph 1.2.12, that this option '*could be accommodated within a range of site size (some 6.3ha to over 8ha). The revised ES Figure 3-3 (Annex A) indicates the focus areas of flexibility sought, with the areas indicated potentially to be used for any (or all) of LVIA, water environment, ecological and operational drainage functions. These are a limited part of the overall CCF area that will be developed during detailed design and are an appropriate and necessary part of the Proposed Scheme'.* The East Zone site options do not require retesting; even if the Compressed/Compact Layout could be delivered on a site of 6.3ha; it would still require the Iron Mountain plot and one other, with all the challenges that have been set out in the **TSAR (APP-125), the TSAR Addendum (AS-044) and Appendix D of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025).** Further, the South Zones do not require retesting. These are discussed in **Appendix B of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** which confirms that a reduced site size '*would not change the conclusions of the analysis of the different south zones.'* Through the TSAR and TSAR Addendum, the North and West Zones are demonstrated to not be reasonable alternatives with conclusions that would not be affected by site size. The mitigation hierarchy has demonstrably been applied, and it has been applied throughout the project's evolution and scrutiny. It is applied throughout the **Environmental Statement** and **Planning Statement (APP-040)**, with explicit consideration (in addition to the implicit consideration carried through from the other assessments) made at Table 1, and in some detail both at paragraphs 4.2.16 to 4.2.27, and in regard to the principle of development (section 4.7) and marine and terrestrial biodiversity (section 7.9). The **TSAR (APP-125)** acknowledges the policy driven need to follow the mitigation hierarchy; and this is then applied in the Optioneering Principles seeing to '*avoid or minimise'* adverse impact/land take. A design process was undertaken seeking to compress the layout of the Proposed Scheme such that its footprint could be minimised and its benefits optimised (as detailed in the **Design Approach Document (APP-044 to APP-046)**. The Environmental Statement identified suitable mitigation for each topic and these are secured through the Mitigation Schedule. These actions demonstrate compliance with all levels of the mitigation hierarchy. Further, the principles established through these Application documents have been continued through the Applicant's subsequent submissions to the Examination. The **Applicant's**

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		Response to Relevant Representations (AS-043) specifically addresses the potential to avoid the Erith Marshes SINC and Crossness LNR (section 2.5) and the potential to avoid MOL (section 2.6). The Applicant has proactively updated the **Mitigation Schedule** and control mechanisms such as the **Design Code, the Outline LaBARDS** and the **Outline CoCP** in response to helpful suggestions on these matters from Interested Parties. The Applicant has demonstrably applied the mitigation hierarchy throughout the Proposed Scheme. Those residual effects that remain are not HRA or MCZ impacts and have consistently been proven to be not avoidable or capable of being further minimised. Further none of the exceptions set out at NPS EN-1 paragraph 4.2.15 apply. Appropriate mitigation has been built into the Proposed Scheme, not least through a carefully considered, strategic masterplanning approach. Consequently, the starting point for the Secretary of State's decision making, is correctly to be from the assumption that the Proposed Scheme is to be treated as if it has met the relevant tests and to be considered as CNP infrastructure.
Very Special Circumstances		
REP1-057	2.24.1 Section 5.5.5 of the Planning Statement sets out that the Project will make a significant contribution to the global priority to address climate change by capturing carbon dioxide for permanent storage. However, the majority of the carbon savings appear to relate to the CO2 emissions produced by the Riverside Energy Park scheme and the Project is therefore doing little more than offsetting the adverse impact on climate change caused by the existing EfW facilities. In any event, to claim the Project will make a "significant contribution" to addressing global climate change is a significant exaggeration;	The very special circumstance of carbon capture is set out in the **Planning Statement (APP-040)** from paragraph 5.5.5 to 5.5.11 (and reiterated in the **Applicant's Response to Relevant Representations (AS-043, section 3.4**). The Planning Statement explains that the Proposed Scheme would capture some 1.3 million tonnes of carbon dioxide each year, resulting in net-negative CO2 emissions of some 0.6 million tonnes each year. The payback period, the time it would take for carbon emissions calculated for the construction and operation phases to be offset by the savings in carbon emissions from the Proposed Scheme is less than five weeks. The Proposed Scheme will make a substantial contribution to meeting global, national and local decarbonisation targets. This matter is also addressed in the **Project Benefits Report (APP-042)** and section 3.4 of the **Applicant's Response to Relevant Representations (AS-043)**. Mr Hewitt's **Written Representation (REP1-065)** references OIES Paper: CM09, Carbon Capture from EfW: A low-hanging fruit for CCS deployment in the UK? (Carbon Capture from EfW); it is provided at **Appendix E** to this report. The Executive Summary states: *'In fact, the significance of EfW+CCS in meeting climate objectives cannot be overstated, as the practice can contribute at least three different climate benefits. First, by diverting waste away from landfill, it avoids the generation of methane emissions which would occur otherwise. Second, it directly reduces emissions by capturing CO2 from the fossil content in waste (around half of waste is fossil-based). Third, and perhaps most critically, EfW coupled with CCS can generate negative emissions (or 'carbon removal') since a substantial portion of the carbon contained in residual waste streams is of biogenic origin, the permanent sequestration of which leads to a negative impact on overall CO2 stocks in the atmosphere.'*

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		The Carbon Capture Facility is proposed, and is designed, for the capture of carbon dioxide emissions from Riverside 1 and 2 energy from waste facilities. That is its function, and the outcome of its function is a very special circumstance – it is an exceptional project that will deliver meaningful change.
REP1-057	2.24.2 Section 5.5.12 of the Planning Statement claims that 'future proofing sustainable waste management' is a very special circumstance. It is not understood why this constitutes a very special circumstance and further clarification is required. No policy support is given in this section as to why waste management needs future proofing and even if it did it is not clear why the Project would contribute towards this as it is not in itself waste management plant. Moreover, the Applicant has not given any sound justification or provided any technical evidence as to why the Project cannot be located further away from the existing waste plants on non MOL/LNR land. Also, it has not been robustly demonstrated that the proposed Project is the most sustainable way to deal with the carbon especially in the longer term – section 5.5.12 is essentially subjective assertion.	The very special circumstance of future proofing sustainable waste management is set out in the **Planning Statement (APP-040)** from paragraph 5.5.12 to 5.5.17. This explains the important role played by Riverside 1 and Riverside 2 (when operational) as providing some 50% of the residual waste management capacity in London and the benefit of being able to achieve negative carbon – the quote given above from 'Carbon Capture from EfW' would also be relevant here. More detail on the sustainable waste management services provided by the Applicant at the Riverside Campus is provided at section 2.3 of the **Project Benefits Report (APP-042)** and section 3.4 of the **Applicant's Response to Relevant Representations (AS-043)**. To be clear, Thames Water is correct in that the Proposed Scheme is not a waste management plant. However, it is the project required to enable the important waste treatment infrastructure already at Riverside to make its full contribution in sustainably managing society's residual waste and helping Bexley, London and the UK to meet their decarbonisation goals. As is explained throughout the application documents, the Carbon Capture Facility necessarily needs to be located with the Riverside Campus for operational efficiency, for security and to reduce impacts on the environment and third parties. Section 4 of the Planning Statement considers matters relevant to the principle of the development and how the Proposed Scheme delivers against a raft of national and local policy priorities for climate change, not least: • NPS EN-1; • the Sixth Carbon Budget, which at page 91 considers that the only way to reach Net Zero by 2042 is if energy from waste facilities use CCS *'in order to decarbonise, as no other viable low-carbon alternatives are available*' and that *'CCS is essential in achieving Net Zero, at lowest cost, in the UK. The importance of CCS globally further underscores the urgency of progressing CCS plans in the UK*.'; • Carbon Capture Usage and Storage Vision; • Draft Strategy and Policy Statement for Energy Policy in Great Britain, which at page 22 states, '*Carbon dioxide transport and storage networks will be the enabling infrastructure for carbon capture from a range of potential sources, including ... carbon capture from energy from waste, ...*'; • London Plan policy GG6, which confirms London's target to be '*a zero carbon city by 2050*'; and • Bexley Local Plan policy DP14 - *'The Council will actively pursue the delivery of sustainable development by ... supporting development that*

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		achieve zero-carbon and demonstrate a commitment to drive down greenhouse gas emissions to net zero.' The policy case for post-EfW carbon capture is also set out in the **Project Benefits Report (AP-042)** at sections 3 and 4. From paragraph 4.3.41, the PBR reports on work commissioned by the GLA to understand the pathways available to reach, and the implications of, an accelerated target to reach net zero carbon emission by 2030, relative to the former 2050 target. 'Analysis of a Net Zero 2030 Target for Greater London' was published by Element Energy in 2022 presenting the work undertaken to provide this insight. Page 22/23 recognises the important role that EfW facilities have to play in supplying heat networks and goes on to recognise that adding carbon capture delivers the ability *'to generate electricity with net negative GHG emissions, which offers the opportunity to offset some of the remaining emissions from other sectors*.' Page 23 confirms that this aligns with the CCC's sixth Carbon Budget 'Balanced Pathway'. '*The CCC's 6th Carbon Budget Balanced Pathway requires all EfW plants to be fitted with CCUS by 2050. Achieving this technology deployment relies on CCUS infrastructure being rolled out across the UK. In London, this transition relies on local projects developing CCUS transport chains for London's EfW plants to join with and therefore the timing of when CCUS could be a viable solution for EfW plants strongly depends on development of these projects. Project Cavendish is aiming to begin operation of hydrogen production with CCUS in the late 2020s, offering a potential opportunity for consolidation of CO2 transport and storage supply chains if one or more of London's EfW plants were to convert in the early 2030s. Without this project (or other opportunities for lower cost CO2 transport and storage), it may be more likely Page 40 of 63 Planning Inspectorate Ref: EN010128 Project Benefits Report Application Document Number: 5.4 that conversion happens later, in the 2030s or early 2040s, as wider CCUS supply chains ramp up.* *If CCUS could be in place at the largest EfW plants by 2030-2032, emissions from EfW could be net negative at -0.2 MtCO2e. Recent UK-wide analysis placed London's EfW plants within a second phase of conversion that could occur between 2031-2040, meaning that this transition is technically feasible if London's plants could convert at the beginning of this phase.'* The role of carbon capture following the management of residual waste through incineration is supported throughout policy documents, and the priority for carbon capture is most neatly summed up by the Committee on Climate Change (CCC) in its 2019 Report to Parliament in which it recognised CCS as a necessity, not an option. In its 2023 Progress Report to Parliament (summarised from paragraph 3.3.12 of the Project Benefits Report) the CCC identifies EfW facilities fitted with CCS, by 2035, as a '*required outcome of policy'*, with the intention to reduce CO2 emissions from EfW by 8%

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		by 2035. Table 12.1 of that report recommends that Government continues *'to progress work on the carbon capture business models at pace and continue to support EfW plants to participated in future phases (recommendation R2022-304)*.' The Second National Infrastructure Assessment 2023 (summarised from paragraph 3.3.19of the Project Benefits Report) states (at page 129): *'Energy from biogenic waste – waste which emits carbon dioxide – combined with carbon capture and storage can also deliver negative emissions. Government should support the transition of the energy from waste sector to carbon capture and storage through its industrial decarbonisation programme*.' Government is taking this action, and the Proposed Scheme will be ready to participate in it and to contribute to meeting the early Tailwinds scenarios set out in the Sixth Carbon Budget. This is a very special circumstance.
REP1-057	2.24.3 Section 5.5.18 of the Planning Statement claims that the 'riverside location' is a very special circumstance, on the basis that the Project can also use shipping vessels to export the LCO2 to its final storage location. It is accepted that the Applicant's existing waste plants are located next to the river; however, the Project, as proposed, does not actually allow for direct access to the river: LCO2 would seemingly still need to be transported from the carbon capture plant to shipping vessels, presumably by vehicle. This would not be the case (or the transport distance would be less) if the Project were located on the East Zone. If the LCO2 is returned directly from the carbon capture facility itself to the existing EfW facilities for collection (i.e. instead of needing to be manually transported to the jetty), then it does not matter where the Project is situated. In either case, TWUL does not consider a 'riverside location' to be a very special circumstance;	The Proposed Scheme does not propose the use of vehicles to transport LCO2 from the Carbon Capture Facility to the Jetty. Neither will any vehicles return to the EfW facilities. The LCO2 is proposed to be transported via pipework, directly from the Carbon Capture Facility to the Jetty, where it will be loaded into the ships. The very special circumstance of the riverside location is set out in the **Planning Statement (APP-040)** from paragraph 5.5.18 to 5.5.22. This explains that the history of the Cory group is underpinned by the River Thames, and that this future use of the river will provide environmental, economic and societal benefit. It can also act as a catalyst to growth of the UK shipping sector. More detail on Cory's history on the river is provided at section 2.3 of the **Project Benefits Report (APP-042)** which also sets out the benefits of this mode of transport at section 5.3. The matter is also addressed at section 3.4 of the **Applicant's Response to Relevant Representations (AS-043)**. The Applicant is the only waste management company to rely upon riparian waste management facilities and to the Applicant's knowledge is currently the only waste management company to engage in shipping for this purpose. The local benefits (not least avoiding additional road movements on the public highway, bringing societal and environmental benefit) and the national benefits (not least demonstrating NPT options for other decarbonisation projects that are not connected to a pipeline) are only achieved by the very special circumstance of being by, and using, the River Thames as intended by the Proposed Scheme.
REP1-057	2.24.4 Section 5.5.23 of the Planning Statement sets out 'sustainable infrastructure delivered through coherent design' as a very special circumstance. However, there is nothing particularly exceptional about the design. By analogy, paragraph 84 of the NPPF provides an exception to the restriction on building isolated homes in the countryside where the design is of "exceptional quality, in that it…is truly outstanding, reflecting the	The very special circumstance of the quality of the proposed coherent design is set out in the **Planning Statement (APP-040)** at paragraphs 5.5.23 and 24. It is also addressed in the **Project Benefits Report (APP-042,** not least at paragraphs 5.4.8 to 5.4.11**)** and at section 3.4 of the **Applicant's Response to Relevant Representations (AS-043)**.

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	highest standards in architecture". TWUL considers that for design to be a very special circumstance justifying building on Green Belt/MOL, a similar standard would need to apply, which is not the case with the Project. Further, the design of the Project means that 30% of it is situated within MOL, which is not a "very small part" as suggested by the Applicant at section 3.4.42 of its Planning Statement. Further, the part of the Project which is not to be constructed on MOL is nevertheless located adjacent to the LNR/MOL and will still have a detrimental impact on ecology and on the visitor experience due to visual impacts. TWUL considers that the proposed loss of MOL will have a disproportionate impact on the remaining Crossness Nature Reserve.	Thames Water may consider the loss of MOL to be considerable. The Applicant disagrees and has set out its comprehensive analysis of this harm at section 5.4 of the **Planning Statement (APP-040)** and section 3.4 of the **Applicant's Response to Relevant Representations (AS-043)**. It has demonstrated that harm is limited, that there will remain a *'break within the built up area*', there will be no loss of Accessible Open Land and there will result a general improvement in the user's experience of the MOL. Further, Thames Water focusses purely on aesthetic design, which is not a stage yet reached by the Proposed Scheme. Good design is much broader than simply the visual appearance of a development. The comprehensive and coherent design promulgated through the Proposed Scheme addresses all aspects of the project, starting with the use of the land allocated as SIL to the west of Norman Road (some 70% of the Carbon Capture Facility site), through considering an optimal layout within the site, seeking to integrate biodiversity and landscape within elements of the project (eg water habitats within the attenuation pond), developing proposals for the Mitigation and Enhancement Area is committed through the Outline LaBARDS, and into the ongoing evolution of the design in compliance with the Design Code that will control all of these matters as the project moves through detailed design and into implementation. The rigour and standard applied to these matters is set out in the application documents, not least the **Design Approach Document (APP-044 to 046).** It is a standard that would only be seen in a project of national significance permitted through a comprehensive approach to development masterplanning to secure wider ranging design proposals than incremental development on a plot by plot basis, is likely to be capable of achieving if the CIL policy area was to come forward as individual plot proposals, and is a very special circumstance of the Proposed Scheme, which delivers on a globally important environmental challenge with a positive and locally relevant solution. Visual effects of a development can be considered 'other harm' for MOL as it results in changes in landscape character and the nature of the visual environment. **Chapter 10: Townscape and Visual of the Environmental Assessment (Volume 1) (APP-059)** considers the effects on townscape character and visual amenity during both construction and operation phases, including an assessment of the views that are available to people who may be affected by the Proposed Scheme, including their perception and response to changes in these views, and visual amenity. The extent to which the Townscape and Visual Impact assessment relates to MOL is limited to its assessment of impact on accessible non-built-up areas of the site. The assessment concludes significant adverse effects during construction and operation phases on users of Accessible Open Land (AOL) (parts of which fall within the MOL and Crossness LNR) and PRoW within the Site Boundary. The magnitude of impact is related to the scale and nature of the Proposed Scheme, along with the geographic extent of the Proposed Scheme within views and how these views would change with the introduction of the Proposed Scheme. The quality and condition of the Accessible Open Land, however, would be tangibly improved through the

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		proposals for the Mitigation and Enhancement Area (committed through the **Outline LaBARDS (APP-129)**) which includes enhanced grazing marsh, enhanced wetland habitat, and improved footpath construction. The proposed improvements to habitat and access aim to create a more enjoyable, inclusive, and sustainable interaction with the environment for users of the AOL and remaining MOL, which would foster not only a positive user experience but also long-term ecological resilience.
Green Belt and MOL Harm		
REP1-057	2.26 Section 5.4.16 of the Applicant's Planning Statement sets out: "The Proposed Scheme will result in the net loss of 2.5ha of MOL (Stable and East Paddock) and a maximum area of 1ha of compromised MOL (within Sea Wall Field and West Paddock)." Section 5.4.17 goes on to state: "However, this loss is minimised, openness is maintained through the retention of remaining open land and urban sprawl is prevented. Further, there is no impact on the Accessible Open Land within the MOL". 2.27 TWUL disagrees that the impact on MOL is minimised through the retention of remaining open land, as a total of 3.5 hectares will be lost/impacted in a key location between existing built development. It is also not relevant that the impacted land is non accessible as that is not a requirement of development in Green Belt policy (and see below regarding the designation of 'accessible' and 'non-accessible' open land). 2.28 It is considered that the proposed Project will have a significant adverse impact on the openness of the MOL at Crossness Nature Reserve and this was accepted in the Applicant's PEIR, which confirms that the impact on MOL to be permanently lost is considered to be: Moderate Adverse (significant). 2.29 Chapter 8 of the Bexley Green Infrastructure Study identifies the part of the MOL proposed for the Project as having 'Strong Openness', characterised as 'wholly open MOL free from buildings and structures that compromise openness' (Chapter 3, Table 3.1). This part is also described as being 'flat and open with views towards commercial development along the Thames.' (Chapter 8, Table 8.1).	That there will be harm to the designated MOL is recognised and considered in some detail within the Application documents, principally **section 5.4** of the **Planning Statement (APPP-040)** and **section 3.4** of the **Applicant's Response to Relevant Representations (AS-043)**. Within these submissions, the level of harm and application of the mitigation hierarchy is explicitly considered, and the Bexley Green Infrastructure Study is referenced. Thames Water and the Applicant concur on the matter that is raised and the relevant documents to consider. Consequently, the difference between them is simply a judgement of the level of harm resulting from the Proposed Scheme. The site assessment process has been undertaken following a rigorous, iterative and proportionate approach, that delivers the policy requirements of NPS EN-1. In addition to the **TSAR (APP-125)**, and the **TSAR Addendum (AS-044),** the Applicant provided the further information sought by the Examining Authority (including impacts on FP4 and explanation of the economic assessment) in its **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024),** particularly at **Appendices B, D and E (REP1-025)**. As acknowledged by LBB in their relevant representation (RR-124) and in the Bexley GI Study (Part 1, Chapter 3, paragraph 3.51) that the concept of 'openness' is a combination of 'spatial' openness, where the 'scale, form and density of built development' are the relevant factors; and 'visual' openness, where consideration is given to the role of topography, vegetation, buildings, linear features in maintaining or screening open views of the wider MOL. This position is confirmed in case law. In Turner v Secretary of State and East Dorset Council [2016] EWCA CIV 466, Sales LJ said '*the concept of 'openness of the Green Belt' is not narrowly limited to a volumetric approach…The word 'openness' is open-textured and a number of factors are capable of being relevant when it comes to applying it to the particular facts of a specific case*'. It does not therefore imply a freedom from any form of development. The Supreme Court in Samuel Smith Old Brewery (Tadcaster) and Others v North Yorkshire County Council [2020] UKSC took this further, holding that consideration of visual impacts of a development on openness '*…is a matter not of legal principle, but of planning judgement'* (paragraph 25) which could form a material consideration. The Bexley GI Study acknowledges this and notes that vegetation and

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		landform can provide visual enclosure to a development to mitigate its visual impacts on the wider MOL (paragraph 3.51). In considering the impacts to MOL, including its openness, it is important to note that there are no reasonable alternative sites such that any impact on MOL could be avoided entirely. This has been consistently demonstrated by the applicant. However, site choice, design evolution and the Design Principles and a robust Design Code, do minimise that impact. As has been discussed, approximately 70% of the scheme will be positioned on SIL, where LBB have confirmed (RR-124, and most recently in the **SoCG Rev B (Document Reference: 8.1.1**, as submitted alongside this response) that development of the CCF would accord with policy. Only 2.5ha of MOL is to be unavoidably lost within the East and Stable Paddocks, as a result of the proposed scheme **(Work No. 1a, Works Plans APP-137)**. A further 1ha of MOL will be impacted, but not lost, to the immediate west and south of Riverside 2 **(Work No.2B, Works Plans, APP-137)**. All reasonable measures have been taken to minimise the impacts and identified harms to MOL **(Section 5.4, APP-040),** and to effectively mitigate those which cannot be avoided. The comprehensive design and considered layout of the proposed development as detailed in **Section 5 of the DAD (APP-044 to 046)** and the consequent Design Principles and Design Code **(APP-047, as updated by AS-043)** will ensure that the physical characteristics of the Proposed Scheme will have a limited impact on the relevant primary purpose of the MOL, to keep land open. In particular, careful consideration has been given to the scale, massing and layout of the scheme to minimise the footprint of the built form and consequent impacts on the MOL and other designations, and to reflect the transition from the industrial riverside to the community at Belvedere. A diffused and compact layout option were explored **(DAD, APP-045)** with the compact option ultimately selected to reduce the footprint of the CFF and provide space for a landscaping buffer to facilitate spatial and visual separation between the CCF and the MOL to help protect openness. The applicant therefore maintains that the scheme proposed, which minimises as far as practicable the area of MOL to be lost, alongside the scheme of comprehensive landscaping, which will minimise the visual impacts of the scheme for any visitors to the remaining MOL, will have a limited and minimal impact on the primary aim and purpose of the MOL to provide strategic open land and a break within a built up area. The applicant would highlight, that the majority of the overall Site area located within the MOL is to be retained as a substantially undeveloped Mitigation and Enhancement Area, and that the broad variety of enhancements to be delivered (see **Outline LaBARDS, APP-129**) are considered to accord with the wider aims and purposes of MOL set out within the London Plan and Bexley Local Plan.

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		Whilst TWUL states that it is irrelevant that the fact that much of the MOL land in this location is inaccessible, they note that this relates to Green Belt policy. A key distinction between Green Belt and MOL policy objectives is that MOL not only "…*protects and enhances the open environment*…" it <u>also</u> "…*improves Londonders' quality of life by providing localities which offer sporting and leisure use, heritage value, biodiversity, food growing, and health benefits through encouraging walking and running and other physical activity." (Policy G3 of the London Plan), and to this end Policy G3 (paragraph A(2)) introduces a requirement for boroughs to "work with partners to enhance the quality and range of uses of MOL"*. The applicant therefore contents that by retaining the majority of the Site area as a largely undeveloped Mitigation and Enhancement Area, the Proposed Scheme will maintain the majority of the spatial openness of the MOL in this location, so that the retained MOL will continue to perform its primary function, to provide a meaningful break within the built up area, and will largely retain the physical structure of this part of London. However, though the delivery of the scheme, extensive benefits to the environment and community will also be delivered which are consistent with the wider aims of MOL policy.
REP1-057	2.30 TWUL does not agree with the Applicant where they suggest that the Project will maintain the existing 'break within the built up area' which contributes to the physical structure of this part of London (see paragraph 3.48 of the Bexley Green Infrastructure Study), as there will be a significantly reduced open space between the proposed Project's built form and the Crossness STW, contrary to the Applicant's assessment at section 5.4.3 of its Planning Statement.	That there will be a loss to the designated MOL is recognised and considered in some detail within the Application documents, principally **section 5.4 of the Planning Statement (APPP-040)** and **section 3.4 of the Applicant's Response to Relevant Representations (AS-043)**. Consequently, the Applicant agrees with Thames Water that this loss leads to a reduction of the MOL, open space between Norman Road and the Crossness STW. However, even with that loss, the location of the Carbon Capture Facility is correctly described by the Applicant as being able to retain a *'break within the built-up area*', which is the primary function for the MOL as set out within the Bexley Local Plan. Thames Water is wrong to read paragraph 5.4.3 of the Planning Statement as saying anything other than what it does, that the remaining land designated as MOL within the Crossness LNR will *'continue to perform a separating function between the built up area. A substantial, and definitive, area of openness between the proposed Carbon Capture Facility and the Crossness Sewage Treatment Works will be maintained.*' The MOL in this area, north of the A2016 and between the Crossness Sewage Treatment Works and Norman Road, measures some 34ha. The Carbon Capture Facility would use 2.5ha, leaving some 31ha of open space remaining.
REP1-057	2.31 Section 5.3.17 of the Applicant's Planning Statement claims that only the first purpose of Green Belts set out at paragraph 143 of the NPPF applies to the MOL required for the Project. TWUL does not agree with this assertion, as they define 3 purposes (at paragraphs 2.31.1 to 2.31.3 that are also considered directly relevant.	Thames Water suggests that the Green Belt purpose '*to prevent neighbouring town merging into one another'* is relevant. The Applicant disagrees. Paragraph 5.5.56 of the Bexley Local Plan states: '*The primary function of Metropolitan Green Belt is to serve as a break between settlements. Metropolitan Open Land functions similarly,* ***but as a break within a built-***

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		up area *rather than at the edge. Both of these land use designations are strongly protected from development by the London Plan and NPPF.'* (emphasis added) The Bexley Local Plan differentiates between the Metropolitan Green Belt and Metropolitan Open Land. If it felt that it was necessary to make a break between settlements it would have designated this area as Green Belt, rather than MOL. In any event, there remains a break between the built-up areas, and it cannot reasonably be suggested that the settlements of Erith and Thamesmead are merging. Thames Water suggests that the Green Belt purpose '*to assist in safeguarding the countryside from encroachment'* is relevant. The Applicant does not agree. Whilst the MOL is not developed, it cannot reasonably be considered an area of countryside. The Proposed Scheme's impact on the habitat of Coastal Grazing Marsh is appropriate to understand and assess and is addressed elsewhere within the Application documents and in this response document. It is not however reasonable to suggest that habitat represents countryside. Thames Water suggests that the Green Belt purpose '*to assist in urban regeneration, by encouraging the recycling of derelict and other urban land'* is relevant. The Applicant does not agree and is somewhat perplexed by Thames Water's representation. It offers no evidence of how the East and Stable Paddocks have encouraged the delivery of this purpose (whilst suggesting it has been achieved) and fails to recognise that most of the Carbon Capture Facility is located on land allocated as SIL (some 70%).
Interaction with Existing Consents		
REP1-057	2.46 As to taking into account proposals to provide 'new, improved or compensatory land', the Applicant places considerable weight on what it misleadingly calls the 'extended' local nature reserve.19 This is misleading in the sense that: (a) the 'extension' (the Norman Road Field) is already subject to section 106 obligations relating to ecology and nature conservation; and (b) there is an overall net loss of open space. 2.53 A review of the masterplan approved as part of the 2005 Permission (drawing number A4572/102C) and the land to which it relates on Google Maps indicates that the 2005 Permission was implemented, as part of the land appears to have been developed in a manner similar to what is shown on the masterplan and subsequent reserved matters approvals and minor amendments.20 The 2005 Agreement (and clause 24 thereof) would have been triggered by such implementation and it is understood by TWUL that the obligations in clause 24 remain live as at the date hereof, given there is nothing in the 2005 Agreement or the EMP which places an end date on the active management of Area 5. 2.54 As such, it is TWUL's view that the Secretary of State could not assign much, if any, weight to the proposals for Norman Road Field when applying section 5.11.32 of the NPS in relation to the loss of open space, because there is no new or compensatory open space: Norman Road Field is subject to an existing nature conservation and management	The Applicant was unaware of the s.106 relevant to the Veridion Park permission until it was referenced by the Save Crossness Nature Reserve Group in a draft SoCG. However, the Applicant was fully cognisant of the use of Norman Road Field as an element of the mitigation delivered for the first phase of Veridion Park. It had been assumed that the management of that land had been subject to the standard period of five years for aftercare. This history is however neither important nor relevant. As is set out in some detail at **Appendix F to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-026)**, and as agreed with London Borough of Bexley in the **SoCG** (most recently **Rev B (Document Reference: 8.1.**1, submitted alongside this response)) the mitigation measures required at Norman Road Field for the Veridion Park development have been implemented and managed for the requisite period of ten years. Consequently, there is no extant mitigation commitment at Norman Road Field. As is also set out at **Appendix F of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-026)** the habitat enhancement proposals set out in the **Outline LaBARDS (REP1-012)** will both enhance biodiversity at this location and secure a further 30 years of management commitment.

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	requirement so cannot be considered to be new or compensatory land and, as set out from paragraph 2.58 below, the 'improvements' to Norman Road Field are considered insufficient by TWUL. 2.55 It is also noted that the Applicant indicated at ISH1 that it was not aware of the 2005 Agreement. As such, the position with Norman Road Field could not have been taken into account as part of the Project's biodiversity net gain (BNG) calculations. TWUL therefore reiterates that the inclusion of the Norman Road Field as part of the BNG 'offer' needs to be reassessed in light of the existing baseline for Norman Road Field.	
REP1-057	Net Loss of Habitat and Recreation Land 2.56 The second reason TWUL considers the term 'extended LNR' to be misleading is because the loss of East Paddock and Stable Paddock due to the Project will result in a net loss of habitat and land for recreation. At present, the existing TWUL LNR is approximately 25 hectares in area, with Norman Road Field being approximately 8 hectares. The Project will result in a loss of approximately 3.5 hectares of habitat and recreational land. There is no 'new' or 'extended' land being provided to offset this loss. The Norman Road Field is already accessible via footpath 2 and the LNR by footpath 1. Save for what appears to be a new short connection from Norman Road Field to the LNR, accessibility to either is not substantively changed. 2.57 Whilst article 48 of the draft development consent order technically designates the Norman Road Field as a nature reserve for the purposes of section 21 of the National Parks and Access to the Countryside Act 1949, it is already land subject to nature conservation requirements pursuant to the 2005 Agreement and is freely accessible to the public for recreation: for all practical and beneficial purposes, Norman Road Field can already be considered an extension of the LNR. TWUL therefore considers it disingenuous for the Applicant to be giving the impression they are providing additional land for nature conservation and enhancement, which is what the term 'extended nature reserve' implies. There is no such additional land; there will be a net loss and the enhancements proposed by the Applicant in the Outline Landscape, Biodiversity and Recreation Delivery Strategy (LaBARDS) does not make up for that loss.	The Applicant proposes extending the designation of Local Nature Reserve (LNR) to include Norman Road Field. As Thames Water identifies, Norman Road Field is some 8 ha; approximately 2.5ha of the Crossness LNR would be developed for Carbon Capture Facility, with approximately another 1 ha oversailed by the Flue Gas Ductwork. Thames Water considers a total of 3.5ha of Crossness LNR to be lost, which would still result in a net extension of 4.5 ha of land designated as LNR. The Proposed Scheme does not suggest there would be new open space. However, the users experience of the LNR, as extended, would be enhanced through a range of improvements focussing on habitat condition and biodiversity, path quality and accessibility (including potential new connections to make a circular route along the River Thames and to the former Thamesmead Golf Course) and a more open and welcoming entrance at the southern end of Norman Road (which would specifically address one of the challenges of this site identified in the Bexley Green Infrastructure Study).
REP1-057	Landscape, Biodiversity and Recreation Delivery Strategy 2.58 Firstly, the LaBARDS indicates that there is likely to be a greater loss of MOL and habitat thereon than the 3.5 hectares originally calculated, due to: 2.58.1 the use of Sea Wall Field (which is MOL) for temporary construction compounds (as shown on Figure 13); 2.58.2 the relocation of the stable block from the north of the TWUL emergency access to the south with proposed fencing (as shown on Figure 9); and 2.58.3 the creation of an additional footpath link connecting footpath 2 to footpath 3 (section 6.4.9).	A linear strip is required for construction of the overhead Flue Gas Ductwork, both to the east side of Sea Wall Field and northern boundary of the West Paddock. This is proposed as a framework structure supported on legs that will be 'light touch' and, in the long term, have limited impact on the habitats beneath. During construction, measures will be taken to protect existing habitats and species including protection against ground compaction and avoidance of large concrete foundations where practicable, appropriate stripping and storing soils on site to protect the important seed bank site and to ensure suitable condition, to be reapplied to the land once the vacated. These temporary works will be undertaken in accordance with the **Outline CoCP (updated alongside this response)** not least as set out at Sections 5 and 15 of that document.

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	2.59 All of the above will result in disturbance to and/or loss of habitat. Whilst temporary, the construction of the compounds and subsequent activity may result in irreversible loss of habitat in that location, if not properly reinstated by the Applicant. 2.60 With regards the footpath link, TWUL has already created a link between footpaths 2 and 3. Whilst TWUL would welcome the enhancement of the existing TWUL link (which may then be dedicated as a formal public footpath), the creation of a further link is unnecessary, would lead to further land loss and a further reduction of grazing land. 2.61 It is noted from Figure 14 of the LaBARDS, that the creation of a woodland habitat is proposed to be provided on grazing marshland. TWUL considers that this is inappropriate, as grazing marsh habitat is meant to be an extensive open area with a flat, low-lying landscape, and a strong feeling of remoteness and wildness. As well as removing this sense of openness, trees dry out wetlands, create shade, and provide additional perching for predators of ground-nesting bird species. The provision of trees on the Norman Road Field would also appear to be inconsistent with the 2005 Agreement, which requires that field to be managed in accordance with the EMP. TWUL considers it more appropriate to remove the proposed woodland, which would allow for a reconfigured stable block to remain in its current location, thereby removing the potential for further habitat loss. 2.62 In summary, TWUL considers that the LaBARDS as currently drafted does not provide sufficient mitigation and enhancement of the Norman Road Field and the LNR to overcome the permanent loss of Stable Paddocks and East Paddock, and the temporary loss of Sea Wall Field. Whilst TWUL does not consider there is any justification for this loss, TWUL will nevertheless seek to engage with the Applicant to propose what enhancements and mitigation should be included to better compensate for the loss, in the event the Application is approved, notwithstanding TWUL's position that it should be refused, as detailed below.	Potential relocation of the stable block from the north of the Thames Water Access Road to the south side is shown in illustrative plans only. The final location would be developed through the detailed design phase and in consultation with the grazier and is to be approved by LBB prior to commencement (through approval of the full LaBARDS, requirement 12 of the draft DCO). The footprint of the new stable block will not affect the ability of the Proposed Development to fully compensate for the effects of habitat loss. Effects on protected species will be avoided and minimised by embedded mitigation in minimised in accordance with the **Outline CoCP (updated alongside this response)**, and any residual effects mitigated through additional measures as detailed in Section 7.9 of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056).** All the footpath proposals are indicative at this stage, shown in illustrative plans and to be agreed with LBB through submission, and approval, of the full LaBARDS. The Applicant sees the second access through Sea Wall Field (new FP2 leg) as an optional, more attractive route that could replace the current provision. The Applicant has proposed these footpath and access improvements as additional measures (not strictly required as mitigation) within the Proposed Scheme to enhance the users experience of this area. As these do not open up new areas of the reserve, merely improve connectivity, they do not represent the risk of additional disturbance to species or loss/degradation of habitats from members of the public than exists already at Crossness Nature Reserve and has been factored into the ecological baseline conditions. It is noted that the Core Temporary Construction Compound is located on land that is ultimately required for the Carbon Capture Facility and will not be reinstated. The Western Temporary Compound is located on land that forms part of the Mitigation and Enhancement Area which will be restored and enhanced pursuant to the LaBARDS. The illustrative proposals in Figure 14 of the Outline LaBARDS suggest a sparse collection of trees along the eastern edge of Norman Road Field. The intention was to: • Improve diversity of ditch side habitat to include some occasional low level native trees such as Salix caprea. • Provide additional layers of screening for the CCF built form and fence lines when viewed from CLNR. • Maintain light levels for grazing marsh plant species through wide spacing between proposed trees/ shrubs and selecting species with a low/ hunkered form. However, the Applicant agrees that tree planting should not detract from grazing marsh habitats and will update the illustrative Figure 14 to show significantly reduced tree numbers in the next iteration of the outline LaBARDS to be submitted to Examination. The Outline LaBARDS is, necessarily an outline document, with the full LaBARDS to be approved by LBB under requirement 12 of the draft DCO. The location of the existing stable block within Stable Paddock would be difficult to retain due to CCF access and security requirements. The illustrative scheme proposes the

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		remaining part of Stable Paddock utilised primarily for drainage basins and screening vegetation, which also provides new, complementary habitat. The Applicant welcomes Thames Waters' commitment to engage on the enhancement and mitigation proposals within the Proposed Scheme and will seek to continue discussions with them.
Open Space		
REP1-057	2.41 Firstly, the NPS applies very wide scope as to what the term 'open space' should be taken to mean for the purposes of applying the policy, namely: "all open space of public value, including not just land, but also areas of water such as rivers, canals, lakes and reservoirs which offer important opportunities for sport and recreation and can also act as a visual amenity." 2.42 As such, for the purposes of the NPS, all open space of public value should be treated equally when assessing the harm due to loss caused by the Project. However, the Applicant does not do this; rather, it introduces its own categories of 'Accessible' and 'Non-Accessible' Open Land, with the latter essentially being disregarded for the purposes of assessing harm. For example, section 6.4.1 of the Planning Statement (under the 'Policy Analysis' heading) states that: "Crucially, however, there will be no loss of Accessible Open Land resulting from the Proposed Scheme, i.e. land that is actually used as open space". 2.43 For the purposes of the NPS, it is just as crucial that there is loss of 'non-accessible' open space. Further, the 'non accessible' open space is 'actually used as open space' for the purposes of the NPS, in that its 'use' is to provide essential visual amenity. However, harm is not assessed on this basis by the Applicant and it is as though the loss of 'non-accessible' open space does not matter. All parts of the LNR constitute open space for the purposes of the NPS – it all has public value and it all provides essential amenity in various ways. 2.44 Secondly, it was noted at CAH1 that the Applicant suggested that the western extent of the LNR (i.e. the area more commonly known as the 'protected' or 'member's' area) was not to be regarded as open space, as it is not accessible to the public and is not laid out for the purposes of recreation. This is not correct: whilst there is controlled access, anybody can become a member and it is entirely laid out for the purposes of recreation – it contains a bird hide, public toilets, an education pond, a 'mini-beast' area and boardwalks through reedbeds. 2.45 As such, there is clearly greater harm to open space than the Application purports. There should be no categorisation of 'Accessible' and 'Non-Accessible' open space: they both constitute open space for the purposes of the NPS which have not been assessed as being surplus to requirements by the local authority or independently. As such, it is important that this is recognised by the Secretary of State in determining whether the benefits of the Project outweigh the loss of open space.	Paragraph 2.2.7 of the **TSAR (APP-042)** describes Accessible Open Land as *'being both designated as, and used as, public open space, which has not been deemed surplus to requirements by LBB ...*'. Page 33 of the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)** reports Mr Fox's clarification at ISH1: *'that in relation to Accessible Open Land this also counts as open space or special category land. The term Accessible Open Land had been in recognition that this land is used by people both to recreate and to access nature. It was a term used in the Environmental Statement and in the Optioneering Principles*.' Reference to, and consideration of Accessible Open Land within the Application documents is wholly appropriate and aligns with NPS EN-1. It is relevant for impacts of the Proposed Scheme to be considered in the context of whether open space is actually accessible by the public, or not. It is a fact, not disputed by Thames Water, that none of the East, Stable nor West Paddocks are accessible by the general public. Indeed, none of the Crossness LNR north of the Thames Water Access Road is accessible to the general public. It is not disputed that these areas have 'public value' and can provide 'essential amenity in various ways' principally privately by the grazier and by being looked at for the general public. However, this is the limit of their use as open land. The Applicant also notes that it has, in its TVIA, considered impacts relating to the Non-Accessible Open Land, including impacts to it as forming part of the local townscape character, and as part of the user experience of Public Rights of Way, in considering effects on the visual amenity of those users. The conclusions of that TVIA have then been considered in the Planning Statement as part of the planning balance. Indeed, Thames Water's Written Representation makes clear just how limited access to these paddocks is by its own reference to the Members or Protected Area of the Crossness LNR (albeit this lies outside the Order limits). The Members/Protected Area is identified as accessible, if persons become a member and are able to obtain the controlled access) (which, the Applicant notes, still means it does not qualify as 'public open space' for the benefit of the 2008 Act, as the ability to recreate is still controlled and is 'by right' of the landowner, rather than 'as of right'); whereas this, qualified, level of access is not granted to the land to the north of the Thames Water Access Road.

Table 2-9-4 – Greater London Authority

Doc ref	Summary of issue raised	Applicant's response
REP1-072	"The Terrestrial Sites Alternative Report (TSAR) sets out alternative development proposals that are not considered feasible and provides increased detail on how they have been assessed against the optioneering principles. Whilst this was requested and welcomed, we do not believe that the information provided presents a clear justification for why the preferred site was chosen or why alternatives were rejected. It is not clear that the optioneering principles have been implemented appropriately and with adequate recognition of the ecological emergency. For instance, the East zone site option appears to perform more favourably in regard to Principle 1 (Seek to avoid or minimise adverse impact to locally important biodiversity sites) and other issues identified do not appear significantly greater than those associated with the chosen site. There also does not appear to have been full exploration of the factors that would influence the feasibility of the West zone. The information provided does not allow assessment of how these factors have been weighed against each other, including what is considered to be excessive costs."	The Applicant has responded to the points raised by the GLA at section 2 of its **Response to Relevant Representations (AS-043)**. Paragraph 2.2.26 states: '*... Beyond this approach (and in response to the concerns raised in the GLA's RR (RR-077)) no weighting is applied to any of the Principles or to the scores; this is deliberate, to ensure a balanced conclusion can be drawn. ...*'. The GLA will find further information on the site assessment provided in the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, particularly at **Appendices B, D and E (REP1-025)**.
REP1-072	Notes in the TSAR reference protecting biodiversity important sites and species, but necessarily the associated habitats. It is not entirely clear how or whether the variables impacting Biodiversity Net Gain (BNG) have been considered within the site selection i.e., habitat distinctiveness etc. (See more on BNG below)"	Paragraph 2.2.17 of the Applicant's **Response to Relevant Representations (AS-043)** states: '*In response to the GLA's Relevant Representation (RR-077), the Applicant can confirm that impacts on the BNG Metric (such as habitat distinctiveness) were not considered as part of the optioneering process, as there is not a policy prerogative to do so.'*

Table 2-9-5 – Save Crossness Nature Reserve

Doc ref	Summary of issue raised	Applicant's response
CNP Status		
REP1-047	15. The Applicant places great reliance on the "CNP presumptions" in EN-1 to justify the harms created under the Proposed Scheme. In particular, the Applicant relies upon paragraph 4.2.16 ... 16. However, as the Applicant accepts, the CNP presumptions only apply where a scheme meets the requirements in EN-1, including the mitigation hierarchy, as well as any other legal and regulatory requirements (see paragraph 4.2.10 EN-1). At paragraph 4.2.11 of EN-1, it states, "Applicants must apply the mitigation hierarchy and demonstrate that it has been applied.". Therefore, the concept of the CNP presumptions being the 'starting point' is not accurate and the true starting point is an assessment of the mitigation hierarchy and other requirements listed above. 17. The mitigation hierarchy is "the avoid, reduce, mitigate, compensate process that applicants need to go through to protect the environment and biodiversity". Paragraph 5.4.42 of EN-1 states that "as a general principle, and subject to the specific policies	**Paragraph 3.2.16 of the Planning Statement (APP-040)** simply quotes paragraph 4.2.16 of NPS EN-1, that critical national priority infrastructure, such as the Proposed Scheme, will be determined from a starting point '*that such infrastructure is to be treated as if it has met any tests which are set out within the NPSs, or any planning policy, which requires a clear outweighing of harm, exceptionality or very special circumstances.'* **Paragraph 3.2.17 of the Planning Statement**, simply acknowledges that paragraph 4.2.17 of NPS EN-1 specifically applies that approach to development in the Green Belt, which for the Proposed Scheme, would also apply to Metropolitan Open Land. However, contrary to SCNR's assertions, NPS EN-1 paragraph 4.2.10 is not forgotten; indeed, it even appears in the Executive Summary and section 4 of the Planning Statement: Paragraphs 4.2.10 and 4.2.11 make clear that this level of policy support does not negate the need to follow the requirements of the NPS, or any other relevant legal and regulatory requirements. In particular '*applicants must apply the mitigation hierarchy and*

Doc ref	Summary of issue raised	Applicant's response
	below, development should, in line with the mitigation hierarchy, aim to avoid significant harm to biodiversity… including through consideration of reasonable alternatives". The Applicant has failed to apply the mitigation hierarchy, on multiple fronts. It has failed to avoid and reduce the significant harm to the environment and biodiversity, by failing to consider reasonable alternatives and smaller scheme designs. Furthermore, it has failed to adequately mitigate the significant harms to biodiversity that the current Proposed Scheme would cause. These points are explored in detailed below." 18. Therefore, the CNP presumptions do not apply, and there remains a need to evidence a clear outweighing of harm, exceptionality and very special circumstances as required under the various policies explored below. The DCO Application fails to do so. 19. Even if the CNP presumptions were to apply, the Proposed Scheme is one of the "exceptional cases" where the need does not outweigh the residual harmful effects, which are detailed below.	*demonstrate that it has been applied. … Applicants should demonstrate that all residual impacts are those that cannot be avoided, reduced or mitigated*.'. NPS EN-1 paragraph 4.2.10 is addressed at Table 1, and in some detail both at paragraphs 4.2.16 to 4.2.27 and at section 4.7 of the Planning Statement. The Application documents both appropriately apply the mitigation hierarchy and demonstrate that it has been satisfied, as is explicitly addressed in **row 1 of table 2-4-1 and row 4 of table 2-9-3 of this response**. Consequently, the starting point for the Secretary of State's decision making, is correctly to be from the assumption that the Proposed Scheme has met the relevant tests, and the "*CNP presumption*" applies. At paragraph 4.2.15, NPS EN-1 states that: '*Where residual non-HRA or non-MCZ impacts remain after the mitigation hierarchy has been applied, these residual impacts are unlikely to outweigh the urgent need for this type of infrastructure. Therefore, in all but the most exceptional circumstances, it is unlikely that consent will be refused on the basis of these residual impacts*. ...' . Whilst adverse impact to terrestrial biodiversity and loss of MOL within the Order limits is identified, the level of harm is not 'exceptional' or substantial. The level of harm resulting from the Proposed Scheme is not unusual for a project of this scale and, importantly, it is readily mitigated and compensated, with the proposals set out in the **Outline LaBARDS** and **Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)** providing for biodiversity net gain.
Planning Designations and Land Loss – Local Nature Reserve		
REP1-047	24. The Applicant has failed to give due consideration to this designation and the loss of 3.5 ha of LNR, which amounts to 11.7% of Crossness Nature Reserve. In Chapter 7 of the Environmental Statement (Terrestrial Biodiversity) ("ES Chapter 7"), the Applicant gives the site County importance, and considers this loss of LNR to only have a medium magnitude of impact, leading to a conclusion of direct, permanent, long term, moderate adverse (significant) effect. However, this loss represents a total loss of a significant proportion of the LNR, and a large alteration to key elements/features of the baseline conditions, meaning (under the Applicant's own methodology) the magnitude of impact should be high. This results in a finding of major to moderate adverse effect, and we believe a major adverse effect in the circumstances. 25. This failure to adequately assess the extent of adverse effect has led to insufficient mitigation. The Applicant relies on the creation and enhancement of habitats and the 'expansion' of the LNR designation to Norman Road Field. However, neither of these account for or justify the loss of LNR land. Any qualitative gains (the extent of which we dispute below) do not make up for the quantitative loss. The 'expansion' of the designation does not create more open space, but rather it extends the definition to land which is already classified as MOL and which could, if existing planning controls were properly enforced (as detailed below), qualify for LNR designation regardless of the	Habitat loss within Crossness Nature Reserve has been assessed within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** and therefore the Applicant cannot be said to have failed to give the nature reserve and the ecological features it supports due consideration. County importance has been assigned appropriately as the nature reserve meets the designation criteria as an LNR, rather than criteria for a higher designation such as for an SSSI (which would infer National importance). Habitat loss for Crossness LNR has been given as medium ('Partial loss or alteration to one or more key elements/features of the baseline conditions' of **Table 7-5** of the chapter) within the assessment of **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)** to account for the loss of the East Paddock and other habitats. The significance rating of moderate adverse is therefore appropriately applied, and compensation for residual effects of habitat loss within the nature reserve is proposed, both within Section 7.9 of the chapter, **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)** and the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**. Note, the requirement for compensation is quantified through the use of the Biodiversity Net Gain Metric and has not resulted from a qualitative approach.

Doc ref	Summary of issue raised	Applicant's response
	Proposed Scheme. The Proposed Scheme must be understood as a loss of land that is or could already be LNR.	The Applicant acknowledges that the expansion of the designation does not create more space, but it does bring an area that currently undesignated (and with no active habitat management regime) into the LNR designation which will benefit it as a whole.
Planning Designations and Land Loss – Metropolitan Open Land		
REP1-047	30. The Proposed Scheme results in a loss of 3.5 ha of MOL, but offers no mitigation against this. The Applicant's reasoning, summarised below, is not sufficient to justify this loss. 31. First, the focus on there being no loss of 'Accessible Open Land' is inappropriate, as accessibility is only one of many factors that gives MOL its value. This ignores the other benefits from biodiversity / nature conservation, health, landscape, and scientific interest.	The Carbon Capture Facility will result in the loss of 2.5ha of MOL, with the Flue Gas Ductwork expected to impact, but not result in the loss of, approximately 1ha of MOL. The consideration of harm to the MOL is principally set out at **section 5.4 of the Planning Statement (APP-040)**. It does not focus on there being no loss of Accessible Open Land, although this is one factor that is considered, and it is appropriate to do so. **Section 5.4** of the **Planning Statement (APP-040**) also considers the other harms, being in relation to: terrestrial biodiversity; landscape and visual; and amenity. These topics align with those identified by the SCNR and each is considered in the Planning Statement. Mitigation for these harms is set out from **paragraph 5.4.42** of the **Planning Statement**, which recognises that reasonable site alternatives for the Carbon Capture Facility are limited and that the loss of MOL has been minimised. The **Outline LaBARDS** includes proposals that will bring ecological improvements, address townscape effects and enhance amenity experience of the MOL in this area.
REP1-047	32. The Applicant also alleges that there is "limited impact" as "the primary aim and relevant function of the MOL will be maintained, there will remain a 'break within the built-up area'. A substantial, and definitive, area of openness between the proposed Carbon Capture Facility and the Crossness Sewage Treatment Works will be maintained". We dispute that the impact would be limited. Clearly, the Applicant accepts that there will be a negative impact on the MOL and the extent to which there will be a break within the built-up area will inevitably be reduced if this Proposed Scheme proceeds as currently proposed. The extent to which "some" break within the built-up area will be maintained, is insufficient to achieve the aims and purpose of the MOL designation. As such, the reduction in MOL is unacceptable. 33. The Applicant's analysis ignores the other functions of MOL: to protect and enhance open environment; to improve quality of life; and to protect areas of landscape, recreation, nature conservation and scientific interest. All of these functions will be significantly hindered by the Proposed Scheme, but the DCO Application fails to acknowledge this, and fails to justify or mitigate this significant impact. We also dispute the assertion that the primary aim / function of MOL is to provide a break within a built-up area. There is no clear primary aim / function set out in policy, but the broad wording from the London Plan best summarises its overarching goal: to protect strategically important spaces. These spaces may be strategically important as a result of landscape, recreation, nature conservation and scientific interest. The break within the built-up environment is only part of this strategic role.	That there will be a loss to the designated MOL is recognised and considered in some detail within the Application documents, principally **section 5.4 of the Planning Statement (APPP-040)** and **section 3.4 of the Applicant's Response to Relevant Representations (AS-043)**. However, even with that loss, the location of the Carbon Capture Facility is correctly described by the Applicant to retain a *'break within the built-up area*', which is the primary function for the MOL as set out within the Bexley Local Plan. The remaining land designated as MOL within the Crossness LNR will (as set out at paragraph 5.4.3 of the Planning Statement) '*continue to perform a separating function between the built up area. A substantial, and definitive, area of openness between the proposed Carbon Capture Facility and the Crossness Sewage Treatment Works will be maintained*.' The MOL in this area, north of the A2016 and between the Crossness Sewage Treatment Works and Norman Road, measures some 34ha. The Carbon Capture Facility would use 2.5ha, leaving some 31ha of open space remaining. As set out in the row above the Applicant has not ignored the other functions of the MOL, they have all been appropriate considered and mitigated. Consequently, the Applicant disagrees that these functions will be '*significantly hindered'*; indeed, the Applicant believes they will be enhanced. SCNR disputes that the primary aim/function of the MOL is to provide a break within a built-up area. The Applicant disagrees. Paragraph 5.5.56 of the Bexley Local Plan states:

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		'*The primary function of Metropolitan Green Belt is to serve as a break between settlements. Metropolitan Open Land functions similarly, but* ***as a break within a built-up area*** *rather than at the edge. Both of these land use designations are strongly protected from development by the London Plan and NPPF.'* (emphasis added) Paragraph 8.3.4 of the London Plan states: '*Proposals to enhance access to MOL and to improve poorer quality areas such that they provide a wider range of benefits for Londoners that are appropriate within MOL will be encouraged. Examples include improved public access for all, inclusive design, recreation facilities, habitat creation, landscaping improvement and flood storage*.' These are all benefits that the Applicant has incorporated within the Proposed Scheme.
REP1-047	34. The Applicant relies on the CNP presumptions, but the failure to apply the mitigation hierarchy means they do not apply. Even they did, this constitutes an exception case due to the significant harm arising from the large loss of MOL and impacts on the landscape, recreation and nature conservation functions of the remaining MOL, as detailed below.	A full response to the SCNR's claim that 'CNP presumptions' do not apply is given above, at **in row 1 of table 2-9-5**. Whilst adverse impact to terrestrial biodiversity and loss of MOL within the Order limits is identified, the level of harm is not 'exceptional' or substantial. The level of harm resulting from the Proposed Scheme is not unusual for a project of this scale and, importantly, it is readily mitigated and compensated, with the proposals set out in the **Outline LaBARDS and Appendix 7-1: Biodiversity Net Gain Report Environmental Statement (Volume 3) (APP-088)** providing for biodiversity net gain.
Planning Designations and Land Loss – Site of Importance for Nature Conservation		
REP1-047	37. The Proposed Scheme fails to protect the SINC, and results in the loss of 3.5 ha of SINC. The Applicant's justifications are that "none of this land is Accessible Open Land" and that mitigation measures limit the impact. However, accessibility is not relevant to assessment of SINC, the value of which derives from its nature conservation value. Pursuant to G6, it is not possible to resort to mitigation, as the harm to the SINC is unavoidable through delivery on the East Site (as detailed below), and because the benefits do not clearly outweigh the negative impacts on biodiversity. 38. The Applicant considers Erith Marshes MSINC to be of County importance (paragraph 7.8.8 of ES Chapter 7), but as it is a sustainable area of a priority habit in the UK BAP (and at least a smaller area of such habitat which is essential to maintain the viability of a larger whole), it is in fact of National importance. The loss of 3.5% and resulting fragmentation, the threat to Habitats of Principal Importance (HPIs) and Species of Principal Importance (SPIs), the air quality impacts and broader risk of pollution (all set out below) represent a large alteration to key elements/features of the baseline conditions, meaning the magnitude of impact is high (not medium, as the Applicant concludes at paragraph 7.8.10). Therefore, the effect is major, not moderate. Once again, the Applicant has failed to properly assess and therefore mitigate the harm.	It is acknowledged that the Proposed Scheme will lead to the loss of 2.5ha of habitat within Crossness Nature Reserve that is designated as both Crossness LNR and Erith Marshes MSINC, a response already provided to the respondent for their points numbered 59, 66 and 85 above within **Table 2-4-8**. Compensation for the loss of habitat will be provided through habitat creation and enhancement both within the Mitigation and Enhancement Area (i.e. Norman Road Field) and Biodiversity Opportunity Area, this as detailed in **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056)**, **Appendix 7-1: Biodiversity Net Gain Report of the Environmental Statement (Volume 3) (APP-088)** and the **Outline Landscape, Biodiversity, Access and Recreation Delivery Strategy (REP1-012)**. It is important and relevant to note that the Applicant's assessment of impacts on the terrestrial biodiversity of Crossness Nature Reserve and its designated sites and habitats has been carried out in the absence of consideration for its accessibility to people for recreation, which is dealt with elsewhere in the Environmental Statement (although it does, appropriately, consider the effects of existing baseline levels of public access in baseline evaluation). The site assessment that has been undertaken (and principally reported in the **TSAR (APP-125)** and the **TSAR Addendum (AS-044)** but with further information provided at **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, particularly at **Appendices B, D and E (REP1-025)**) demonstrates that there is no other

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		reasonable alternative site, such that impact on the SINC cannot be avoided. However, the Proposed Scheme has been carefully designed such that these effects are suitably minimised, mitigated and compensated. The **Design Principles and Design Code (AS-020)** provides ongoing control throughout the detailed design phase through to implementation, such as timing of works to avoid impacts on breeding/wintering birds and control of lighting to maintain dark corridors through the SINC. A design process was undertaken seeking to compress the layout of the Proposed Scheme such that its footprint could be minimised (as detailed in the **Design Approach Document (APP-044 to APP-046)**. These actions demonstrate compliance with the avoid/minimise level of the mitigation hierarchy. The Applicant therefore maintains that loss of habitat within Crossness Nature Reserve is unavoidable. The Applicant has explained and justified the approach to the evaluation of Erith Marshes MSINC within **Chapter 7: Terrestrial Biodiversity of the Environmental Statement (Volume 1) (APP-056).** By applying the criteria within **Table 7-6** of the chapter, county value is the appropriate level of importance**.** This chapter assesses impacts on the MSINC in **Section 7.8**, including those from air quality changes and habitat loss and fragmentation, and the applicant maintains that the impact magnitudes applied to each impact to determine effects on ecological features is correct and in compliance with criteria detailed in **Table 7-5**. Thus, the Applicant has properly evaluated ecological features, assessed the impacts on them and applied mitigation and compensation for residual effects.
Planning Designations and Land Loss – Open Space and Green Infrastructure		
REP1-047	44. The Proposed Scheme fails to provide any new or additional open space to substitute for the loss of 3.5 ha of open space / green infrastructure and fails to protect London's network of green and open spaces. 45. The Applicant places great reliance on the fact that "there will be no loss of Accessible Open Land resulting from the Proposed Scheme, i.e. land that is actually used as open space". However, the Applicant's understanding of what is "actually" open space for these purposes is fundamentally wrong. The relevant definition here is that in EN-1, quoted above, which explicitly acknowledges and distinguishes itself from narrower concepts of open space, and clearly includes "all open space of public value", including "visual amenity" value. The London Plan definition is also relevant and expressly confirms spaces with limited and restricted public access are included. There is no basis to limit open space to accessible space in this context. Therefore, the Applicant's justification is flawed, meaning they have failed to assess the true extent of the significant harm and failed to adequately mitigate.	There is not loss of 3.5ha of open space/green infrastructure – the Carbon Capture Facility would result in the loss of 2.5ha; the Flue Gas Ductwork would compromise an additional 1ha, but it would not be lost. **Paragraph 2.2.7 of the TSAR (APP-042)** describes Accessible Open Land as *'being both designated as, and used as, public open space, which has not been deemed surplus to requirements by LBB ...'*. Page 33 of the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)** reports Mr Fox's clarification at ISH1: *'that in relation to Accessible Open Land this also counts as open space or special category land. The term Accessible Open Land had been in recognition that this land is used by people both to recreate and to access nature. It was a term used in the Environmental Statement and in the Optioneering Principles*.' As discussed in the response to **reference 2-2-8-12**, there is no statutory obligation to provide replacement land for the Non-Accessible Open Land that is lost, as it does not constitute special category land for the purposes of the Planning Act 2008. Reference to, and consideration of Accessible Open Land within the Application documents is wholly appropriate and aligns with NPS EN-1. It is relevant for impacts of the Proposed Scheme to be considered in the context of whether open space is actually

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		accessible by the public, or not. It is a fact, not disputed by SCNR, that none of the East, Stable nor West Paddocks are accessible by the general public. Indeed, none of the Crossness LNR north of the Thames Water Access Road is accessible to the general public. It is not disputed that these areas have 'public value' and can provide 'essential amenity in various ways' principally privately by the grazier and by being looked at for the general public. However, this is the limit of their use as open land. The Applicant also notes that it has, in its TVIA, considered impacts relating to the Non-Accessible Open Land, including impacts to it as forming part of the local townscape character, and as part of the user experience of Public Rights of Way, in considering effects on the visual amenity of those users. The conclusions of that TVIA have then been considered in the Planning Statement as part of the planning balance. As identified above, **(in row 4 of table 2-9-5)** paragraph 8.3.4 of the London Plan states: '*Proposals to enhance access to MOL and to improve poorer quality areas such that they provide a wider range of benefits for Londoners that are appropriate within MOL will be encouraged. Examples include improved public access for all, inclusive design, recreation facilities, habitat creation, landscaping improvement and flood storage.*' These are all benefits that the Applicant has incorporated within the Proposed Scheme. In this context, the Applicant acknowledges that NPS EN-1, states at paragraph 5.11.32 that: '*the Secretary of State should not grant consent for development on existing open space, sports and recreational buildings and land unless an assessment has been undertaken either by the local authority or independently, which has shown the open space or the buildings and land to be surplus to requirements or the Secretary of State determines that the benefits of the project (including need), outweigh the potential loss of such facilities, taking into account any positive proposals made by the applicant to provide new, improved or compensatory land or facilities.'* The Applicant acknowledges that LBB has not considered the Non-Accessible Open Land, which it marks as open space in its Green Infrastructure Study, as surplus to requirements. However, the Applicant considers that, including considering the context the nature of the land 'lost', that the benefits of the Proposed Scheme outweigh that loss of land that is not publicly accessible, particularly when considering the proposals set out in in the **Outline LaBARDS (APP-129)** for both the Accessible Open Land and retained Non-Accessible Open Land.

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Alternative sites – East Zone		
Policy Test		
REP1-047	128. These are reasonable objectives and align with government's objectives for the energy system: "to ensure our supply of energy always remains secure, reliable, affordable, and consistent with meeting our target to cut GHG emissions to net zero by 2050". We suggest the notion of "objectives" for these purposes should be guided by the government's energy objectives.	The Applicant welcomes that the SCNR considers the Project Objectives to be reasonable.
REP1-047	130. However, it is inappropriate for the site selection process to have been driven by the OPs. The OPs are the subjective priorities or preferences of the Applicant, rather than objectives, and go beyond the scope of the government's energy objectives. All of the points covered under the OPs are either already reflected by the Project Objectives or are covered by the policy requirements under EN-1 (or other applicable planning policies). Therefore, the OPs are redundant, and the consideration of these points should instead be dictated by the Project Objectives and application of policy. The policies are not only more detailed, but also provide a broader range of considerations that are overlooked by the OPs. Furthermore, policies are carefully drafted to give different weighting to different policies, whereas the Applicant has applied the OPs without any particular weighting (paragraph 2.2.26 of the Response to Relevant Representations). It is wrong for the Applicant to suggest this approach "ensure[s] a balanced conclusion can be drawn", as it overlooks the value judgment made by the Applicant in choosing these OPs. A truly well-balanced conclusion is only achieved through a detailed consideration of alternatives pursuant to the policy requirements (and the specific weighting of each set out in policy). 131. The Applicant's approach undermines the policy framework's role in the consideration of alternatives, and leads to a failure to apply EN-1 paragraph 4.3.22.	The Optioneering Principles are not subjective priorities or preferences of the Applicant, and neither do they fail to apply NPS EN-1 paragraph 4.3.22. At **section 2.2 of the TSAR (APP-125)** the Applicant sets out the framework for reasonable alternatives, which starts with paragraph 4.3.22 of NPS EN-1. Each of the elements of paragraph 4.3.22 - the proportionate response to legislative and policy requirements and identification of the key principles for any alternative to meet the objectives of the Proposed Scheme – are then considered. **Paragraph 2.2.7** recognises the protective policies in NPS EN-1 that are relevant to a proportionate assessment of site alternatives, namely: • the need for the mitigation hierarchy to be followed; • the presence of Metropolitan Open Land, which is treated in London Plan and London Borough of Bexley (LBB) Local Plan terms (and in previous DCO application) as having the same status as Green Belt, and thus needing to demonstrate very special circumstances for building on it; • the Accessible Open Land being both designated as, and used as, public open space, which has not been deemed surplus to requirements by LBB; and • the 'due consideration' to be given to impacts to local nature designations such as LNRs and SINCs, both of which are present in the Site. **Paragraph 2.2.8** confirms '*These policy protections, have informed the factors that have been considered in assessing the different development zone options, as discussed below.'* **Section 2.5 of the TSAR** explains the development of the optioneering process, describing the evolution of Project Principles, Design Principles and Optioneering Principles, and their interaction. The Optioneering Principles are introduced at **section 2.8 of the TSAR (APP-125)** following a comprehensive explanation of how they have been developed. Paragraph 2.8.1 provides further explanation that the Optioneering Principles have been focussed on those matters that will differentiate between the alternatives being considered, pursuant to the policy imperatives discussed above.

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		Contrary to SCNR's assertions, the Optioneering Principles are far from redundant; they are used to identify how each alternative would deliver the Project Objectives and they do this using the appropriate range of policy and practicality considerations, whilst facilitating a site assessment process to be able to be undertaken. The Applicant disagrees that an approach of no weighting is inappropriate; not least it definitively avoids the ability for a value judgement to be placed on any of the Principles in the assessment. It is an appropriate and the proportional approach to ensure that a balanced conclusion can be drawn. None of the criticisms of the site assessment have resulted in demonstrating that any of the other zones would deliver the Project Objectives (with which the SCNR agree) indicating the balanced approach taken by the Applicant is robust and the correct one. A detailed consideration of policy requirements relevant to the Proposed Scheme is presented in the Application documents, not least the **Planning Statement (APP-040).**
Applicant's approach to East Zone		
REP1-047	132. The Applicant ruled out development in or near to the East Zone far too soon, without gathering sufficient evidence, testing the feasibility of different options, and analysing against policy requirements (for ease, we will refer to the areas similar to / around the East Zone as the East Zone). The Applicant's initial approach to assessing alternative sites seemed to rely on fairly arbitrary rectangles within each area (Options A-I; see Appendix A to the TSAR), which then informed the boundary of the East Zone. It seems that the Applicant never conducted a more detailed assessment of: (1) which locations within that area would be best; (2) whether similar but slightly different locations might be better; and (3) what different designs might make delivery feasible / optimised for those specific areas. The Applicant attempts to justify this approach at paragraph 2.3.12 of the Response to Relevant Representations, by suggesting the "single block shown in the TSAR… is a reasonable presentation of the East Zone as a whole". But this is not the relevant test: the Applicant must determine and assess delivery in the optimum site within the East Zone (and surrounding area), not just a general assessment or an average. The Applicant never did so. At the OFH, the Applicant admitted the investigations of economic impacts, the main driver for rejecting the East Zone, were "very high level". Therefore, the Applicant has failed to meet the first requirement of the mitigation hierarchy and avoid the significant environmental harms of the Proposed Scheme by delivering in or near the East Zone.	The Applicant notes that there is no prescribed methodology for site assessment. Consequently, it is not for the SCNR to assert that the approach used by the Applicant *'is not the relevant test*'. Further, there is no test of 'best' in planning; consequently, there is no requirement for the Applicant to determine the *'optimum site*' within the Belvedere Industrial Estate. What is required of the Applicant, as set out at NPS EN-1 paragraph 4.3.22, is to undertake a proportionate '*consideration of alternatives in order to comply with policy requirements'* and identify those *'that can meet the objectives of the proposed development*.' This is what the Applicant has done. The site assessment process has been undertaken following a rigorous, iterative and proportionate approach, that delivers the policy requirements of NPS EN-1. In addition to the **TSAR (APP-125)**, and the **TSAR Addendum (AS-044)** (which considered a range of blocks within the East Zone and demonstrates that the exemplar zone used in the TSAR was appropriate) the Applicant provided the further information sought by the Examining Authority (including impacts on FP4 and explanation of the economic assessment) in its **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024), particularly at Appendices B, D and E (REP1-025)**. The East Zone has not been ruled out prematurely, it has been robustly, and continuously, demonstrated not to be a reasonable alternative.
REP1-047	133. It appears that a slightly different site, incorporating the Iron Mountain facility, and Aviva land next to the Iron Mountain Facility, would be sufficient to accommodate the Carbon Capture Facility and avoid impact on other East Zone businesses. As confirmed at the OFH, the Applicant considered designs for the South Zone 1 that are smaller than 8 ha – we await confirmation from the Applicant as to what the correct minimum figure is.	The evolution of land requirements, and representation of the 'compressed layout' is explained in the **TSAR (APP-125)** and in the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024), particularly at Appendix B (REP1-025).** **Appendix D of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** presented further information on why the East Zone is not an appropriate location for the Carbon Capture Facility. **Annex A** to that Appendix shows the Indicative

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	It is unclear whether testing of options within the East Zone were repeated after the potential for reduced size was confirmed, but it appears that this did not happen.	Equipment Layout of the Carbon Capture Facility located on the land currently occupied by Iron Mountain, and Lidl. This Annex shows clearly that the Iron Mountain plot alone is not sufficient to accommodate the Carbon Capture Facility; it does not need further configurations to confirm that fact. **Appendix B of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** explains how the Proposed Scheme evolved over time and how this was considered within the optioneering undertaken by the Applicant, focussing on site location and layout options. It explains consideration of different site layouts, with the Compressed/Compact Layout selected for the Carbon Capture Facility, noting at paragraph 1.2.12, that this option '*could be accommodated within a range of site size (some 6.3ha to over 8ha). The revised ES Figure 3-3 (Annex A) indicates the focus areas of flexibility sought, with the areas indicated potentially to be used for any (or all) of LVIA, water environment, ecological and operational drainage functions. These are a limited part of the overall CCF area that will be developed during detailed design and are an appropriate and necessary part of the Proposed Scheme'.* The East Zone site options do not require retesting; even if the Compressed/Compact Layout could be delivered on a site of 6.3ha; it would still require the Iron Mountain plot and one other, with all the challenges that have been set out in the **TSAR (APP-125)**, the **TSAR Addendum (AS-044)** and **Appendix D of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025).**
REP1-047	134. It was also confirmed that a single process line would be technically feasible and require less space, and that the heat transfer station included in the Proposed Scheme was already required (at least partially) for Riverside 2. Furthermore, it was confirmed that burying the flue pipe would be possible (even if adding technical complexity and cost), which would reduce the space acquired above ground, and also mitigate impacts on FP4. During discussions in OFH, the main reason for dismissing burial of the flue pipe in relation to South Zone 1 was the requirement to cross a major highway. That issue would seemingly not arise with the East Zone.	The Applicant's response to the Landsul/Munster Joinery Written Representations (REP1-059 and REP1-060) (**Document Reference: 9.14**, submitted alongside this response) responds to the potential for a single process line in more detail. Whilst the Applicant agrees that a single-train plant configuration has the potential to reduce the footprint of capture process equipment when compared against a two-train configuration, in doing so the Applicant would lose the operational flexibility of the two-train configuration that it is seeking the flexibility to retain. However, when comparing the overall plant configurations for the two options, any reduction in footprint for the capture process equipment (approximately one quarter of the site) would be modest (amounting to a few percent of the overall site). SCNR has misunderstood the discussion at ISH1 regarding the potential to bury the Flue Gas Ductwork. The ductwork is located on pipe bridges at elevation for supply from Riverside 1 and Riverside 2 to the carbon capture plant. That is the only technically viable way of supplying the flue gas. The ducts themselves are three to four metres in diameter as the flue gas is very low pressure from Riverside 1 and Riverside 2 and it is also at an elevated temperature, above 100 degrees. Page 12 of the **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)** states '*As such (and also in response to the comments of Mr David Wilson from Thames Water), the option of burying the ductwork is not viable - firstly, you would require significant excavation to be able to bury such a large duct and secondly, because of the high temperature you would be faced with heat leak from the duct into the surrounding*

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		soil, that would be likely to kill off surrounding flora and fauna for several metres around the duct work unless specific mitigation measures were taken. Such measures include insulation and cooling around the ductwork, which would add to complexity and reduce the viability of the buried solution.' There is no major highway between South Zone 1 and Riverside Campus and the Applicant does not recall reference to this during the OFH. It is not technically viable to bury the Flue Gas Ductwork. **Appendix A to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** explains the position in regard to the heat network.
REP1-047	135. Therefore, it is not legitimate for the Applicant to rule out delivery on/near the East Zone until all potential locations are properly tested, and a reduced size is properly tested – both in terms of the potential size reductions considered for South Zone 1, and through the potential further reductions set out in the preceding paragraph.	As is made clear in the responses provided above, a robust assessment of the relevant site alternatives, including options in the Belvedere Industrial Area, has been undertaken. The East Zone has not been ruled out prematurely; it has been robustly, and continuously, demonstrated not to be a reasonable alternative.
REP1-047	136. Nevertheless, even with an 8-ha scheme in the East Zone, this location is revealed as a more suitable location for the Proposed Scheme, if the EN-1 paragraph 4.3.22 approach is taken. We analyse this approach in detail below, considering both the Project Objectives and policy requirements. We also provide an alternative assessment of the East Zone under the Optioneering Principles to show that, even under this skewed approach, the East Zone is preferred to South Zone 1.	The Applicant does not agree that its approach is 'skewed'. The Applicant notes that both parties agree the appropriate place is NPS EN-1 paragraph 4.3.22 and that the Project Objectives are appropriate (SCNR refers to them being reasonable). As explained in **row 9 of table 2-9-5** above, the Optioneering Principles come from the Project Objectives and apply the expectations of NPS EN-1 paragraph 4.3.22. The Applicant, as required by NPS EN-1 paragraph 4.3.22, has undertaken a proportionate '*consideration of alternatives in order to comply with policy requirements'* in order to identify those *'that can meet the objectives of the proposed development*.'
REP1-047	137. It should be noted that it is for the Applicant, not the Interested Parties, to provide detailed analysis of alternative sites. To the extent that the East Zone appears to better comply with policy requirements on the evidence available, it is for the Applicant to provide evidence to the contrary. SCNR is making every effort to provide useful evidence for the Examination, but as a voluntary campaign group, it is limited in terms or time, finances, access to information and resources.	The Applicant believes it has submitted a robust and comprehensive analysis of alternative sites. It will continue to provide clarification to the Examining Authority and interested parties regarding this matter.
Analysis of Project Objectives in East Zone		
REP1-047	138. Development on the East Zone, particularly in the north-west corner, would meet all three Project Objectives, as considered in detail below.	The Applicant acknowledges that the East Zone does perform well against some of the Optioneering Principles and these can be aligned to the Project Objectives. The Applicant responds to each of the SCNR's points individually below; however, this approach is flawed and demonstrates the need to take a balanced approach to achieve the Project Objectives, by reference to all of the Optioneering Principles. As set out in **row 9 of table 2-9-5,** the Optioneering Principles are used to identify *how* each alternative would deliver the Project Objectives and they do this using the appropriate range of policy and practicality considerations.

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		In addition to the **TSAR (APP-126)**, and the **TSAR Addendum (AS-044)** the Applicant provided the further information sought by the Examining Authority (including impacts on FP4 and explanation of the economic assessment) in its **Written Summary of the Applicant's Oral Submission at ISH1 (REP1-024)**, particularly at **Appendices B, D and E (REP1-025)**. The East Zone has not been ruled out prematurely; it has been robustly, and continuously, demonstrated not to be a reasonable alternative.
REP1-047	139. Regarding the first Project Objective, development would be close to the Riverside Campus and River Thames, and allow efficient connection to the EfW facilities and Proposed Jetty. Confusingly, the Applicant gives the whole of the East Zone a 'green' rating for OP 5 (which aligns with this Project Objective), but gives each of the specific East Zones 1-3 a 'red' rating. At OFH, the Applicant confirmed that ductwork would be able to reach the Iron Mountain site in the north-western part of the East Zone without technical difficulty and would not require additional booster fans. The Applicant has highlighted concerns around the impact on users of FP4 (at the OFH and in the Application Documents), which is considered below. However, those concerns relate to impacts on the footpath and public amenity, not the technical feasibility of connection, and so are not appropriate to consider here. No other technical connectivity issues have been raised. Accordingly, the East Zone meets the first Project Objective. 140. Regarding the second Project Objective, there is clearly space across the East Zone to accommodate the full Carbon Capture Facility, and we don't believe this is a controversial point. 141. Regarding the third Project Objective, there is nothing to suggest development on the East Zone would not be deliverable in a timely manner. The Applicant does not suggest this in the TSAR or Response to Relevant Representations; the closest thing is reference to the large scale and complexity to the operations on the site. There are references to "disturbance" to and "wider socio-economic considerations" on third-party operations, but these do not relate to this Project Objective and are more appropriate to consider as part of the policy requirements. During the OFH, the Applicant referred to a high-level consideration of scale and complexity of delivery on the East Zone, but did not go so far as to state it would prevent timely delivery.	At **Table 2-1 of the Applicant's Response to Relevant Representations (AS-043)** the East Zone does have a green score for Optioneering Principle 5, which does most closely align with the first Project Objective. There would generally be good ease of required connections between this location and the Riverside Campus (with the exception of Flue Gas Ductwork from Riverside 2). It would also avoid or minimise adverse impact to protected species (OP2). The Applicant does have concerns about the permanent effects that would likely impact FP4 if the Carbon Capture Facility were to be developed at the East Zone (as set out at **Appendix D to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)**. However, and as is explained in that Appendix, this is not the only concern with this location, which are discussed further in response to the SCNR's analysis. East Zones 1-3 are scored red for OP5 because they are different land plots with a different outcome for this Optioneering Principle. East Zones 1-3 are located further south and east of East Zone, requiring an extended length of Flue Gas Ductwork and for it to negotiate the public highway (Norman Road) and other buildings. The Applicant disagrees. There is no site option within the Belvedere Industrial Area that would provide a site option of 8ha and not have a substantial, direct, adverse impact on existing businesses and jobs. The Applicant disagrees. **Appendix E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** considers this in some detail, in addition to the TSAR and TSAR Addendum. The existing businesses in the East Zone are, as described in the **TSAR (APP-125) and TSAR Addendum (AS-044)** as being of a greater scale and complexity than those within South Zone 1. The proportionate assessment undertaken in the terrestrial site assessment process has been appropriate to identify those differences, underpinning the red score ascribed to OP3 for East Zone in T**ables 2-1 and 2-3 of the Applicant's Response to Relevant Representations (APP-043).** Table 2-1 (and repeated at Table 2-3) has an amber score for OP6 for the East Zone; however as identified above the assessment focusses only on the site and warehouse occupied by Iron Mountain. This misses out consideration of the plot occupied by Lidl, and the likelihood of all that newly constructed warehouse and regional distribution centre requiring demolition. All of the East Zone land parcels have operational buildings located on them that utilise a substantial area of the plots. Those buildings, and potentially their foundations, would need to be demolished prior to construction of the Proposed Scheme being able to

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		commence. Conversely, construction would be able to begin at the northern end of South Zone 1 immediately; the premises occupied by Munster Joinery could be demolished whilst those construction works are underway, thereby enabling the operating plant of the Proposed Scheme to be delivered early in the project.
Analysis of Policy Requirements in East Zone - Planning Designations and Loss of Land		
REP1-047	142. As set out above, there are strong policy protections against the loss of LNR, MOL, SINC and open space / green infrastructure, including (but not limited to) the mitigation hierarchy. While South Zone 1 results in the substantial loss of such land, development in the East Zone would either entirely prevent (or at least significantly reduce) this harm.	The Applicant recognises the policy protection given to these designations in NPS EN-1, the Bexley Local Plan and the London Plan and National Policy Statements; not least they are considered in some detail at **Section 3.2 and 3.3** of the **Planning Statement (APP-040)**. South Zone 1 results in the loss of 2.5ha of land designated as MOL, SINC and LNR. This is the least area affected across all of the South Zones. It is agreed that development in the East Zone would reduce this harm and it is consequently scored green at **Table 2-1 of the Applicant's Response to Relevant Representations (AS-043).**
REP1-047	143. At paragraph 2.3.17 of the Response to Relevant Representations, the Applicant alleges that development in the East Zone "would still impact upon the MOL as the Flue Gas Ductwork from Riverside 2 would need to be located on the western and southern boundaries of the Riverside Campus". The Applicant repeated this assertion during OFH, suggesting there "simply isn't room within the campus". However, this is in direct contradiction with Table 3-2 of the TSAR, which states that, for East Zone development, "Flue gas ducting would predominantly be within the Applicant's Riverside 1/Riverside 2 site. The route would require crossing a small section of third-party land (Aviva) between the Applicant's Riverside 1 site and Eastern Zone, and FP4". The Applicant has not explained or properly evidence this change in position.	The text quoted by SCNR appears in the first bullet under OP5 in Table 3-2. It is an error. The correct description of the Flue Gas Ductwork to the East Zone is given in the following bullets: • *Routing of flue gas ducting would be constrained – for Riverside 2, it must run either in the Northern section of the Applicant's Riverside 1 site where there is a slope between the Site ground level and England Coast Path ground level, or around the Western and Southern boundary of the Riverside 1/ Riverside 2 sites, which has the drawback of being one of the longest ducting routes from Riverside 2 of around 630m.* • *Any route would require crossing FP4 running between the eastern boundary of Riverside 1/Riverside 2 site and the Iron Mountain facility.* • *The estimated length of the flue gas ducting from Riverside 2 is a minimum distance of 470m.* The Applicant's position is defined throughout the **TSAR (Documents Reference APP-125), Responses to Relevant Representations (AS-043)** and ISH1 remains consistent.
REP1-047	144. It is accepted that development in the East Zone would impact FP4, by requiring creation of a vehicular crossing across it and the installation of piping overhead, including temporary stopping up during construction. As open space / green infrastructure, impact on FP4 should be mitigated, and we note the particular reference to public rights of way being "important recreational facilities" at paragraph 5.11.30 of EN-1. However, any actual loss of the footpath would be temporary, and the only long-term impact would be to visual amenity. The remark made on behalf of the Applicant at OFH, that it is "likely that the footpath would have to be lost", appears to be completely unfounded, and contradicts the position in the Applicant's own TSAR and Response to Relevant	The Applicant disagrees and considers there would be a permanent impact on FP4 if the Carbon Capture Facility were to be developed at the East Zone (as set out at **Appendix D to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)**. However, and as is explained in that Appendix, this is not the only concern with this location, which are discussed further in response to the SCNR's analysis. The Applicant has undertaken a proportionate and balanced approach across all the matters relevant to site selection for the Proposed Scheme. The important designations

Doc ref	Summary of issue raised	Applicant's response
	Representations. It would be irrational and contrary to policy requirements to place this relatively minor impact on FP4 above the much greater impact to Crossness Nature Reserve, which has much stronger policy designations (LNR, MOL and SINC). This is particularly true when a great many of the users of the footpath would be using it in order to enjoy Crossness Nature Reserve. Any effort by the Applicant to focus on the accessibility of FP4 (and lack thereof of the parts of Crossness Nature Reserve being lost) does not reflect the policy position, for the reasons detailed in previous sections.	of MOL, SINC and LNR are appropriate considered within the Application documents and the SCNR's specific comments have been addressed within this response.
REP1-047	145. A further consideration is that the East Zone is designated as a Strategic Industrial Location (SIL). The Bexley Local Plan confirms that, following a review of Bexley's industrial land, SILs "will be intensified where possible to optimise the use of this land for appropriate business uses, including waste facilities". Policy DP25(2) states SILs "are appropriate locations for new waste management facilities". Therefore, development in the East Zone better conforms to this policy position than South Zone 1. The Applicant claims that its site selection "sought to maximise use of land within the SIL allocation and minimise loss of land within designations such as MOL, Erith Marshes SINC and Crossness LNR", however, the evidence adduced by the Applicant does not support this assertion.	The Applicant agrees the Belvedere Industrial Area is allocated as SIL. This is the same policy allocation as most of the land proposed for the built form of Carbon Capture Facility that (unlike Belvedere Industrial Area) is, apart from Munster Joinery/Landsul, unused except for supporting other Cory projects on a temporary basis. As agreed with SCNR in its **SoCG (REP1-018)**, some 70% of the land used by the Carbon Capture Facility is allocated as SIL and is policy compliant. Developing land in the Belvedere Industrial Area would likely use a larger percentage of SIL; however, there is no site option within the Belvedere Industrial Area that would provide a site option of 8ha and not have a substantial, direct, adverse impact on existing businesses and jobs. This would be at the detriment of existing, operational businesses that are in accordance with local SIL policy. Further, as set in **Appendix E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** all of the East Zone land parcels have operational buildings located on them that utilise a substantial area of the plots. Those buildings, and potentially their foundations, would need to be demolished prior to construction of the Proposed Scheme being able to commence. Conversely, construction would be able to begin at the northern end of South Zone 1 immediately; the premises occupied by Munster Joinery could be demolished whilst those construction works are underway, thereby enabling the operating plant of the Proposed Scheme to be delivered early in the project. The Proposed Scheme provides the opportunity to develop SIL for critical national priority infrastructure and to build out the allocated land as a single, cohesive development underpinned by the **Design Principles and Design Code (AS-020).**
Analysis of policy requirements in East Zone - Biodiversity		
REP1-047	146. Similarly, development in the East Zone would avoid (or significantly reduce) the 3.5 ha loss of habitat and impact on protected and other important species that result from development on South Zone 1. As listed above, there are strong policy requirements in relation to the protection of biodiversity, including (but not limited to) the mitigation hierarchy.	There is not loss of 3.5ha of habitat – the Carbon Capture Facility would result in the loss of 2.5ha; the Flue Gas Ductwork would compromise an additional 1ha, but it would not be lost. Notwithstanding that correction, the Applicant agrees that development in the East Zone would negate the loss of any habitat in the Crossness LNR, albeit '*may result in direct impacts or loss of a ditch within the Belvedere Dyke SINC'* as noted in Table 3-2 of the

Doc ref	Summary of issue raised	Applicant's response
	147. At paragraph 3.3.2 of the TSAR, the Applicant notes a "potential for impact on the Belvedere Dykes (SINC)", but no further evidence is provided on this point, and the Applicant accepts "it could be possible to mitigate this to an acceptable level".	**TSAR (Document Reference APP-125).** This is because it would likely need to be crossed by pipework or ductwork. The Applicant recognises, and responds, to the policy relevant to Erith Marshes SINC and Crossness LNR. This has informed development of the proposals for the Mitigation and Enhancement Area presented within the Outline LaBARDS and which include extending the LNR designation to include Norman Road Field, which would result in a net increase of land managed as LNR. At the site assessment phase there is no need to consider this fact in more detail; a proportionate assessment has been undertaken.
Analysis of Policy Requirements in East Zone - Socio-economic impacts		
REP1-047	148. Paragraphs 2.3.15-16 of the Response to Relevant Representations reference the potential additional socio-economic impacts caused by development in the East Zone, compared to South Zone 1, in terms of the potential disruption to Iron Mountain and ASDA (in terms of logistics, end users and potentially jobs). 149. EN-1 acknowledges the potential socio-economic effects (both positive and negative) and encourages the Secretary of State to consider mitigation measures for any adverse impacts (see paragraph 5.13.8). However, the increased impact (when compared against the similar impacts caused to Landsul and Munster Joinery under South Zone 1) seem to be relatively small, and in any event this policy wording is less strongly worded than those set out above. Accordingly, these socio-economic impacts should be given less weight in the balancing exercise. The Applicant's focus on this impact is overstated, and also lacks evidence.	**Appendix E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** responds to the Examining Authority's questions on this matter and demonstrates that the worst case effect of losing jobs at Munster Joinery is less than the effect on existing businesses in the East Zones. As explained, not least at **in row 9 of table 2-9-5,** the Applicant has not applied any weighting to the Optioneering Principles; not least to avoid any value judgement to be placed on any of them in the assessment. It is an appropriate and the proportional approach to ensure that a balanced conclusion can be drawn.
Analysis of Policy Requirements in East Zone - Cost to Applicant		
REP1-047	150. There is no general policy under EN-1 that allows for the costs of delivery to be taken into account when considering alternative proposals / sites. However, paragraph 4.3.27 states that "alternative proposals which mean the necessary development could not proceed, for example because the alternative proposals are not commercially viable… can be excluded on the grounds that they are not important and relevant to the Secretary of State's decision". 151. Therefore, any additional cost of delivery in the East Zone cannot be taken into account unless the Applicant is arguing that those additional costs would render delivery not commercially viable, which they have not argued to date. Any such assessment would also have to factor in the costs of delivery on South Zone 1 which do not arise under delivery in the East Zone (for example, the costs of ecological enhancement and additional biodiversity net gain delivery, and the costs associated with acquisition of Landsul and Muster Joinery's land).	Optioneering Principle 6 is to seek to minimise engineering complexity and consequent cost in the context of the overall Project Principles and Project Objectives. In addition to the **TSAR (APP-125)** and the **TSAR Addendum (AS-043)**, **Appendix E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** responds to the Examining Authority's questions on this matter. Optioneering Principle 6 has been applied in the same manner across all the development zones considered.

Doc ref	Summary of issue raised	Applicant's response
Analysis of Policy Requirements in East Zone - Optioneering Principles		
REP1-047	153. Even if it were accepted that it were possible for the consideration of alternative sites to be guided by the OPs, a consistent and rigorous application of the OPs would result in the East Zone achieving a better score.	The Applicant considers it has undertaken a consistent and rigorous application of the Optioneering Principles, which demonstrates South Zone 1 is the only location that can deliver the Project Objectives. As is recognised at **paragraph 2.2.26 of the Applicant's Response to Relevant Representations**: '*All the zones indicate some level of challenge, demonstrating the need to take a balanced approach to achieve the Project Objectives. Critically, what Table 2-1 (a graphical presentation of the analysis presented in the TSAR (APP-125)) does show, is that South Zone 1, the area proposed for the CCF, has no red score, whilst all other zones do have, at least, one red (a fatal flaw).*'
REP1-047	154. In terms of OP 1 (avoid or minimise adverse impact to locally important biodiversity sites), given the extensive harm set out above, South Zone 1 should be considered 'red'. The East Zone should be considered 'green' as it results in very little impact to important biodiversity sites – to the extent there would be impact on the Belvedere Dykes (SINC), or concerns around noise, air quality, or toxic run-off were considered high, East Zone 1 might be considered 'amber'.	East Zone is not scored green for OP1 as it cannot avoid impact to locally important biodiversity sites, given, for example the presence of the Belvedere Dykes SINC. South Zone 1 is scored amber to reflect that it does minimise those impacts, though also cannot avoid them.
REP1-047	155. Similarly for OP 2 (avoid or minimise adverse impact to protected species), South Zone 1 should be considered 'red' and the East Zone should be considered 'green', or potentially 'amber'.	Within **Table 2-1 of the Applicant's Response to Relevant Represe**ntations (AS-043): East Zone is scored green for OP2, in line with the SCNR's expectations, reflecting that it is able to avoid impact on protected species South Zone 1 is scored amber reflecting that it does minimise adverse impact to protected species, though cannot avoid them.
REP1-047	156. For OP 3 (avoid or minimise the level of adverse impact on existing businesses/third party landowners), both sites should be considered 'amber', as both involve the full disruption and relocation of businesses. While it is accepted that the impact in the East Zone might be worse, the two harms are considered of a similar order. The Applicant has not provided sufficient evidence to explain how or why the impact existing businesses in the East Zone is a 'red' "fatal flaw" as they refer to it. Furthermore, they have not sufficiently explored whether a site in the East Zone (and parts of the North Zone) could not be accommodated such that only Iron Mountain's and Aviva's land was affected, avoiding impact on Asda or Lidl. In such a circumstance, the harm would be even closer to that under the South Zone 1 proposals and should firmly fall into the 'amber' category.	In addition to the **TSAR (APP-125)** and the **TSAR Addendum (AS-043)**, **Appendices B and E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** provides further information on the potential for adverse impacts on existing businesses/third party landowners. **Appendix D of the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** presented further information on why the East Zone is not an appropriate location for the Carbon Capture Facility. **Annex A** to that Appendix shows the Indicative Equipment Layout of the Carbon Capture Facility located on the land currently occupied by Iron Mountain, and Lidl. This Annex shows clearly that the Iron Mountain plot alone is not sufficient to accommodate the Carbon Capture Facility; it does not need further configurations to confirm that fact. Just considering the impact on jobs alone, the worst case scenario of losing the employment opportunities at Iron Mountain/Lid or Iron Mountain/ASDA (Iron Mountain plus additional land would be required to accommodate the Carbon Capture Facility) would mean the loss of several hundred jobs. The loss of employment opportunities at Munster Joinery is limited to less than 60 (as a maximum). There is a very much greater

Doc ref	Summary of issue raised	Applicant's response
		impact of displacing existing operational businesses located at the Belvedere Industrial Area than there would be from the displacement of Munster Joinery.
REP1-047	157. For OP 4 (avoid or minimise land take within the MOL, Accessible Open Land, and impact on PRoW), we'd first note the skewed language here: it considers the broad notion of 'impact' to PRoW, while limiting considerations of MOL (a stronger policy designation) to 'land take' only. It also ignores the additional designations of LNR, SINC and open space / green infrastructure. We also note the inappropriate reliance on the made-up notion of Accessible Open Land. However, even on the Applicant's formulation, the extensive land take on MOL greatly outweighs the limited impact on FP4 (being temporary stopping up and amenity impact from traffic / pipes overhead). Therefore, South Zone 1 should be considered 'red' and the East Zone should be considered 'green' or potentially just into 'amber'.	There is no skewed approach; it is simply that land take is not readily applicable to a narrow linear feature such as PROW. The policy relevant to MOL has been comprehensively addressed, not least at **section 5 of the Planning Statement (APP-040)**. The Applicant disagrees that LNR, SINC and open space/green infrastructure have been ignored. LNR and SINC is considered under OP1 (and to some extent OP2). Open space is considered under OP4 whilst green infrastructure could be considered under either OP1 or 4 depending on which element of green infrastructure is being focussed upon. South Zone 1 is scored amber for OP4 to reflect that it minimises land take within MOL, avoids Accessible Open Land and minimises impact on PROW, alongside an ability to improve provision. East Zone is scored amber to reflect that it avoids MOL and Accessible Open Land (but would affect the Urban Open Space designation between Iron Mountain and Lidl land plots) and would have an adverse (and not readily mitigated) impact on the England Coast Path and FP4.
REP1-047	158. For OP 5 (ease of connection with the Riverside Campus and Proposed Jetty), both sites should be considered 'green'. As per the analysis of the first Project Objective above, there are no apparent issues or added costs to connectivity to the north-western part of the East Site. Any added technical complexity to run ductwork over FP4 appears to be minor, by the Applicant's own admission. Any impact to amenity of FP4 is not directly related to OP 5.	Both sites are scored green in **Table 2-1 of the Applicant's Response to Relevant Representations**, although, as is noted above, and in the TSAR **(APP-125)** routing the Flue Gas Ductwork from Riverside 2 to the East Zone would be technically challenging. The Applicant agrees that impact to the amenity of FP4 is not directly relevant to OP5. The Applicant does have concerns about the permanent effects that would likely impact FP4 if the Carbon Capture Facility were to be developed at the East Zone (as set out at **Appendix D to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)**. However, and as is explained in that Appendix, this is not the only concern with this location, which are discussed further above in responses to the SCNR's analysis.
REP1-047	159. For OP 6 (minimise engineering complexity and consequent cost), while we accept there would be added complexity and cost to deliver on the East Zone (in terms of acquiring the land and then deconstructing current buildings), these are not excessive (the Applicant's considers them 'amber'. Once the complexities and costs of delivering biodiversity enhancement and acquisition of Landsul and Munster Joinery land are factored in, we believe South Zone 1 should also be considered 'amber',but accept it might be considered 'green' – reflecting our belief that the Applicant's main driver for South Zone 1 is cost savings.	**Appendix E to the Written Summary of the Applicant's Oral Submission at ISH1 (REP1-025)** considers OP6 in further detail, in addition to the TSAR and TSAR Addendum. However, it is acknowledged that the SCNR agrees with the scores presented at **Table 2-1 of the Applicant's Response to Relevant Representations (AS-043)**. The Applicant confirms that the Applicant's selection of South Zone 1 for the Carbon Capture Facility is not cost savings. It is the only site demonstrated to deliver the Project Objectives.

Appendices

APPENDIX A - COASTAL PROCESSES MODELLING TECHNICAL NOTE

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DECARBONISATION

QUALITY CONTROL

Document Reference					
Document Owner		Cory Environmental Holdings Limited			
Revision	**Date**	**Comments**	**Author**	**Check**	**Approver**
Revision A	December 2024	-	EN	SH	JW

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FIGURE

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1. INTRODUCTION

1.1.1. This Appendix describes a review and revised analysis of the coastal modelling study carried out in December 2023 to support **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)**. This review considers comments received from the Environment Agency regarding sedimentation at the Great Breach Pumping Station Outfall (referred to in this Appendix as 'the Great Breach Outfall').

2. ENVIRONMENT AGENCY COMMENTS

2.1.1. Comments received from the Environment Agency on 30th October 2024 are included and responded to in **Table 2.1**.

2.1.2. The following sections of this Appendix provide detail on the revised modelling and analysis undertaken in response to the comments received.

Table 2.1 - Environment Agency Comments Summary

Environment Agency Comment	WSP Response
"Based purely on currents, it can be seen that when the old Belvedere jetty and the new jetty are in place together, bed shear stresses outside the Great Breach outfall are slowed on the flood tide but not on the ebb tide, thereby resulting in no gain in deposited sediment (what is deposited on the flood tide is reversed on the ebb tide). With the Belvedere jetty gone, the bed shear stresses are apparently slowed on both the flood tide and the ebb tide so more sedimentation occurs. However, less structures does not explain a slowing of currents so far west, even when considered in the context of the reversal of contraction scour and differences between the flood and ebb tides (including velocities being faster on different sides of the estuary due to the impact of the Coriolis force)."	A flow anomaly was observed in the original hydrodynamic model. This is only present in the post-development with Belvedere Power Station Jetty (disused) removed scenario. Further details of this are included in **Section 3** of this Appendix. To address this anomaly the model was rerun in November 2024 using a higher order solution technique. Further details of this are included in **Section 5** of this Appendix.
"In the meeting, you gave reasoning for less sedimentation occurring outside the Great Breach outfall with the Belvedere jetty and new jetty in place together based on sediment quantities (flux) and deprivation of this sediment to the upstream. *However, we don't think these models work to that level of complexity: They simply convert velocities/shear stress to sediment deposition/erosion based on*	The Danish Hydraulic Institute (DHI) MIKE21 Hydrodynamic and Mud Transport models were used to assess erosion, transportation and sedimentation across the model domain. These models account for suspension induced by currents, transportation and deposition of sediment The existing bed sediment was defined as 'Soft Mud'. This is mobilised and deposited within the model based on

Environment Agency Comment	WSP Response
the Hjustrom diagram. They don't take flux into account. We also believe that there is so much sediment in suspension in the Tidal Thames here that sediment deficit could not occur."	critical/ threshold velocities/ shear stresses. In addition, suspended sediment is also transported within the model where the threshold velocity for suspension is exceeded by the modelled current speeds. Background suspended sediment concentrations were input into the model as constant boundary conditions at the upstream and downstream ends of the domain. Therefore, sediment flux (i.e. sediment input into the system) is accounted for by the background suspended sediment concentration at the boundaries and mobilised bed sediments across the domain. See **Section 4** and **Table 4.1** of this Appendix for details.
"A more detailed explanation of sediment modelling, with sediment flux information."	
"How and where you believe sediment deficit could limit sediment transport in this high suspended sediment environment?"	Previously, a sediment deficit (i.e. a reduction in suspended sediment present due to a loss of flow caused by blockages from structures) was proposed as a potential cause of the differences in accretion seen between the two post-development scenarios (with the Belvedere Power Station Jetty (disused) removed and retained). It has subsequently been identified that the transport of suspended sediment (particularly around the Great Breach Outfall) was being affected by the flow anomaly identified in the post-development with Belvedere Power Station Jetty (disused) removed scenario (described above). This has been addressed in the revised model described in **Section 5** of this Appendix.

Environment Agency Comment	WSP Response
"More detail on the sediment mobilisation threshold velocity and how this changes from in-situ bed material to freshly deposited sediment, including hand calculations and a step-by-step explanation for two locations, starting with the material properties and the peak water velocities locally, to show that the model is producing sensible results at two locations. 1) between the old Belvedere jetty and the proposed new jetty, and 2) close to the Great Breach pumping station outfalls. That would need to be for the different scenarios."	See response to above comments. The DHI recommended value for sediment mobilisation associated with 'Mobile fluid mud' / 'Partially consolidated mud' was used in the model, see **Table 4.1** below for details. A hand calculation check is included in the **Section 6** of this Appendix.

3. DECEMBER 2023 MODEL REVIEW

3.1. HYDRODYNAMIC MODEL FLOW ANOMALY

3.1.1. While reviewing the December 2023 coastal modelling to respond to the Environment Agency's comments, , a flow anomaly was observed in hydrodynamic model. This was only present in the post-development with Belvedere Power Station Jetty (disused) removed scenario.

3.1.2. The location of the anomaly is circled in the current speed plot shown in **Figure 3.1**. **Figure 3.2** shows the development scenario with the Belvedere Power Station Jetty (disused) retained for comparison.

Figure 3.1 - Current Speed and Direction at Peak Spring Flood Tide Showing Flow Anomaly, Belvedere Power Station Jetty (disused) Removed Scenario

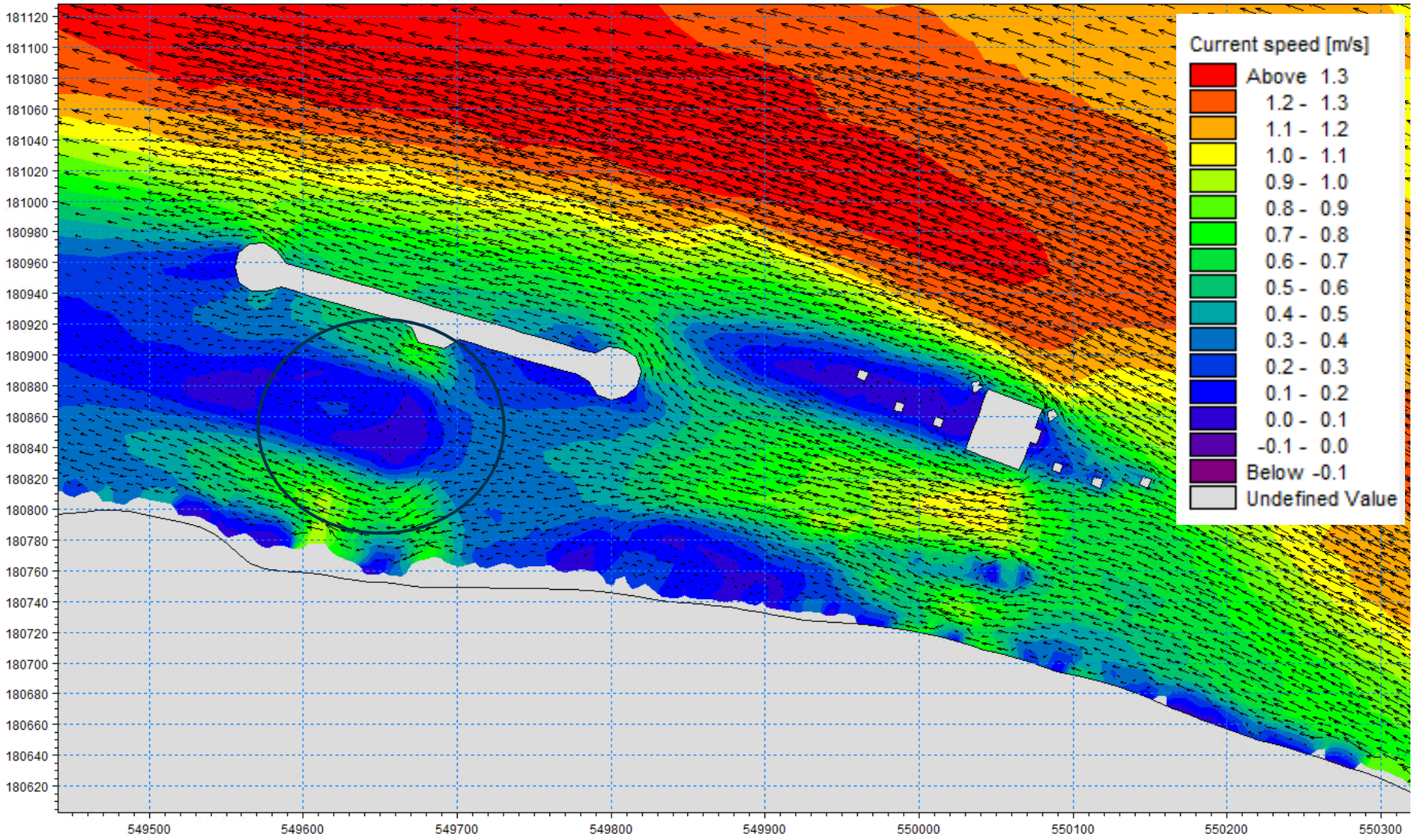
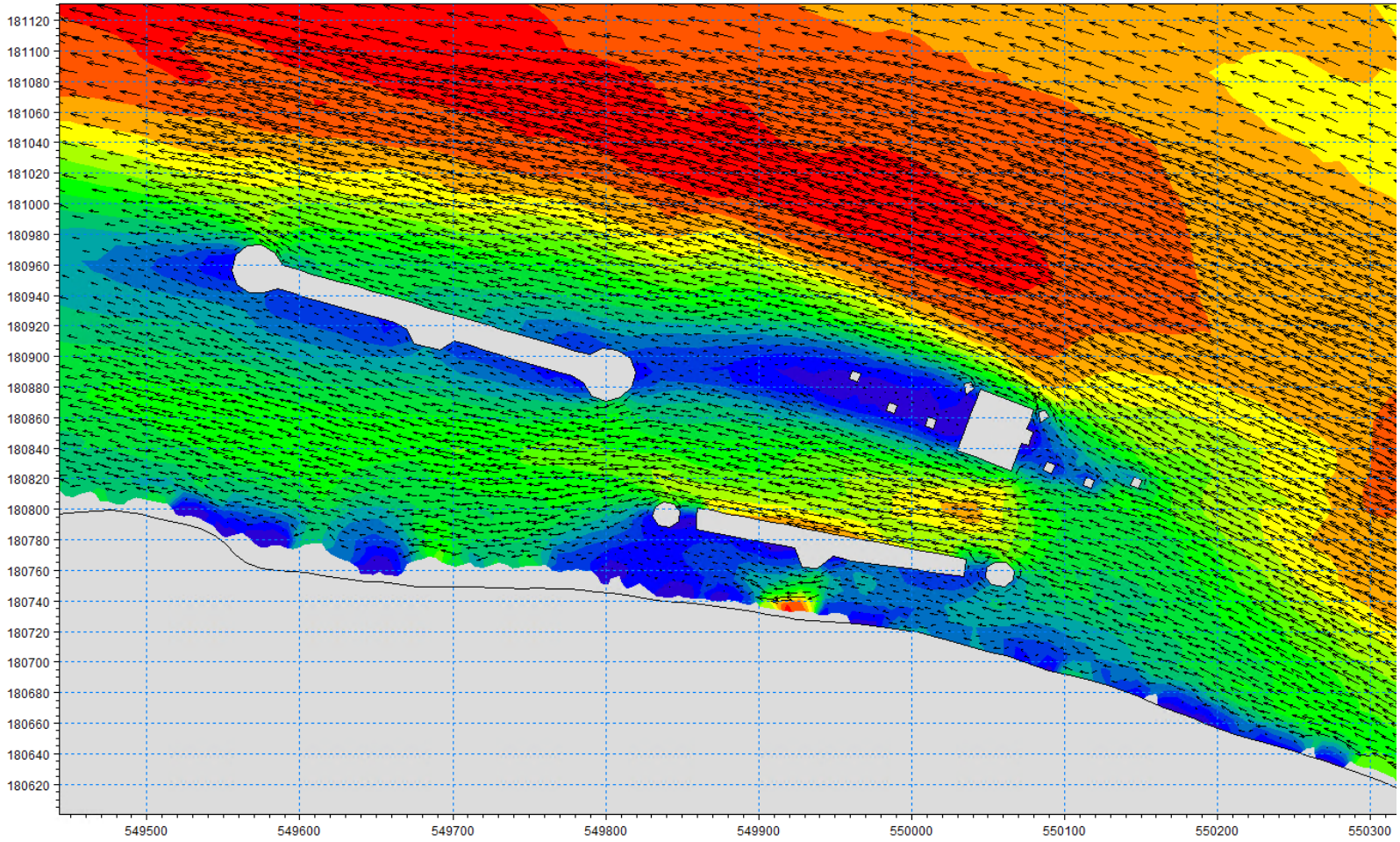


Figure 3.2 - Current Speed and Direction at Peak Spring Flood Tide Showing No Flow Anomaly Belvedere Power Station Jetty (disused) Retained Scenario



4. DECEMBER 2023 MUD TRANSPORT MODEL

4.1.1. The coastal modelling carried out in December 2023 considered two development scenarios, the retention and the removal of the Belvedere Power Station Jetty (disused). These are scenarios 3 and 4 presented in **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)**. A summary of the Mud Transport model set up parameters is included in **Table 4.1**.

Table 4.1 - Mud Transport Model Parameters Summary

Parameter	Value
Settling Velocity Coefficient	0.003 m/s
Critical Shear Stress*	0.9 N/m^2
Erosion description	Soft mud
Bed Material Density**	300 kg/m^3
Upstream Boundary Suspended Sediment Concentration (flux)	0.005 kg/m^3
Downstream Boundary Suspended Sediment Concentration (flux)	0.01 kg/m^3

** Based on DHI recommended value for 'Mobile fluid mud'*

*** Based on DHI recommended value for 'Mobile fluid mud' / 'Partially consolidated mud'*

4.1.2. The Mud Transport model was coupled with the Hydrodynamic model to assess erosion and sedimentation across the model domain over a neap-spring tidal cycle. These coupled models account for current induced suspension, transportation and deposition of sediment.

4.1.3. The bed sediment was defined as 'Soft Mud'. This is mobilised and deposited within the model based on critical/ threshold velocities and shear stresses. In addition, sediment is transported within the model in suspension where the threshold velocity is exceeded by the modelled current speed. Background suspended sediment concentrations were input into the model as constant boundary conditions at the upstream and downstream ends of the domain.

4.1.4. The results showed variation between the two scenarios when comparing the pre- and post-development differences in bed shear stress (shown in **Figure 4.1** and **Figure 4.2**). The 0.1-0.2m increase in bed thickness (orange area circled in **Figure 4.2**) upstream of the Proposed Scheme is adjacent to the Great Breach Outfall. The Environment Agency raised concerns in their **Relevant Representation (RR-065)**

and a follow-up meeting (September 2024) regarding this potential increase in sedimentation at the location of the Great Breach Outfall.

4.1.5. However, due to the flow anomaly identified in the Hydrodynamic model for the Belvedere Power Station Jetty (disused) removed scenario, it was deemed necessary to back check the model files to ensure the hydrodynamic regime was adequately represented at the Great Breach Outfall location.

Figure 4.1 - Proposed Scheme with Belvedere Power Station Jetty (disused) Retained, Difference in Bed Thickness Between Baseline and Proposed Scenarios Over a Spring-Neap Cycle

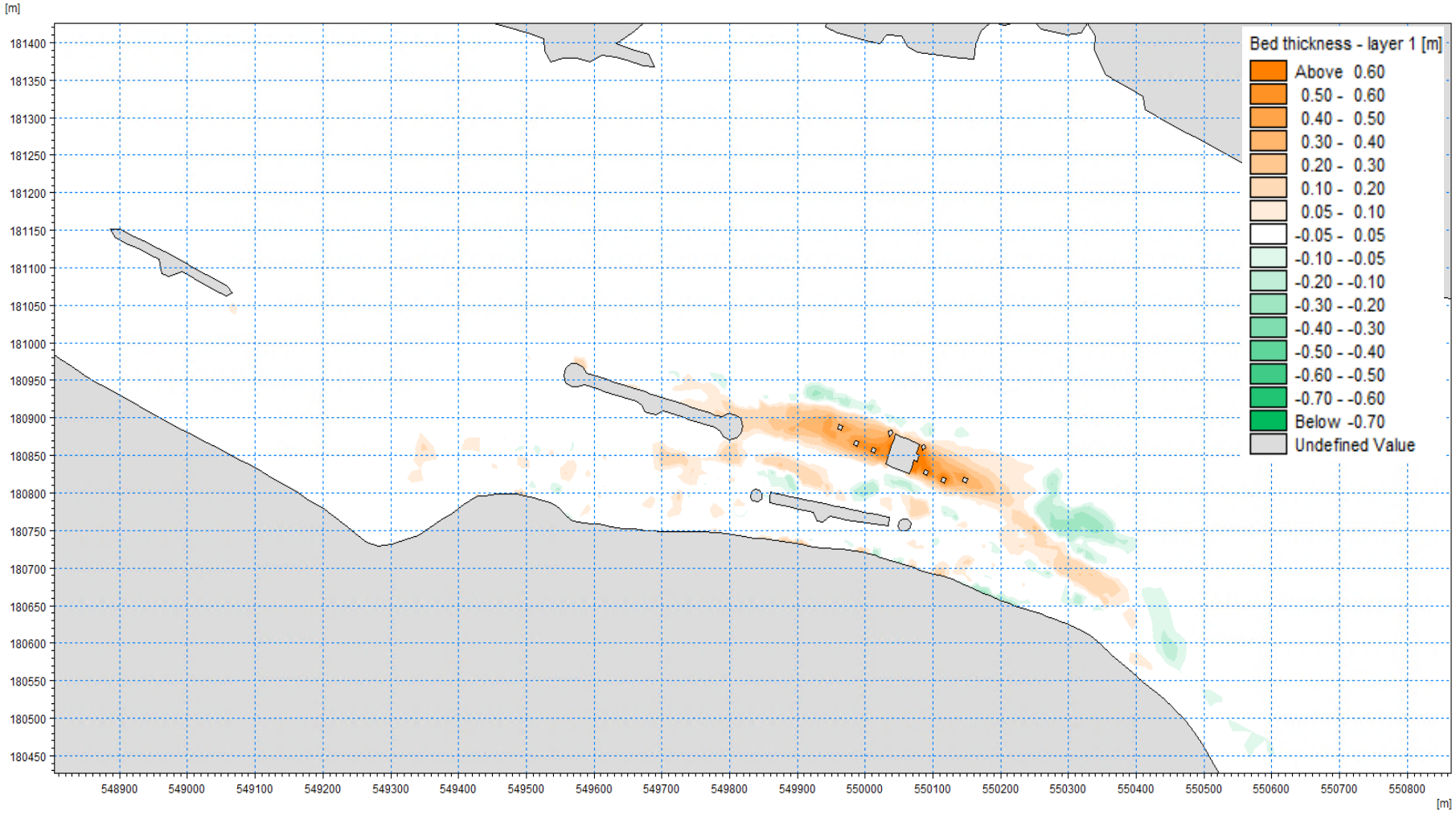
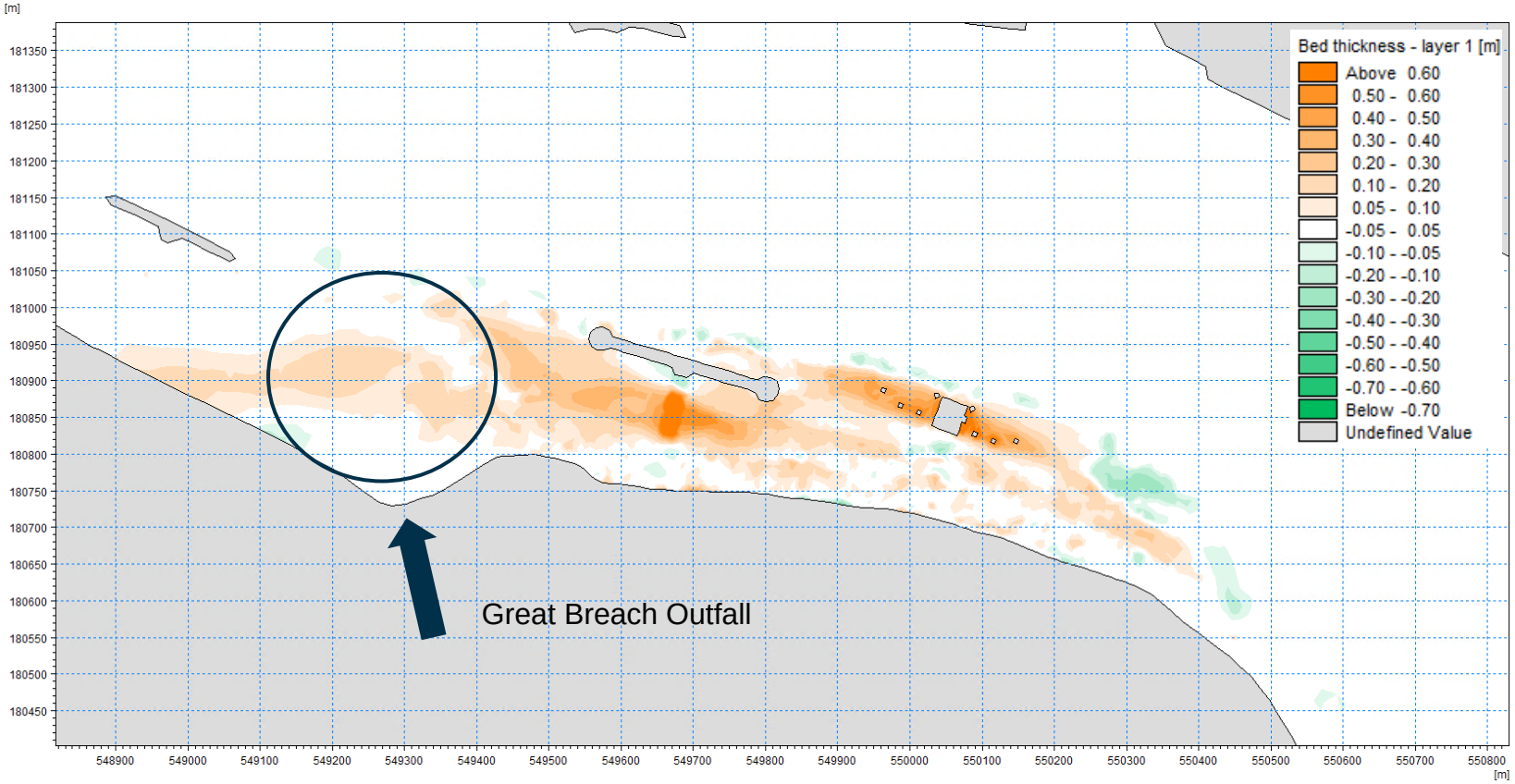


Figure 4.2 - Proposed Development with Belvedere Power Station Jetty (disused) Removed, Difference in Bed Thickness Between Baseline and Proposed Scenarios Over a Spring-Neap Cycle

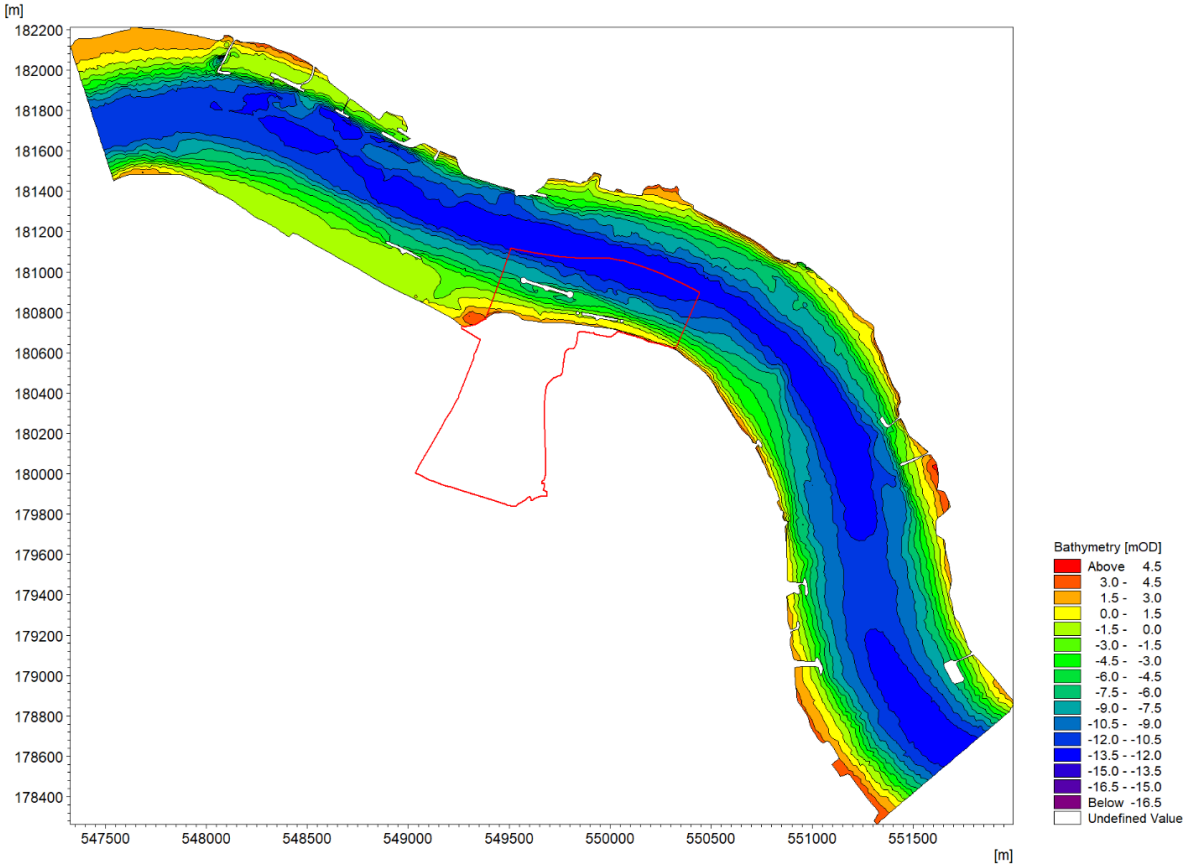


5. NOVEMBER 2024 UPDATES

5.1. HYDRODYNAMIC MODEL

5.1.1. Following the identification of the flow anomaly, a smaller domain model was developed which focussed on the Site of the Proposed Scheme – see **Figure 5.1**.

Figure 5.1 - Smaller Domain Extent



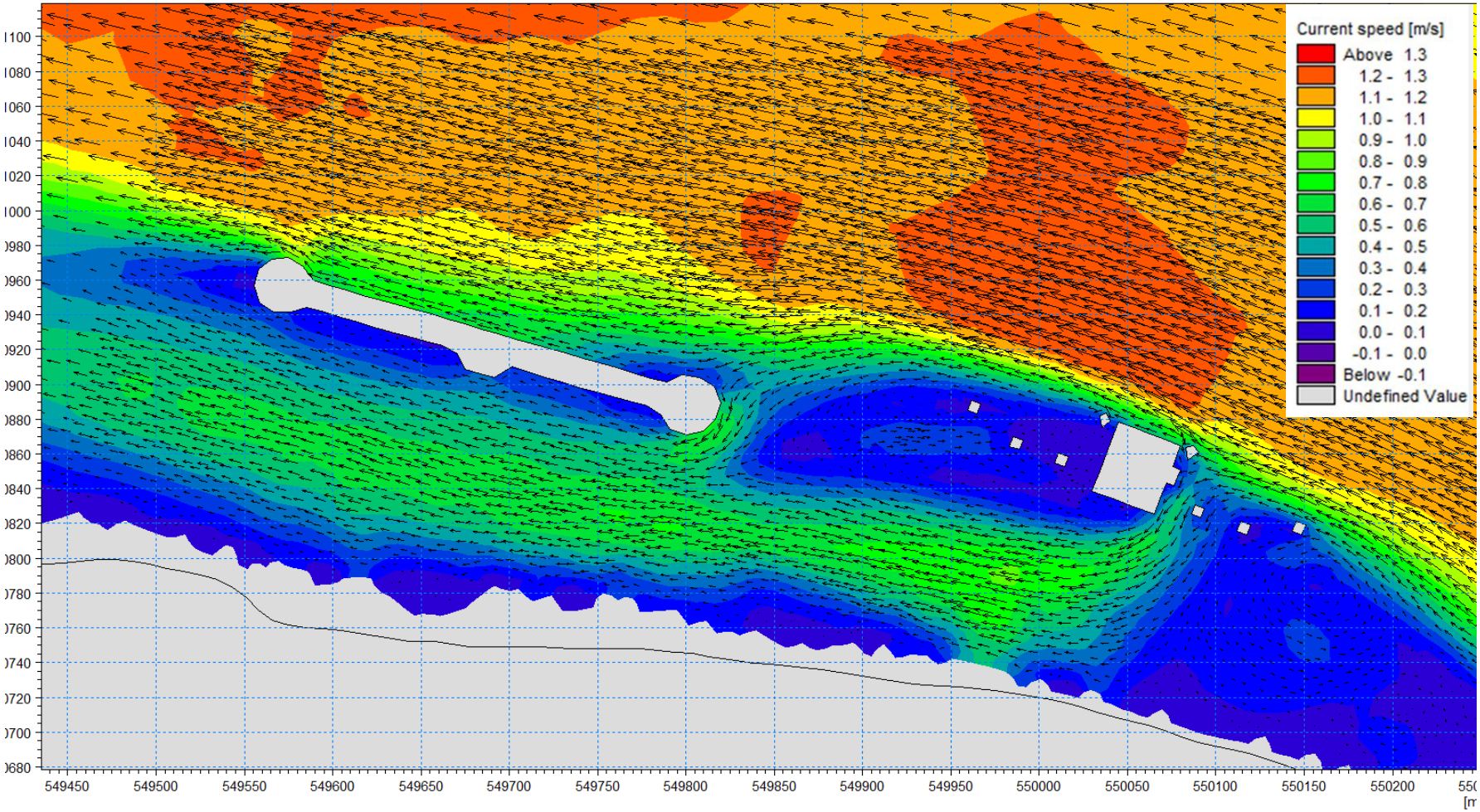
5.1.2. As part of the model back check, the development of a smaller model domain enabled the higher order solution techniques to be employed within the Hydrodynamic model to resolve the flow anomaly which impacted results at the Great Breach Outfall.

5.1.3. Back checks were undertaken to confirm that the higher order model results for the smaller domain extent were comparable to the previously reported results in **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)** for the wider model domain, discussed further in the following section of this Appendix.

5.1.4. The current speed results for the revised models do not show the flow anomaly present in either the Belvedere Power Station Jetty (disused) removed or retained development scenarios (shown in **Figure 5.2**). Therefore, the results presented in **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)** (commented on by Environment Agency), which include the

flow anomaly for the Belvedere Power Station Jetty (disused) removed scenario, are superseded by the outputs within the following sections of this Appendix.

Figure 5.2 - Current Speed at Peak Spring Flood Tide Showing No Flow Anomaly, Revised Post-Development Belvedere Power Station Jetty (disused) Removed Scenario



5.2. CALIBRATION

5.2.1. The revised higher order MIKE FM Hydrodynamic model was calibrated against surface water level and current velocity predictions taken from UKHO Admiralty TotalTide (ATT) at measurement location SN011I, approximately 0.5km upstream of the development (See **Figure 5.3**).

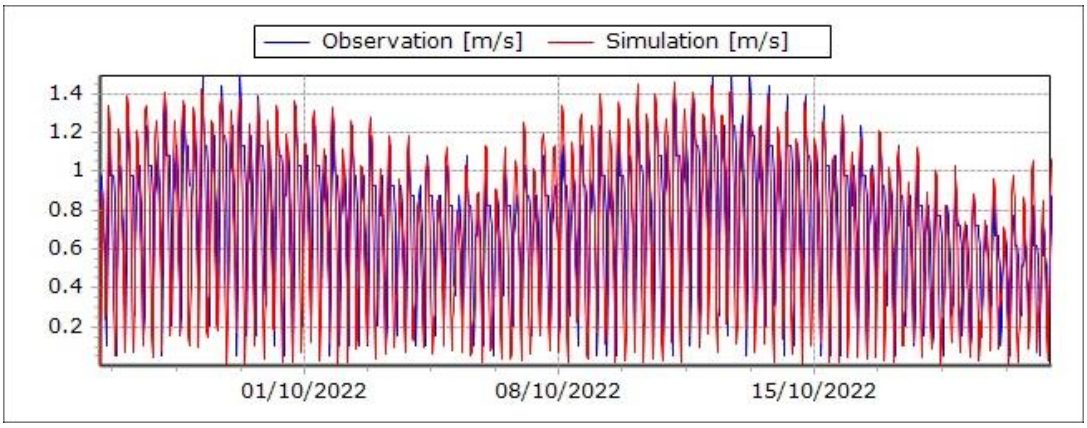
Figure 5.3 - Location of Calibration Data Sources

5.2.2. **Figure 5.4** shows a comparison of the calibration and model data for the current velocities at measurement location SN011I. The model shows a good level of agreement with the calibration data, with an average velocity difference of 0.08 m/s. The MIKE software was used to calculate an R^2 value of 0.76 (where a value of 1 indicates complete agreement between the two datasets).

5.2.3. The differences observed between the predicted tides from the Admiralty TotalTide software at measurement location SN011I maybe due to a variety of reasons including accuracy of the TotalTide data source and differences in bathymetry between model predictions. However, given the complexity in tidal currents within this reach of the River Thames and the fact that for large periods of time both model predictions provide a very close level of agreement, the outcomes from the model

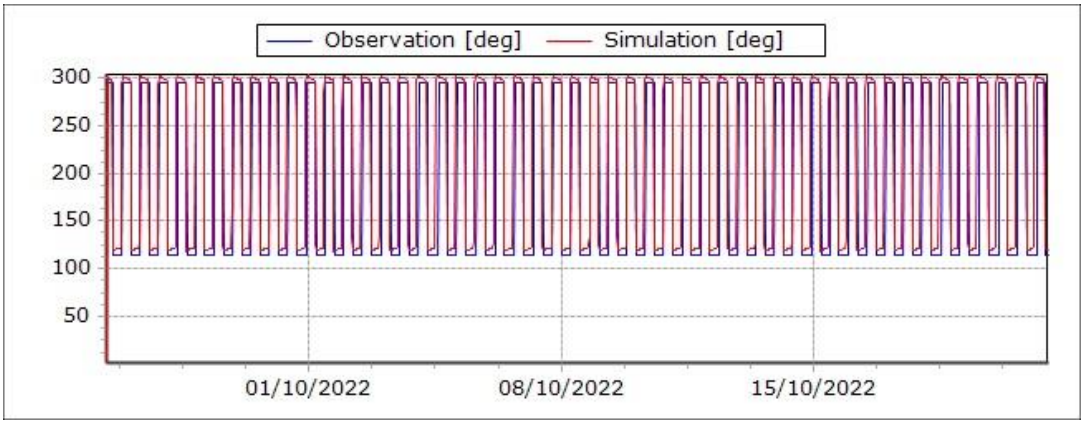
calibration is considered appropriate and within the Framework of Water Research, FR 0374 (1993) guidelines[1].

Figure 5.4 - Current Speed Calibration to ATT (SN011I) Over a Spring-Neap Cycle



5.2.4. **Figure 5.5** shows a comparison of the calibration and model data for the current direction at measurement location SN011I. The model shows a good level of agreement with the calibration data. Again, the MIKE software was used to calculate an R^2 value of 0.87 (where a value of 1 indicates complete agreement between the two datasets).

Figure 5.5 - Current Speed Calibration to ATT (SN011I) Over a Spring-Neap Cycle



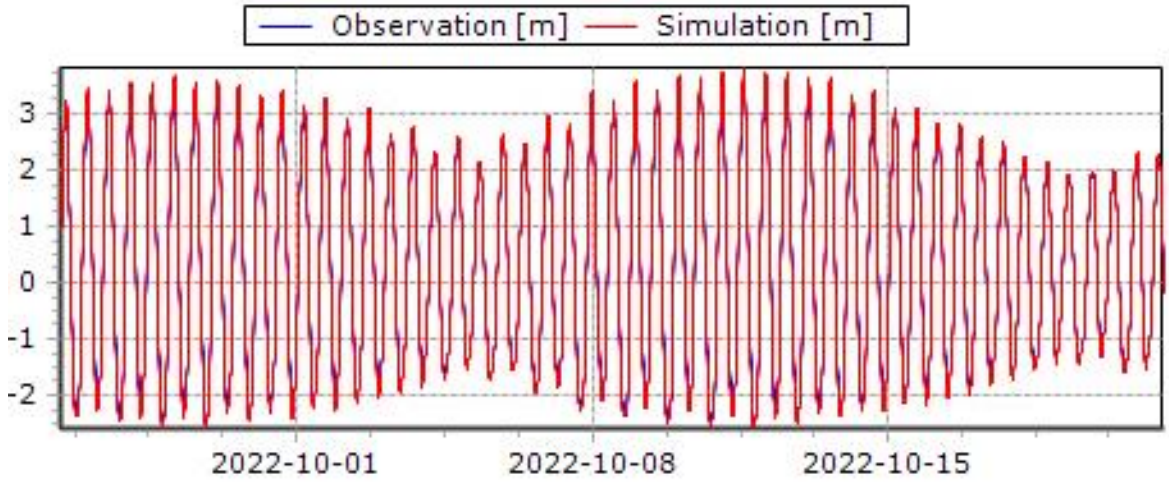
5.2.5. Further calibration against water levels from the existing larger domain baseline calibrated model were undertaken, since no measured/ predicted water level data was available within the smaller domain extent. A calibration point at approximately the same location as the ATT (SN011I) site was selected.

5.2.6. **Figure 5.6** shows a comparison of the calibration and model data for the surface water levels. The model shows an excellent level of agreement with the calibration

[1] Framework of Water Research. (1993). 'A Framework for Marine and Estuarine Model Specification in the UK'. Foundation for Water Research, Buckinghamshire.

data, with an average water level difference of 0.01m. The MIKE software was used to calculate an R^2 value of 1.0 (where a value of 1 indicates complete agreement between the two datasets).

Figure 5.6 - Water Level Comparison of the Higher Order Model against the Existing Calibrated Larger Domain Thames Model Over a Spring-Neap Cycle

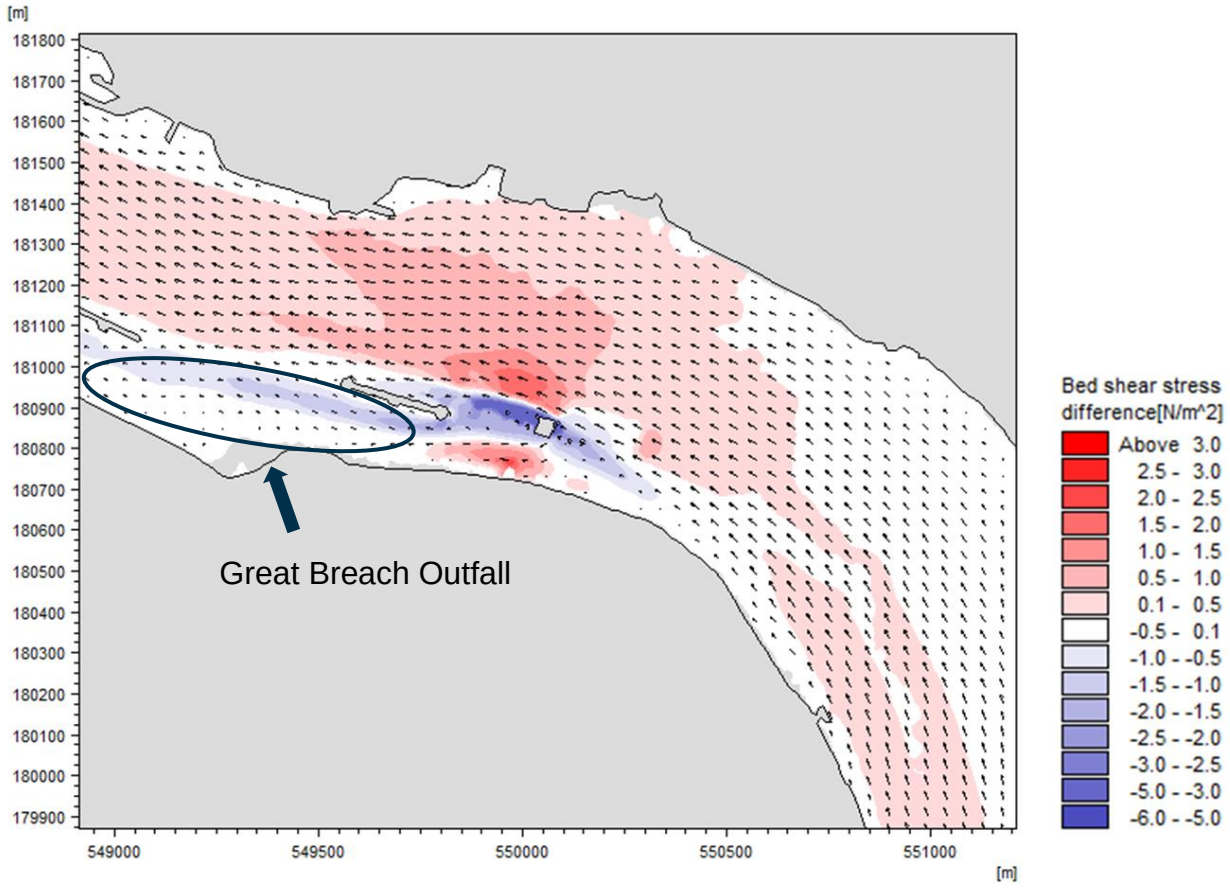


5.3. BED SHEAR STRESS PLOTS

5.3.1. **Figure 5.7** and **Figure 5.8** show post-development minus baseline bed shear stress difference plots, for the peak spring flood ebb tide timesteps respectively. **Figure 5.9** shows a difference plot of statistical maximum bed shear stress values for the post-development minus baseline run over a spring-neap tidal cycle.

5.3.2. Areas shaded in red highlight locations within the channel where bed shear stress values are higher with the Proposed Scheme in place, compared to the baseline. Blue shaded areas show locations within the channel where bed shear stress values are lower with the development in place. These are the areas where, if the difference in bed shear stress means that the threshold for deposition is crossed, accretion is more likely to occur.

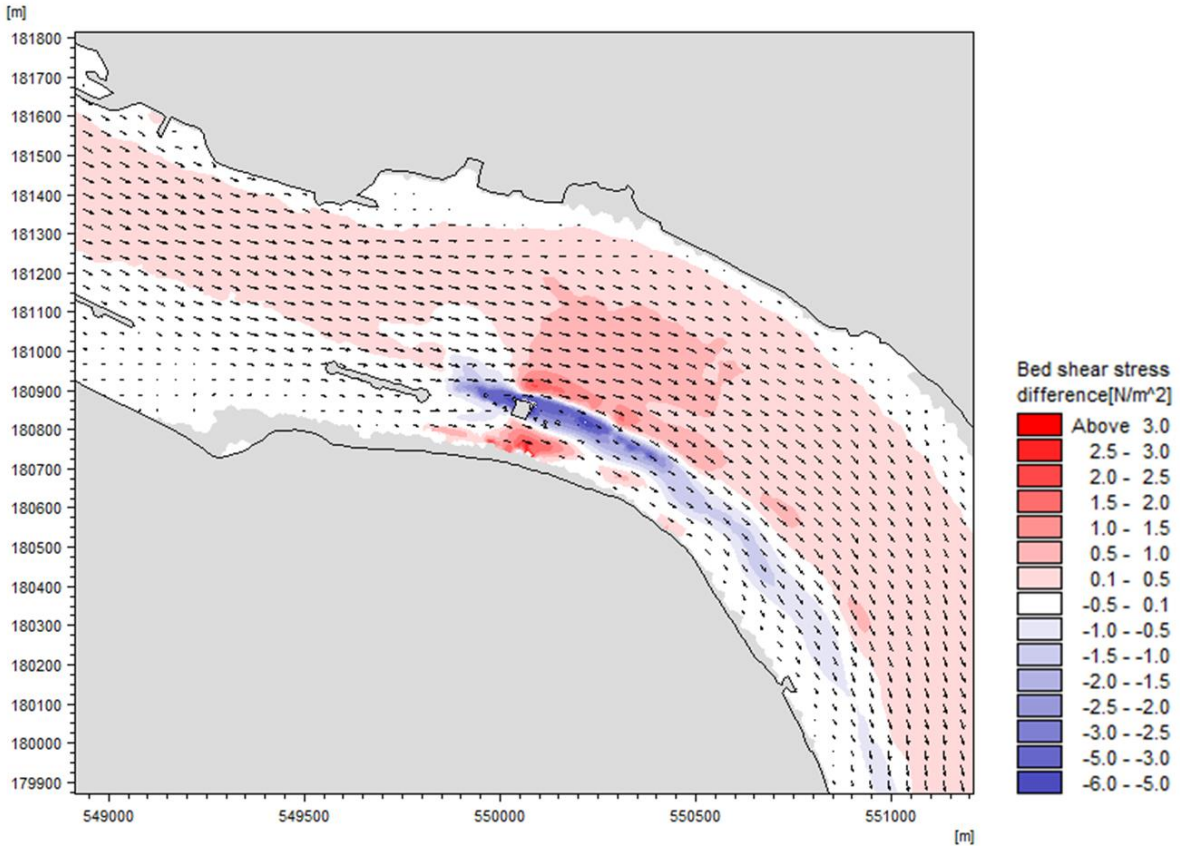
Figure 5.7 - Bed Shear Stress Proposed Post-Development Minus Baseline Difference Plot, Post-Development with Belvedere Power Station Jetty (disused) Removed at Peak Spring Flood Tide



5.3.3. **Figure 5.7** shows that on a flood tide there is an area of reduced bed shear stress towards the main channel from the Great Breach Outfall (circled in black). The magnitude of this difference is broadly consistent with the original reporting (in **Appendix 11-4: Coastal Modelling Studies (Volume 3))** of the bed shear stress differences for the scenario with the Belvedere Power Station Jetty (disused) retained (**Figure 3-13** of **Appendix 11-4: Coastal Modelling Studies (Volume 3)**).

5.3.4. The increase in shear stress between the bank and the Proposed Jetty is due to the removal of the Belvedere Power Station Jetty (disused) from the model – in the baseline scenario the bed shear stress is zero (no water in the location of the structure) so the difference between the proposed and baseline scenarios is equal to the magnitude of the bed shear stress in the proposed scenario without the Belvedere Power Station Jetty (disused).

Figure 5.8 - Bed Shear Stress Proposed Post-Development Minus Baseline Difference Plot, Post-Development with Belvedere Power Station Jetty (disused) Removed at Peak Spring Ebb Tide

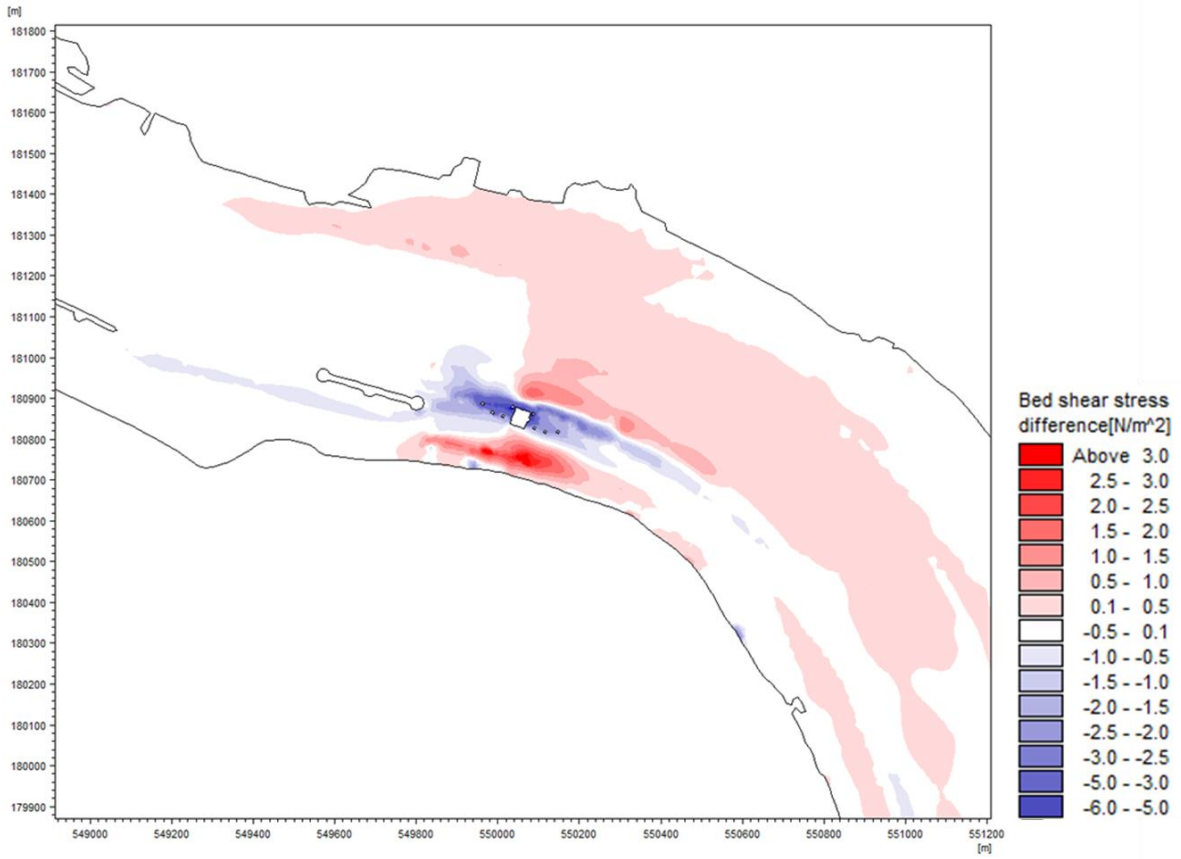


5.3.5. **Figure 5.8** shows that there is no reduction in bed shear stress at or around the Great Breach Outfall on an ebb tide. This is consistent with the reporting of the bed shear stress differences for the scenario with the Belvedere Power Station Jetty (disused) retained presented within **Figure 3-14** of **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)**.

5.3.6. As described above, the increase in shear stress between the bank and the Proposed Jetty is due to the removal of the Belvedere Power Station Jetty (disused) from the model.

5.3.7. **Figure 5.9** shows that there is a narrow area close to the Great Breach Outfall location where the maximum value of bed shear stress is lowered due to the Proposed Scheme (in the scenario where the Belvedere Power Station Jetty (disused) is removed). As described above, the magnitude of changes in this area at peak flood and ebb tides is comparable to the scenario where the Belvedere Power Station Jetty (disused) is retained, which means that the patterns of erosion and accretion will also be similar (i.e. no significant accretion observed at the Great Breach Outfall location over a spring-neap cycle). This is further justified by the time series analysis below.

Figure 5.9 - Bed Shear Stress Proposed Post-Development Minus Statistical Maximum Baseline Difference Plot, Post-Development with Belvedere Power Station Jetty (disused) Removed for Spring-Neap Tidal Cycle



5.4. TIME SERIES ANALYSIS

5.4.1. Time series results of bed shear stress were extracted from the modelled data at the Great Breach Outfall, Mid Channel and Between Jetties locations shown in **Figure 5.10**.

5.4.2. **Figure 5.11** shows a time series plot comparing bed shear stresses at the Great Breach Outfall (location shown in **Figure 5.10**) in the baseline and post-development with Belvedere Power Station Jetty (disused) removed scenarios over a period of eight tides. This shows that the bed shear stresses are comparable between the two scenarios. The timeseries is not continuous due to the intertidal location, shear stresses only occur when the modelled elements in the area are wet.

Figure 5.10 - Locations of Time Series Analysis Points

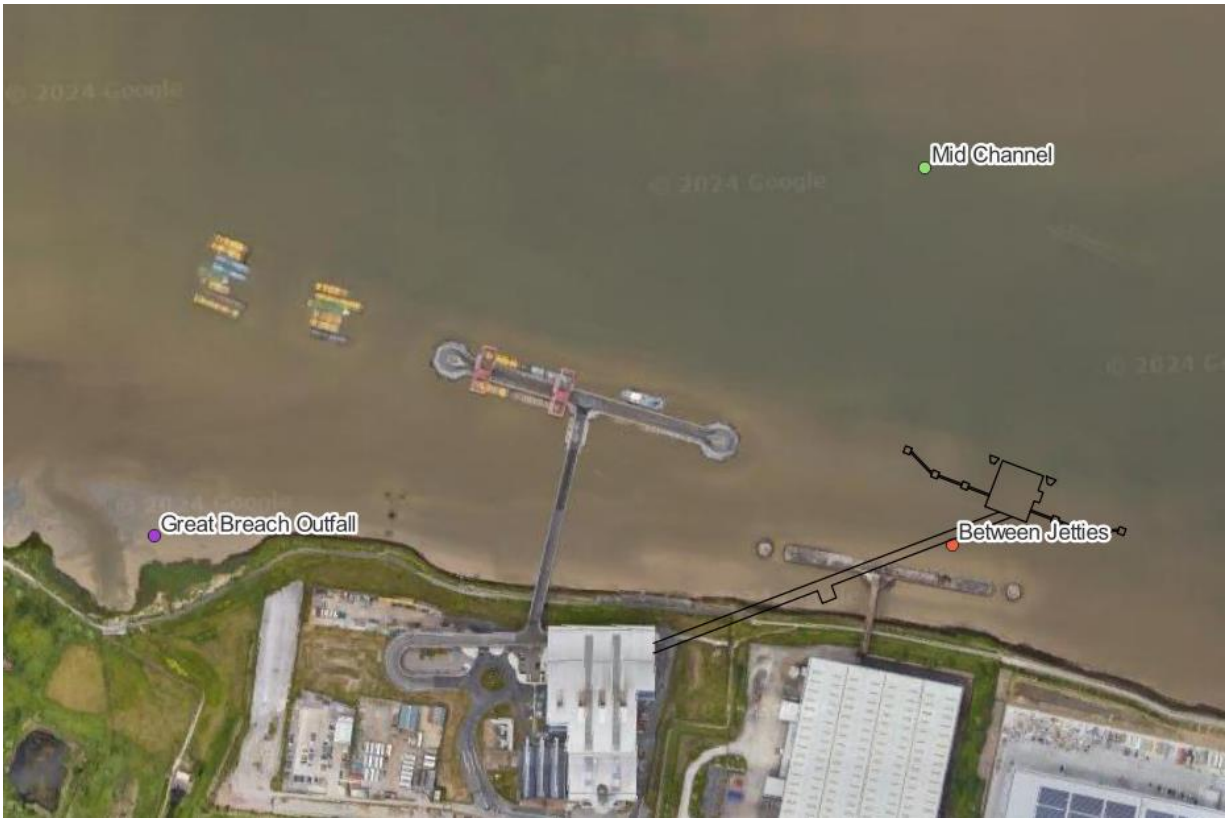
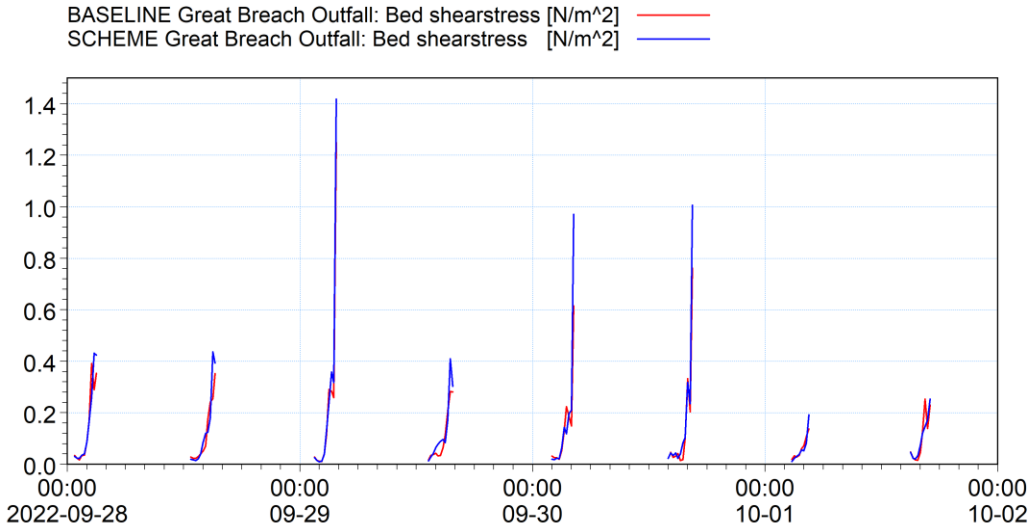


Figure 5.11 - Time Series (8 tides) of Bed Shear Stress for Baseline (red) and Post-Development (blue) Models at Great Breach Outfall Location



5.4.3. The bed shear stress time series was analysed in comparison to the deposition threshold used in the Mud Transport model (0.04N/m^2). The percentage of time during the spring-neap period modelled that deposition could occur (bed shear stress above zero (dry) but below the deposition threshold) was 5.3% in the baseline and 4.7% in the post-development scenario. This shows that the Proposed Scheme is

likely to have an insignificant impact on sediment deposition, and therefore bed accretion, at this location.

5.4.4. For comparison, **Figure 5.12** and **Figure 5.13** show the same bed shear stress time series plots for the Between Jetties and Mid Channel locations shown in **Figure 5.10**. These plots show that, increases in bead shear stress occur at these locations, the magnitude of which is larger during a flood tide, which is consistent with the results in **Figure 5.7** and **Figure 5.8**,.

Figure 5.12 - Time Series (8 tides) of Bed Shear Stress for Baseline (red) and Post-Development (blue) Models at Between Jetties Location

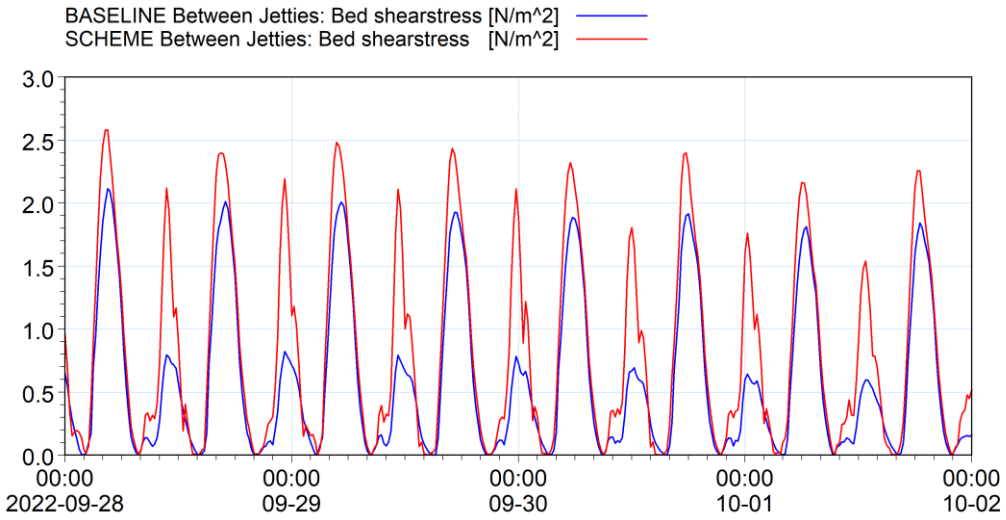
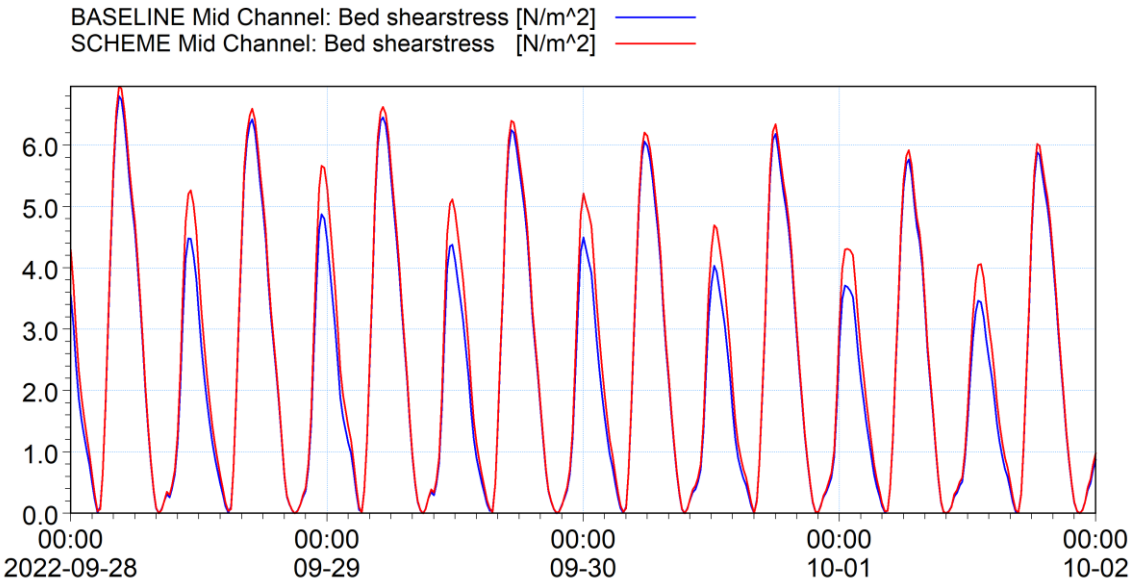


Figure 5.13 - Time Series (8 tides) of Bed Shear Stress for Baseline (red) and Post-Development (blue) Models at Mid Channel Location



6. HAND CALCULATION CHECK

6.1.1. To further validate the revised model results included within this Appendix, hand calculation checks were completed at the Great Breach Outfall and between jetties' locations in **Figure 5.10**. The calculations were completed for peak spring tide ebb and flood tide velocities for the baseline and post-development scenarios. **Table 6.1** shows the inputs and results from these calculations, along with the model outputs at the corresponding locations.

6.1.2. Bed shear stresses were calculated using the method presented in the HR Wallingford report *'Bed Shear-stresses Under Combined Waves and Currents on Smooth and Rough Beds'*[2]. The input parameters for these calculations are: water depth, sediment grain diameter, and depth averaged current speed. Wave parameters are not included as the sediment is only subject to current flows in the model.

6.1.3. The model output bed shear stresses are generally slightly higher than the results of the hand calculations. However, these differences do not change whether the stress is above or below the deposition threshold (0.04N/m^2). It is expected that there will be some variation between hand calculations and model outputs due to the increased number of parameters considered in the model.

6.1.4. This hand calculation check shows that the model bed shear stress outputs are sensible and are not expected to change significantly between the baseline and post-development scenarios.

6.1.5. A further back check was undertaken for the between jetties location for the **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)** model results (with the Belvedere Power Station Jetty (Disused) Retained scenario). These results are also comparable to the hand calculation results in **Table 6.1**.

[2] Soulsby, R., & Clarke, S. (2005). Bed Shear-stresses under Combined Waves and Currents on Smooth and Rough Beds.

Table 6.1 - Bed Shear Stress Calculation Inputs and Results Compared to Model

Scenario	Location	Water Depth (m)	Sediment D_{50} (m)	Depth-averaged Current Speed (m/s)	Calculated Bed Shear Stress (N/m^2)	Model Bed Shear Stress (N/m^2)
Baseline Flood Tide	Great Breach Outfall	0.17	1.50E-08	0.08	0.02	0.03
Baseline Ebb Tide	Great Breach Outfall	0.31	1.50E-08	0.26	0.14	0.35
Baseline Flood Tide	Between Jetties	5.07	1.50E-08	0.63	0.42	0.76
Baseline Ebb Tide	Between Jetties	3.84	1.50E-08	1.00	1.02	2.10
Post-Development Flood Tide	Great Breach Outfall	0.18	1.50E-08	0.07	0.02	0.03
Post-Development Ebb Tide	Great Breach Outfall	0.31	1.50E-08	0.29	0.16	0.42
Post-Development Flood Tide	Between Jetties	5.07	1.50E-08	0.85	0.74	1.40
Post-Development Ebb Tide	Between Jetties	3.83	1.50E-08	1.07	1.16	2.40

7. CONCLUSION

7.1.1. A review and validation of the modelling presented in **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)** was undertaken to respond to comments received by the Environment Agency regarding sedimentation at the Great Breach Outfall.

7.1.2. A hydrodynamic flow anomaly was identified in the development scenario where the existing Belvedere Power Station Jetty (disused) was removed. This effected flows around the Great Breach Outfall and subsequently impacted the sedimentation results reported.

7.1.3. A smaller domain model was run as back check with a higher order solution technique which eliminated the hydrodynamic flow anomaly. This model was calibrated against the existing larger domain baseline model along with water level, current speed, and current direction calibration datasets.

7.1.4. The bed shear stress difference plot output from the revised higher order model show that minimal reductions in bed shear stress are anticipated to occur around the Great Breach Outfall during peak ebb tide. These outputs are consistent with the post-development scenario with the Belvedere Power Station Jetty (disused) retained, as reported in **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)**. A time series analysis of bed shear stresses at the Great Breach Outfall also showed that the stresses are comparable between the baseline and post-development scenarios throughout the model run.

7.1.5. Hand calculations were also carried out to validate the outputs of the model and showed the results to be comparable. For the peak flood and ebb tide velocities, the hand calculations and model outputs were consistent in showing locations where bed shear stresses were above or below the sediment deposition threshold. A further hand calculation check confirmed that the **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)** model results (with the Belvedere Power Station Jetty (Disused) Retained scenario) are also comparable.

7.1.6. The results and information presented in this Appendix show that, similarly to the scenario where the Belvedere Power Station Jetty (disused) is retained (presented in **Appendix 11-4: Coastal Modelling Studies (Volume 3)** of the **Environmental Statement (APP-109)**.), bed shear stresses around the Great Breach Outfall in the scenario where the Belvedere Power Station Jetty (disused) is removed are not expected to reduce significantly in comparison to the baseline scenario. Therefore, a negligible increase in sediment deposition at the Great Breach Outfall would be expected.

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APPENDIX B - AMMONIA EMISSIONS LIMITS TECHNICAL NOTE

CORY

DECARBONISATION

APPENDIX B: TECHNICAL NOTE: AMMONIA EMISSIONS LIMITS

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TABLE

1. AMMONIA EMISSIONS LIMITS

1.1. SUMMARY

1.1.1. Additional air quality modelling has been undertaken in order to reduce the impacts of the Cory Decarbonisation Project on designated ecological sites. The additional modelling has been undertaken by reducing the Emission Limit Value (ELV) for ammonia.

1.1.2. An ELV of 10mg/Nm^3 (at 11% O_2, dry) for ammonia post-carbon capture will result in impacts over all sites designated for nature conservation that are markedly lower than presented within the **Chapter 5: Air Quality** of the **Environmental Statement (Volume 1) (APP-054)**.

1.1.3. Impacts modelled at permitted limits will be negligible or beneficial over all sites designated at national and international levels including Epping Forest Special Area of Conservation (SAC)/ Site of Special Scientific Interest (SSSI) and Inner Thames Marshes SSSI.

1.2. BACKGROUND

1.2.1. The assessment of impacts on nature conservation sites from the Cory Decarbonisation Project (the Proposed Scheme) presented in **Chapter 5: Air Quality** of the **Environmental Statement (Volume 1) (APP-054)** was based on an assumption that, *inter alia*, the mass release rate of combustion-related pollutants from Riverside 1 and Riverside 2 would remain constant. Given the removal of CO_2 from the flue gases by the carbon capture process, this effectively meant that the concentration of these pollutants in the flue is assumed to increase between the 'Baseline' and 'with Carbon Capture' scenarios.

1.2.2. This assumption is robust for most pollutants including nitrogen oxides which is unaffected by the carbon capture process. However, for ammonia, the assumption is likely to be overly conservative. Furthermore, since combustion related ammonia is removed from the flue gas prior to carbon capture and solvent degradation-related ammonia is introduced to the flue gas during carbon capture, it does not reflect the physical/chemical process.

1.2.3. Further project development has enabled the development of an estimated worst case concentration of ammonia in the flue gas post carbon capture, with the understanding that this would be achieved by variations in the performance of the Carbon Capture Plant. They have also taken into consideration the composition of the combustion emissions, with, for Riverside 1, information provided on the basis of the measured typical gas composition after combustion and, separately, with emissions at the permitted limits. Using this information, it is proposed that both Riverside 1 and

Riverside 2 be operated to meet an ammonia ELV of 10mg/Nm^3 with carbon capture in place[1].

1.2.4. **Table 1** shows the input and output ammonia ELVs for post-combustion (baseline) and post-carbon capture (with Carbon Capture).

Table 1: Existing (Baseline) and Proposed (With CC) ELVs for Ammonia (mg/Nm3, @11%O2, dry)

Baseline (as per post-combustion)		With CC (as per post-carbon capture)	
R1	**R2**	**R1**	**R2**
10	15	10	10

1.3. RESULTS

1.3.1. The main constraint on air quality impacts on ecological receptors due to the Proposed Scheme is nitrogen deposition. In particular, the data presented in **Chapter 5: Air Quality** of the **Environmental Statement (Volume 1) (APP-054)** showed an impact on the Inner Thames Marshes SSSI that exceeded 1% of the critical load for the most sensitive habitat (10kgN/ha/yr, salt marsh habitat), as numerically shown in **Table 26** of **Appendix 5-3 Detailed Model Pollutant Results** of the **Environmental Statement (Volume 3) (APP-079). Table 6** of **Appendix 5-3 Detailed Model Pollutant Results** of the **Environmental Statement (Volume 3) (APP-079)** shows the impacts on ammonia concentrations. Adverse impacts on ammonia contributed significantly to the change in nitrogen deposition with the Proposed Scheme.

1.3.2. **Table 2** below shows a summary of the maximum impact on sensitive habitats within the relevant nature conservation sites in the Study Area for the Proposed Scheme. The maximum is taken over five meteorological years and any location within the Site. The detailed model results are provided in **Annex A**.

1.3.3. The maximum impact to nitrogen deposition presented in **Chapter 5: Air Quality** of the **Environmental Statement (Volume 1) (APP-054)** over Inner Thames Marshes SSSI was 2.72% of the critical load. With the post-carbon capture ammonia emission limit set to 10mg/Nm3, the modelled impact switches to beneficial (-0.12%), driven by a reduction in emissions from both Riverside 1 and Riverside 2, but primarily the former. Impacts on the Crossness Local Nature Reserve (LNR) reduce to 1% of the critical load.

[1] Whilst not explicitly calculated, holding the mass emission rate for the ammonia constant between the pre and post carbon capture plants effectively assumed an ammonia concentration of 20mg/Nm^3 and 12mg/Nm^3 post carbon capture for Riverside 1 and Riverside 2 respectively.

1.3.4. As shown in **Table 2**, all impacts from ammonia reduce to negligible or beneficial impacts. At Inner Thames Marshes, the impact reduces from 1.13% of the critical load, to -0.22%.

Table 2: Maximum impact over designated sites. Data shown as percentage of site-specific critical load for the most sensitive habitat. Impacts that do not screen as insignificant are shown in red text

Designated Site	Maximum Impact on Nitrogen Deposition as a percentage of site specific critical loads		Maximum Impact to Ammonia Concentration as a percentage of site specific critical loads	
	As presented in ES*	Reduced ELV	As presented in ES	Reduced ELV
Epping Forest - SAC, SSSI	0.35%	-0.02%	0.14%	-0.06%
Ingrebourne Marshes - SSSI	0.69%	-0.39%	0.91%	-1.68%
Inner Thames Marshes - SSSI	2.72%	-0.12%	1.13%	-0.22%
Oxleas Woodlands - SSSI	0.44%	-0.02%	0.49%	-0.22%
West Thurrock Lagoon and Marshes - SSSI	0.16%	-0.22%	0.04%	-0.18%
Crossness - LNR	2.74%	1.00%	4.79%	0.64%
Lesnes Abbey Woods - LNR	1.89%	0.49%	1.76%	0.04%
Rainham Marshes - LNR	2.72%	-0.12%	1.13%	-0.40%
*as updated in the Air Quality Errata Document.				

Annexes

ANNEX A - DETAILED MODEL RESULTS

The following **Tables A1** and **A3** show the data presented in **Appendix 5-3 Detailed Modelled Pollutant Results** of the **Environmental Statement (Volume 3) (APP-079)** i.e. the Full Proposed Scheme Impacts on Nitrogen Deposition over sites designated for nature conservation. **Tables A2** and **A4** show the revised impacts with the 10mg/Nm^3 ammonia ELV.

Table A1: Nitrogen Deposition Results As presented in Environmental Statement

Ecological Site	Scenario	Max PC 2018 (kg/N/ha/yr)	Max PC 2019 (kg/N/ha/yr)	Max PC 2020 (kg/N/ha/yr)	Max PC 2021 (kg/N/ha/yr)	Max PC 2022 (kg/N/ha/yr)
Epping Forest - SAC, SSSI	Baseline	0.06	0.05	0.04	0.04	0.06
	Proposed Scheme	0.07	0.05	0.05	0.05	0.07
	Impact	0.01	0.01	0.01	0.01	0.02
	Impact as % of CL	0.25%	0.17%	0.20%	0.23%	0.35%
Ingrebourne Marshes - SSSI	Baseline	0.58	0.71	0.68	0.68	0.63
	Proposed Scheme	0.65	0.79	0.75	0.78	0.71
	Impact	0.07	0.08	0.07	0.10	0.08
	Impact as % of CL	0.50%	0.54%	0.48%	0.69%	0.54%
Inner Thames Marshes - SSSI	Baseline	0.86	1.00	1.19	0.81	0.87
	Proposed Scheme	1.04	1.22	1.40	1.02	1.07
	Impact	0.21	0.25	0.27	0.22	0.21
	Impact as % of CL	2.08%	2.46%	2.72%	2.16%	2.13%
Oxleas Woodlands - SSSI	Baseline	0.21	0.15	0.19	0.25	0.21
	Proposed Scheme	0.26	0.17	0.24	0.31	0.26
	Impact	0.05	0.04	0.05	0.07	0.06
	Impact as % of CL	0.34%	0.25%	0.33%	0.44%	0.39%
West Thurrock Lagoon and Marshes - SSSI	Baseline	0.10	0.14	0.11491	0.11	0.12
	Proposed Scheme	0.11	0.15	0.13	0.13	0.14
	Impact	0.01	0.01	0.01	0.01	0.02
	Impact as % of CL	0.09%	0.11%	0.13%	0.14%	0.16%
Crossness - LNR	Baseline	0.67	0.33	0.63	0.63	0.53
	Proposed Scheme	0.66	0.41	0.64	0.76	0.64
	Impact	0.16	0.15	0.13	0.27	0.23
	Impact as % of CL	1.60%	1.53%	1.29%	2.74%	2.34%
Lesnes Abbey Woods - LNR	Baseline	0.29	0.17	0.25	0.37	0.31
	Proposed Scheme	0.42	0.27	0.38	0.56	0.46
	Impact	0.14	0.10	0.13	0.19	0.15
	Impact as % of CL	1.38%	1.01%	1.30%	1.89%	1.51%
	Baseline	0.86	1.00	1.19	0.81	0.87

Ecological Site	Scenario	Max PC 2018 (kg/N/ha/yr)	Max PC 2019 (kg/N/ha/yr)	Max PC 2020 (kg/N/ha/yr)	Max PC 2021 (kg/N/ha/yr)	Max PC 2022 (kg/N/ha/yr)
Rainham Marshes - LNR	Proposed Scheme	1.04	1.22	1.40	1.02	1.07
	Impact	0.21	0.24	0.27	0.21	0.21
	Impact as % of CL	2.08%	2.42%	2.72%	2.12%	2.08%

Table A2: Nitrogen Deposition Model Results from a Reduced Ammonia Emission Limit Value

Ecological Site	Scenario	Max PC 2018 (kg/N/ha/yr)	Max PC 2019 (kg/N/ha/yr)	Max PC 2020 (kg/N/ha/yr)	Max PC 2021 (kg/N/ha/yr)	Max PC 2022 (kg/N/ha/yr)
Epping Forest - SAC, SSSI	Baseline	0.06	0.05	0.04	0.04	0.06
	Proposed Scheme	0.05	0.04	0.04	0.03	0.05
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	-0.07%	-0.06%	-0.04%	-0.02%	-0.04%
Ingrebourne Marshes - SSSI	Baseline	0.58	0.71	0.68	0.68	0.63
	Proposed Scheme	0.46	0.56	0.53	0.55	0.50
	Impact	-0.06	-0.08	-0.08	-0.07	-0.07
	Impact as % of CL	-0.39%	-0.51%	-0.54%	-0.45%	-0.44%
Inner Thames Marshes - SSSI	Baseline	0.86	1.00	1.19	0.81	0.87
	Proposed Scheme	0.73	0.86	0.98	0.71	0.75
	Impact	-0.02	-0.01	-0.01	-0.02	-0.02
	Impact as % of CL	-0.19%	-0.15%	-0.12%	-0.18%	-0.22%
Oxleas Woodlands - SSSI	Baseline	0.21	0.15	0.19	0.25	0.21
	Proposed Scheme	0.18	0.13	0.17	0.22	0.19
	Impact	-0.01	0.00	0.00	-0.01	-0.01
	Impact as % of CL	-0.08%	-0.02%	-0.03%	-0.09%	-0.05%
West Thurrock Lagoon and Marshes - SSSI	Baseline	0.10	0.14	0.11491	0.11	0.12
	Proposed Scheme	0.08	0.10	0.09	0.09	0.10
	Impact	-0.02	-0.03	-0.02	-0.02	-0.02
	Impact as % of CL	-0.22%	-0.31%	-0.23%	-0.23%	-0.23%
Crossness - LNR	Baseline	0.67	0.33	0.63	0.63	0.53
	Proposed Scheme	0.48	0.30	0.47	0.56	0.47
	Impact	0.06	0.06	0.02	0.10	0.09
	Impact as % of CL	0.56%	0.61%	0.18%	1.00%	0.91%
Lesnes Abbey Woods - LNR	Baseline	0.29	0.17	0.25	0.37	0.31
	Proposed Scheme	0.31	0.20	0.28	0.40	0.33
	Impact	0.02	0.03	0.03	0.05	0.04

Ecological Site	Scenario	Max PC 2018 (kg/N/ha/yr)	Max PC 2019 (kg/N/ha/yr)	Max PC 2020 (kg/N/ha/yr)	Max PC 2021 (kg/N/ha/yr)	Max PC 2022 (kg/N/ha/yr)
	Impact as % of CL	0.23%	0.32%	0.28%	0.49%	0.43%
Rainham Marshes - LNR	Baseline	0.86	1.00	1.19	0.81	0.87
	Proposed Scheme	0.73	0.86	0.98	0.71	0.75
	Impact	-0.02	-0.02	-0.01	-0.02	-0.02
	Impact as % of CL	-0.22%	-0.15%	-0.12%	-0.20%	-0.24%

Table A3: Ammonia Concentration Results as Presented in Table 6 of the Environmental Statement, Appendix 5-3.

Ecological Site	Scenario	Max PC 2018 (µg/m^3)	Max PC 2019 (µg/m^3)	Max PC 2020 (µg/m^3)	Max PC 2021 (µg/m^3)	Max PC 2022 (µg/m^3)
Epping Forest - SAC, SSSI	Baseline	0.01	0.00	0.00	0.00	0.01
	Proposed Scheme	0.01	0.01	0.01	0.00	0.01
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	0.10%	0.07%	0.08%	0.09%	0.14%
Ingrebourne Marshes - SSSI	Baseline	0.09	0.11	0.11	0.11	0.10
	Proposed Scheme	0.10	0.12	0.11	0.12	0.11
	Impact	0.01	0.01	0.01	0.01	0.01
	Impact as % of CL	0.60%	0.65%	0.56%	0.91%	0.64%
Inner Thames Marshes - SSSI	Baseline	0.14	0.16	0.19	0.13	0.14
	Proposed Scheme	0.16	0.18	0.21	0.15	0.16
	Impact	0.03	0.03	0.03	0.03	0.02
	Impact as % of CL	0.84%	0.99%	1.13%	0.85%	0.83%
Oxleas Woodlands - SSSI	Baseline	0.02	0.01	0.02	0.02	0.02
	Proposed Scheme	0.02	0.02	0.02	0.03	0.03
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	0.39%	0.29%	0.39%	0.49%	0.45%
West Thurrock Lagoon and Marshes - SSSI	Baseline	0.02	0.02	0.02	0.02	0.02
	Proposed Scheme	0.02	0.02	0.02	0.02	0.02
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	0.01%	0.01%	0.02%	0.03%	0.04%
Crossness - LNR	Baseline	0.11	0.05	0.10	0.10	0.09
	Proposed Scheme	0.10	0.06	0.10	0.12	0.10
	Impact	0.03	0.02	0.03	0.05	0.04

Ecological Site	Scenario	Max PC 2018 (µg/m³)	Max PC 2019 (µg/m³)	Max PC 2020 (µg/m³)	Max PC 2021 (µg/m³)	Max PC 2022 (µg/m³)
	Impact as % of CL	2.80%	2.33%	2.68%	4.79%	3.98%
Lesnes Abbey Woods - LNR	Baseline	0.03	0.02	0.03	0.04	0.03
	Proposed Scheme	0.04	0.03	0.04	0.05	0.04
	Impact	0.01	0.01	0.01	0.02	0.01
	Impact as % of CL	1.15%	0.86%	1.11%	1.60%	1.28%
Rainham Marshes - LNR	Baseline	0.14	0.16	0.19	0.13	0.14
	Proposed Scheme	0.16	0.18	0.21	0.15	0.16
	Impact	0.03	0.03	0.03	0.02	0.02
	Impact as % of CL	0.84%	0.99%	1.13%	0.83%	0.83%

Table A4: Ammonia Model Results from a Reduced Ammonia Emission Limit Value

Ecological Site	Scenario	Max PC 2018 (µg/m³)	Max PC 2019 (µg/m³)	Max PC 2020 (µg/m³)	Max PC 2021 (µg/m³)	Max PC 2022 (µg/m³)
Epping Forest - SAC, SSSI	Baseline	0.01	0.00	0.00	0.00	0.01
	Proposed Scheme	0.00	0.00	0.00	0.00	0.00
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	-0.09%	-0.07%	-0.06%	-0.06%	-0.09%
Ingrebourne Marshes - SSSI	Baseline	0.09	0.11	0.11	0.11	0.10
	Proposed Scheme	0.06	0.07	0.07	0.07	0.07
	Impact	-0.02	-0.02	-0.02	-0.02	-0.02
	Impact as % of CL	-1.68%	-2.12%	-2.10%	-1.96%	-1.85%
Inner Thames Marshes - SSSI	Baseline	0.14	0.16	0.19	0.13	0.14
	Proposed Scheme	0.10	0.11	0.13	0.09	0.10
	Impact	-0.01	-0.01	-0.01	-0.01	-0.01
	Impact as % of CL	-0.25%	-0.25%	-0.22%	-0.26%	-0.28%
Oxleas Woodlands - SSSI	Baseline	0.02	0.01	0.02	0.02	0.02
	Proposed Scheme	0.02	0.01	0.01	0.02	0.02
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	-0.37%	-0.22%	-0.27%	-0.48%	-0.36%
West Thurrock Lagoon and	Baseline	0.02	0.02	0.02	0.02	0.02
	Proposed Scheme	0.01	0.01	0.01	0.01	0.01
	Impact	-0.01	-0.01	-0.01	-0.01	-0.01

Ecological Site	Scenario	Max PC 2018 (µg/m³)	Max PC 2019 (µg/m³)	Max PC 2020 (µg/m³)	Max PC 2021 (µg/m³)	Max PC 2022 (µg/m³)
Marshes - SSSI	**Impact as % of CL**	-0.18%	-0.24%	-0.19%	-0.19%	-0.21%
Crossness - LNR	**Baseline**	0.11	0.05	0.10	0.10	0.09
	Proposed Scheme	0.07	0.04	0.06	0.08	0.06
	Impact	0.00	0.00	0.00	0.01	0.01
	Impact as % of CL	0.05%	0.45%	-0.36%	0.64%	0.60%
Lesnes Abbey Woods - LNR	**Baseline**	0.03	0.02	0.03	0.04	0.03
	Proposed Scheme	0.03	0.02	0.02	0.03	0.03
	Impact	0.00	0.00	0.00	0.00	0.00
	Impact as % of CL	-0.25%	0.04%	-0.07%	-0.04%	0.00%
Rainham Marshes - LNR	**Baseline**	0.14	0.16	0.19	0.13	0.14
	Proposed Scheme	0.10	0.11	0.13	0.09	0.10
	Impact	-0.01	-0.01	-0.01	-0.01	-0.01
	Impact as % of CL	-0.42%	-0.40%	-0.42%	-0.40%	-0.44%

APPENDIX C – VERIDION PARK ALTERNATIVE SITE LOCATION PLAN

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LEGEND

Veridion Park Option

LDĀDESIGN

PROJECT TITLE

CORY MASTERPLANNING

DRAWING TITLE

Veridion Park Alternative Site Location Plan

ISSUED BY	Oxford	T: 01865 887 050	
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SCALE @A3	1:10,000	CHECKED	KH
STATUS	Draft	APPROVED	AWy

DWG. NO. 9116_Alternatives_Veridion_Park

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: Ordnance Survey

APPENDIX D - VERIDION PARK ALTERNATIVE SITE VISUALISATION

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LDĀDESIGN

PROJECT TITLE
CORY MASTERPLANNING

DRAWING TITLE
Veridion Park Alternative Site Visualisation

ISSUED BY	Oxford	T: 01865 887050	
DATE	Dec 2024	DRAWN	SD
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DWG. NO. 9116_Alternatives_Veridion_Park_3D

No dimensions are to be scaled from this drawing.
All dimensions are to be checked on site.
Area measurements for indicative purposes only.

Sources: VU.CITY 2024

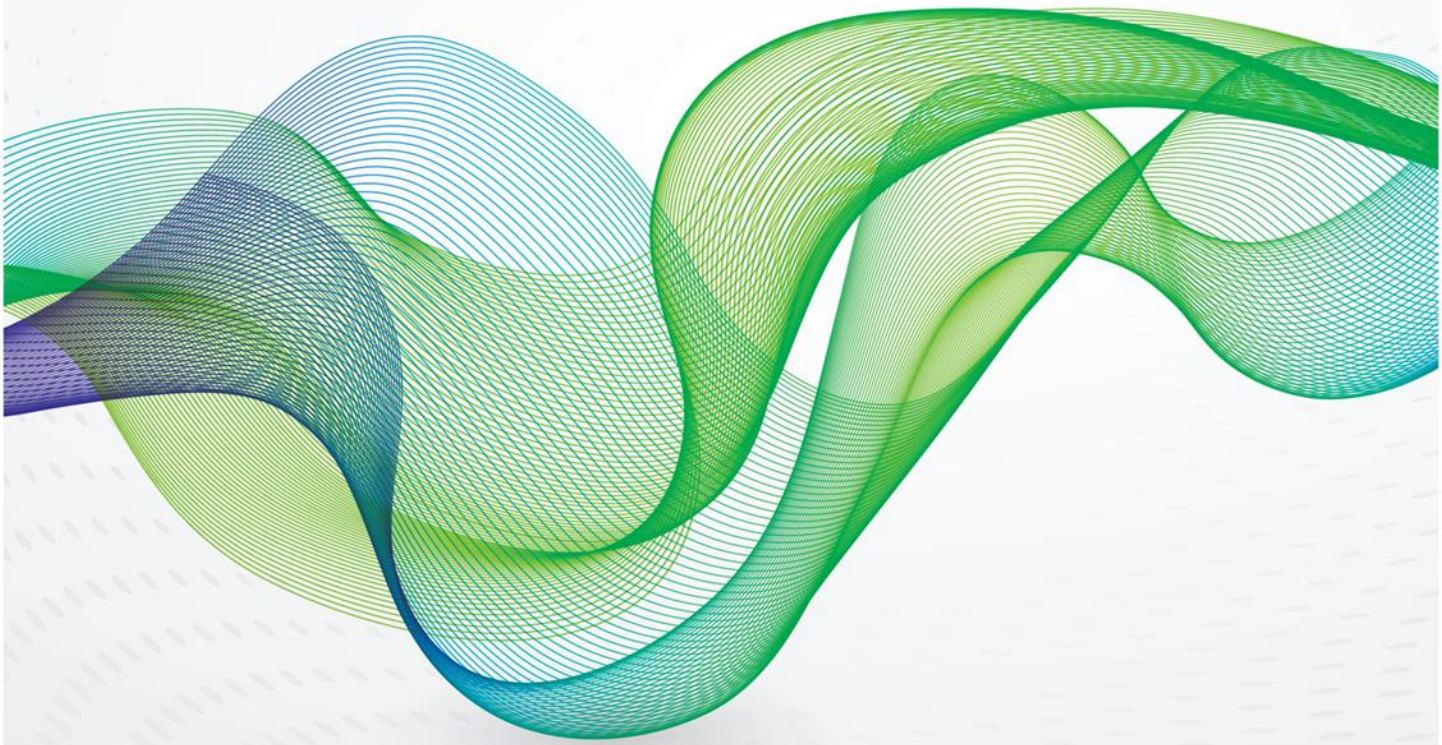
v2022.0

APPENDIX E – OIES PAPER- CARBON CAPTURE FROM EFW

THE OXFORD INSTITUTE FOR ENERGY STUDIES

May 2024

Carbon capture from energy-from-waste (EfW): A low-hanging fruit for CCS deployment in the UK?



OIES Paper: CM09

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Ryan Cownden, OIES-KAPSARC Research Fellow, OIES
Mathieu Lucquiaud, Professor in CCS, University of Sheffield

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The contents of this paper are the authors' sole responsibility. They do not necessarily represent the views of the Oxford Institute for Energy Studies or any of its Members.

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Executive Summary

Energy-from-waste (EfW) is a waste treatment process that combusts residual waste after re-use, recycling and composting to produce energy in the form of electricity and/or heat. EfW is considered a more environmentally-friendly method of dealing with residual waste than its alternative – waste dumping or landfilling. In the UK context in particular, the role of the EfW sector is prominent. UK EfW facilities generate around 3.2% of the nation's total power output but also emit around 3.5% (14.4 $MtCO_2$) of net annual territorial GHG emissions (2022 figures). As the UK is moving to expand the scope of its emissions trading scheme (UK-ETS) to include waste combustion and EfW facilities starting from 2028, decarbonising its EfW sector becomes critical. Here, the integration of carbon capture and storage (CCS) can help maintain EfW facilities as a source of sustainable, low-carbon energy while also meaningfully contributing to the UK's emission reduction targets.

In fact, the significance of EfW+CCS in meeting climate objectives cannot be overstated, as the practice can contribute at least three different climate benefits. First, by diverting waste away from landfill, it avoids the generation of methane emissions which would occur otherwise. Second, it directly reduces emissions by capturing CO_2 from the fossil content in waste (around half of waste is fossil-based). Third, and perhaps most critically, EfW coupled with CCS can generate negative emissions (or 'carbon removal') since a substantial portion of the carbon contained in residual waste streams is of biogenic origin, the permanent sequestration of which leads to a negative impact on overall CO_2 stocks in the atmosphere.

This is particularly important as it can contribute towards the UK Government's targets of deploying 5-6 Mtpa in engineered greenhouse gas removals (GGRs) by 2030, 23 Mtpa by 2035 and up to 60 Mtpa by 2050. Meeting these targets will be challenging – especially the near-term ones – as they would require significant scale-up of carbon removal projects, at a time when a pipeline of GGR projects with the necessary scale is still lacking. Moreover, while other nascent GGR solutions such as direct air capture may need to undergo long testing and investment stages, EfW+CCS relies on already-proven technology and can be deployed relatively quickly, further highlighting the strategic role that EfW+CCS can play in meeting those targets.

Not only can CCS help decarbonise EfW facilities, but the EfW sector is also key in ensuring the timely and large-scale deployment of CCS itself as a national decarbonisation solution. For instance, of the 8 projects shortlisted to progress to negotiations through the UK's cluster sequencing approach, two are EfW projects, while Enfinium – a leading UK EfW operator – has also recently announced a proposal for £200m in private investment in carbon capture technology.

In light of these developments, this study has three objectives.

First, it evaluates the business case for CCS in the UK EfW sector, especially as unabated facilities will be subject to carbon pricing for the fossil CO_2 they emit after inclusion in the UK-ETS. The analysis in this study shows that several financial benefits have the potential to outweigh the added costs of CCS retrofit. Namely, in a ETS world, an abated facility avoids carbon compliance costs, and can generate revenue in the form of premium gate fees and sale of zero-carbon energy. In addition, the resulting negative emissions can be monetized in voluntary and/or compliance carbon markets.

Second, this report assesses the technical feasibility of physically installing carbon capture technology at UK EfW facilities, based on minimum capacity requirements and availability of enough on-site space for capture retrofit. The analysis finds that 60-65% of the existing 57 UK EfW facilities meet these criteria – accounting for 74-78% of the total CO_2 emissions from the sector. Most critically, the analysis finds that **negative emissions in the order of 5-8 Mtpa can be captured from the UK EfW fleet (with an average of 6 Mtpa),** depending on the assumed emissions factor of the waste combusted. For reference, this is on par with the aforementioned UK target of 5-6 Mtpa of GGR capacity by 2030 and is equivalent to 21-34% of the 2035 target, and 8-13% of the 60 Mtpa by 2050 target.

Lastly, this study identifies different methods to transport CO_2 from EfW facilities to their nearest storage sites using transportation cost and emissions intensity of different transport options (pipeline, rail, ship, truck) as metrics to evaluate what is economically feasible, and emissions-wise acceptable.

Pipeline transportation of CO_2 provides the lowest cost and lowest CO_2 emissions for EfW facilities in England, Scotland, and Wales, yet some considerations may limit the opportunity for EfW facilities to utilise pipeline transport. For instance, constructing new long-distance pipelines requires significant time to acquire the necessary regulatory approvals and land agreements, and the timeline required for planning and construction may not be consistent with CCS implementation plans. Pipelines also require a significant commitment of upfront capital to construct.

Here, the role of non-pipeline transport (NPT) modes becomes key, especially for dispersed EfW facilities (those not located around industrial clusters). Rail and ship transport are second-best options with site-specific characteristics determining which option is preferable in terms of cost and emissions. Both modes could offer benefits for project proponents by utilising existing infrastructure that reduces the timeline and risks associated with approval and construction of CO_2 transport infrastructure.

Overall, for sites where all transport modes are viable, the typical cost merit order is *pipeline* < *ship* < *rail* < *truck*. The analysis of both pipeline and ship transport options for UK EfW facilities highlights the importance of creating central hubs to achieve economies of scale for key infrastructure to reduce costs associated with CO_2 transportation. While this study only focuses on UK EfW facilities, it is key to note that CO_2 transport infrastructure would need to be shared with emission sources in other industries to achieve the production scale associated with cost forecasts.

It is also noteworthy that there are 17 new EfW plants under construction in the UK (plus one replacement) with a licenced capacity of 5.7 $MtCO_2/y$ which were not included in this study but represent further opportunity for CO_2 capture from the sector. Moreover, this work only considered transportation to the four CO_2 sequestration hubs currently being developed under the UK government's initial CCS cluster sequencing; however, other CCS hubs may be developed in the future that would reduce cost/emissions for CO_2 transportation from certain UK EfW facilities.

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1. Introduction

Limiting global warming to 1.5°C above pre-industrial levels is crucial to mitigate the ecological and socio-economic consequences of climate change. The Intergovernmental Panel on Climate Change (IPCC) recognises that achieving this goal will require not only aggressive abatement of greenhouse gas (GHG) emissions, but large-scale deployment of carbon dioxide removal solutions (CDR) – also known as greenhouse gas removals (GGR)[1] and negative emission technologies (NETs) – as soon as possible to remove CO_2 from the system.[2] CDRs reduce the overall stock of CO_2 in the atmosphere and help address historical emissions and offset emission sources which are otherwise difficult or expensive to directly abate.[3]

Some of the most important CDR solutions available today include afforestation and bioenergy production coupled with carbon capture and storage (BECCS).[4] However, despite their high removal potential, both solutions suffer from shortcomings. For instance, while afforestation represents one of the least expensive CDRs and there is significant, potentially-suitable land area available globally, carbon sequestered in forests can be subject to release during disturbances (e.g., insects or wildfires), and complex interactions within the biosphere means that its net climate impact can be uncertain.[5,6] On the other hand, BECCS provides a more permanent, and relatively easier-to-quantify, CO_2 sequestration pathway, yet it is a land-intensive mitigation technique which can conflict with other uses and, unless properly managed, can incentivise deforestation in other jurisdictions – ultimately leading to carbon leakage.[7]

A variant of BECCS which mitigates land use impacts while retaining the benefits of permanent CO_2 sequestration is retrofitting energy-from-waste (EfW) facilities with carbon capture and storage (EfW+CCS). EfW facilities combust residual waste which remains after reuse and recycling, for the purpose of producing electricity and/or heat.[8] Already a mainstream practice in many regions, producing energy from waste avoids the environmental impacts associated with its counterfactual: disposal in landfills, which leads to increased land use, pollution, and methane emissions.[9] However, if left unabated, EfW facilities still generate CO_2 emissions – this is where CCS comes in.

EfW coupled with CCS is especially valuable as, much like BECCS, the practice can lead to 'carbon removal' since a substantial portion of the carbon contained in residual waste streams is of *biogenic* origin (in other words, it belongs to the natural carbon cycle).[10] The permanent sequestration of this biogenic content generates a negative impact on overall CO_2 stocks in the atmosphere.[11] On average, around half of waste is composed of biogenic content, including food, paper, cardboard; and half is fossil content, such as

[1] The terms 'CDR' and 'GGR' are used interchangeably in this paper. 'GGR' is used where in reference to EfW in the UK context as this is the term of choice in UK policy/business models.
[2] IPCC (2018). Chapter 2: Mitigation pathways compatible with 1.5°C in the context of sustainable development. In: Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty.
[3] IPCC (2022a). Energy Systems. In Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change
[4] IPCC (2022b). Cross-sectoral perspectives. In IPCC, 2022: Climate Change 2022: Mitigation of Climate Change. Contribution of Working Group III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change
[5] Fuss, S., Lamb, W. F., Callaghan, M. W., Hilaire, J., Creutzig, F., Amann, T., ... & Minx, J. C. (2018). Negative emissions—Part 2: Costs, potentials and side effects. *Environmental research letters*, *13*(6), 063002.
[6] Deng, J., Xiao, J., Ouimette, A., Zhang, Y., Sanders-DeMott, R., Frolking, S., & Li, C. (2020). Improving a biogeochemical model to simulate surface energy, greenhouse gas fluxes, and radiative forcing for different land use types in northeastern United States. *Global Biogeochemical Cycles*, *34*(8), e2019GB006520.
[7] ibid
[8] Tolvik (2023). UK Energy from Waste Statistics – 2022. Tolvik Consulting. Available: [redacted]
[9] CEWEP (2022). Wate-to-Energy Climate Roadmap. Confederation of European Waste-to-Energy Plants. Available: [redacted]
[10] ibid
[11] ibid

plastics.[12] It follows that if biogenic alongside fossil CO_2 is captured from EfW facilities, EfW+CCS becomes a net negative emissions solution, without creating new land use demands.

In the UK context in particular, the role of the energy-from-waste sector is prominent. In 2022, UK EfW facilities produced 9.4TWh, equivalent to 3.2% of the nation's total power output of 293.7TWh.[13] In similar proportions, these facilities emit around 3.5% (14.4 $MtCO_2e$) of the UK's overall annual territorial GHG emissions, estimated at 406.2 $MtCO_2e$ in 2022.[14] It is unsurprising, then, that the UK has recently (July 2023) moved to expand the scope of its emissions trading scheme (UK-ETS) to include waste combustion and EfW facilities starting from 2028. Integrating CCS into the EfW sector helps maintain EfW facilities as a source of sustainable, low-carbon energy while also meaningfully contributing to the UK's emission reduction targets.

Not only is CCS an important technology to decarbonise UK EfW facilities, but the EfW sector is key in progressing the timely and large-scale deployment of CCS as a decarbonisation solution itself. In March 2023, the UK Government shortlisted 8 industrial projects to proceed to negotiations for support through its established CCS business models, as part of its cluster sequencing approach (Track-1, Phase-2). Two of these projects are energy-from-waste, including the Runcorn Energy Recovery Facility (ERF) and the Protos ERF. In April 2024, Enfinium, one of the UK's largest EfW developers, further announced a proposal for £200m private investment in carbon capture technology, while also publishing a Net Zero Transition Plan[15] which outlines an objective of moving from energy-from-waste operations today to a carbon removals business in the future, with CCS at the heart of this plan.

More broadly, these developments resonate with the UK Government's 'CCUS Vision' (published in December 2023) which delineates a long-term vision for moving from government-backed to self-sustaining, merchant business models for CCS from 2035. These also come at a time when the UK, in its 2021 Net Zero Strategy[16], had committed to negative emissions targets of 5-6 Mtpa of greenhouse gas removals (GGRs) deployment by 2030, 23 Mtpa by 2035 and up to 60 Mtpa by 2050, a significant proportion of which could come from capturing CO_2 from EfW.

In light of the above, the objectives of this study are threefold. First, we qualitatively evaluate the business case for CCS in the UK EfW sector, comparing costs of abated and unabated facilities, following the future inclusion of EfW facilities into UK-ETS. Second, we assess the technical feasibility of physically installing carbon capture technology at UK EfW facilities, on a facility-by-facility basis, taking the entire UK EfW fleet into account. Here, CCS integration may be constrained by location-specific attributes such as availability of on-site space for retrofit, or economic attributes if the processing capacity of the facility itself is not large enough to economically justify capturing CO_2. Third, we identify different methods to transport CO_2 from EfW facilities to their nearest storage sites – again on a facility-by-facility basis – using transportation cost and emissions intensity of different transport options as metrics to evaluate what is economically-feasible, and emissions-wise acceptable.

It is worth noting that this study and the methodology adopted here is largely based on previous research published by the Oxford Institute for Energy Studies (Muslemani et al., 2023)[17] where a similar assessment was conducted on the European EfW fleet.

[12] GCCSI (2019). Waste-to-energy with CCS: A pathway to carbon-negative power generation. Available at: [redacted]

[13] ibid

[14] UK DESNZ (2023). 2022 UK Provisional Greenhouse Gas Emissions. UK Department for Energy Security and Net Zero. Available: https://www.gov.uk/government/statistics/provisional-uk-greenhouse-gas-emissions-national-statistics-2022

[15] Enfinium (2024). Our journey to carbon removals – Net Zero Transition Plan 2024. Available at: https://enfinium.co.uk/wp-content/uploads/2024/04/201029.04_Enfinium_Net-Zero-Report-AWK_SCREEN_AWK_4.pdf

[16] HM Government (2021). Net Zero Strategy: Build back greener. Available at: https://assets.publishing.service.gov.uk/media/6194dfa4d3bf7f0555071b1b/net-zero-strategy-beis.pdf

[17] Muslemani, H., Struthers, I., Herraiz, L., Thomson, C., & Lucquiaud, M. (2023). *Waste not, want not: Europe's untapped potential to generate valuable negative emissions from waste-to-energy (WtE) using carbon capture technology* (No. 01). OIES Paper: CM01, Oxford.

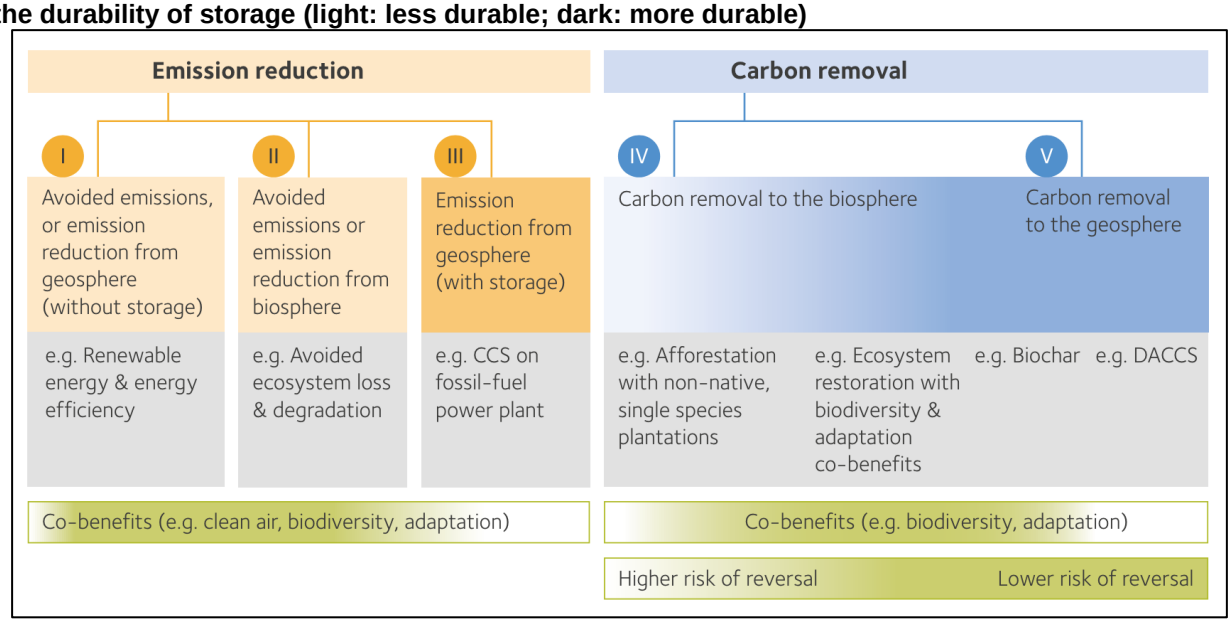
2. The case for CCS in the EfW sector

The case for deploying CCS in the EfW sector depends on a number of factors, including the possibility of capturing CO_2 at source (as will be demonstrated later) and the availability of adequate CO_2 transport and storage (T&S) infrastructure for its eventual disposal. In addition, CO_2 capture from EfW will necessitate other non-technical factors, namely a robust and reliable accounting framework to measure the captured and sequestered CO_2, including methods to quantify, monitor and verify the amounts of emissions captured/avoided, and viable business models that facilitate the technology's deployment and economically support its operation throughout the project's lifetime.

On the former, a sound carbon accounting framework is necessary for several reasons. First, waste is a dynamic resource whose quantities and composition vary over time, influenced by existing policies such as recycling rates and incentives (or lack thereof) for waste treatment, as well as other macro factors such as population and economic growth. Second, under an EfW+CCS scenario, while both fossil and biogenic CO_2 emissions are captured from the same facility, the application creates two value chains: one leading to *emission reductions* (from the capture of fossil CO_2) and another to *negative emissions* (from the capture of biogenic CO_2 as outlined earlier), and so the overall economic and environmental value brought about by deploying CCS in the sector should be appraised accordingly. For instance, negative emissions help capturing *historical* emissions which are already in the atmosphere, while emission reductions (e.g., through 'conventional' CCS as in fossil power plants) help lower existing emissions and avoid *future* emissions. Because of this, in a carbon-constrained world, the former may often be regarded as more 'valuable'.[18]

More specifically, both from an accounting and a value-added perspective, retrofitting an EfW facility with CCS is unique in that it is an application that would simultaneously contribute to three different types of climate mitigation activities, as categorised in the recently-revised Oxford Offsetting Principles (Figure 1).[19]

Figure 1: Taxonomy of climate mitigation activities. Shading of colours from light to dark pertain to the durability of storage (light: less durable; dark: more durable)



Source: Oxford Offsetting Principles (2024)

First, waste combustion – whether with or without CCS – leads to ***avoided emissions*** (Category II in Figure 1) as its counterfactual is waste diverted into landfill, which would have in time generated methane emissions that, from a global warming potential perspective, are significantly more potent than the CO_2 emitted under an EfW scenario. Despite this, it is here worth noting that accurately measuring the environmental benefits associated with these avoided emissions remains a challenge (i.e., methane emissions which would

[18] Zickfeld, K., Azevedo, D., Mathesius, S., & Matthews, H. D. (2021). Asymmetry in the climate–carbon cycle response to positive and negative CO_2 emissions. *Nature Climate Change*, *11*(7), 613-617.
[19] See revised 2024 version of Oxford Offsetting Principles here:

otherwise have occurred cannot be physically quantified). This contrasts with some CDR solutions such as Direct Air Capture (DAC) where the baseline scenario is zero additional emissions i.e., no additional emissions would be generated in absence of the project.

Second, EfW+CCS leads to ***emission reduction*** (Category III) due to the capture and storage of *fossil* CO_2 and, third, to ***carbon removal*** (Category V) from the capture and geological storage of *biogenic* CO_2. Alongside these climate contributions, waste combustion also has the added benefit of ***producing energy*** as a by-product, which can be economically monetized. Again, it is important to highlight that this added benefit may increase the complexity of emissions accounting at the project level, as the generated electricity/heat would displace grid electricity and/or a heat source with a different emission factor.

The treatment of the various benefits of EfW+CCS has not only accounting but also policy and economic dimensions. As noted earlier, negative emissions may be viewed as more valuable since they can address potential future temperature overshoots. This is perhaps one of the reasons why participants in carbon markets today are increasingly procuring carbon removal over avoidance/reduction solutions, despite their higher cost on average, as they are widely regarded as higher quality, more future-proof, and are much less contested.[20] It is key to note here that this assertion assumes that removal solutions are not used to substitute the need to reduce emissions in hard-to-abate applications where the removal solution may have a lower cost of abatement, something that corporate net-zero guidance frameworks such as the Science-Based Targets Initiative (SBTi) makes explicit.[21]

Most relevant to this study, the stated benefits of EfW+CCS (avoided emissions, emissions reduction, carbon removal, and energy generation) directly impact the business models which may support the deployment of CCS in the sector.

For context, the revenue stream of a typical EfW facility consists predominately of gate fees charged to consumers for treatment of residual waste, after recycling of waste collected through local authorities, in addition to the sale of electricity produced in the process. In the UK, the baseline scenario is that, from 2028, the EfW sector will enter the UK-ETS where *unabated* EfW facilities will become exposed to carbon pricing on the fossil portion of the CO_2 they emit (e.g., around 50%).[22] This added cost could ultimately translate to increased gate fees to be passed up the supply chain, as responsibility for emissions does not arguably lie with the EfW developer but with end-consumers who produce the waste in the first place.

On the contrary, biogenic emissions emitted by that facility are exempt from carbon pricing under the current UK-ETS proposal, although the UK Government has signalled its intention to include GGRs within the scope of the UK-ETS (without a firm timeline for its inclusion at the time of writing).[23] Here again, if GGRs can monetised, EfW operators would be expected to pass on additional profits to end-consumers in the form of gate fees reduction. Put simply, a fraction of the *value* and *responsibility* of procuring the biogenic carbon belongs to the end-consumer who produces the waste.

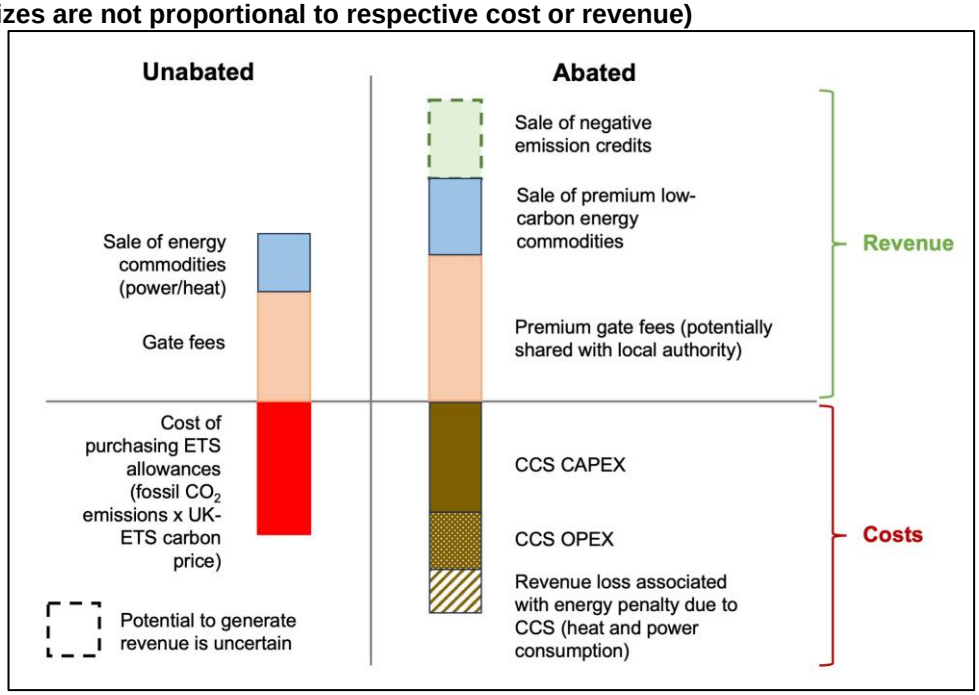
Under this same compliance market, an *abated* facility would incur significant costs for CCS deployment and maintenance over the project's lifetime, in addition to revenue loss from heat and power consumption associated with CCS (Figure 2). However, assuming capture rates close to 100% (Su et al., 2023), CCS retrofit means the facility will no longer be subject to carbon pricing for its fossil-based emissions, and an economic benefit in the form of cost avoidance is reaped in an ETS world. From an EfW facility's and its local authority's perspective, if the carbon cost savings due to CCS outweigh the needed increase in gate fees without CCS, revenue can be generated and potentially shared amongst both in a gainsharing mechanism.

[20] Walsh, V. R. & Toffel, M.W. (2023). What every leader needs to know about carbon offsets. Available at: [redacted]

[21] University of Oxford (2023). CO_2 removal is essential, along with emissions cuts, to limit global warming. [redacted]

[23] UK DESNZ (2023). Engineered greenhouse gas removals – Government response to the consultation on a GGR Business Model. Available at: https://assets.publishing.service.gov.uk/media/64955096831311000c296222/engineered-ggrs-government-response.pdf

Figure 2: Costs and revenue streams of unabated (left) vs abated (right) EfW facilities under an ETS (bar sizes are not proportional to respective cost or revenue)



In addition to a premium gate fee and cost avoidance under the ETS, other monetary benefits can be generated due to carbon removal, as noted earlier, for instance through the sale of negative emission credits in the voluntary carbon market (VCM), or later in a compliance carbon market. This assumes revenue from sale of negative emissions credits can be stacked with other government support mechanisms (for instance, the support provided under the UK's waste industrial carbon capture [waste ICC] contracts). Even then, it remains difficult to estimate the price that negative emission credits could command in the VCM as cost estimates vary widely across different CDR solutions (e.g., biochar, DACCS, BECCS, enhanced rock weathering, etc.) and across different regions for the same solution, where some solutions are still in early stages of development. The bilateral nature of trading in the market may also make this difficult to estimate since details of purchase agreements are not always disclosed.

Lastly, a fourth financial benefit for an EfW+CCS operator is generated in the form of zero-emission energy, which can sell at a premium especially as electricity typically generated by an EfW facility is highly carbon intensive (around 500-600 gCO_2/kWh)[24]. However, it is important to ensure that no double counting occurs if negative emission credits are also monetized.

Under current market conditions (low UK-ETS price of around £38/tCO_2, and high CCS costs estimated at around 150 £/tCO_2 for EfW)[25,26], an abated facility would expectedly incur higher costs than an unabated one. However, with additional revenue in the form of premium gate fees and sale of premium low-carbon energy commodities, in addition to potential sales of (high-value) negative emission credits, an abated facility is likely to be profitable if the additional benefits outweigh the costs of CCS (Figure 2).

In what follows, we assess the technical feasibility of retrofitting carbon capture technology on UK EfW facilities.

[24] Energy Systems Catapult (n.d.). Can Energy from Waste drive the deployment of Carbon Capture & Storage?. Available at: [redacted]

[25] UK-ETS price accurate as of May 15, 2024 (source: [redacted]

[26] Cost of capture of around £150/tCO_2 estimated in a techno-economic analysis study conducted by the authorship team as part of the NEWEST CCUS project, funded by the ERA-NET Accelerating CCS Technologies (ACT2) initiative.

3. Technical feasibility of carbon capture from UK EfW facilities

Post-combustion CCS can be applied to EfW facilities to capture CO_2 emissions from the facility exhaust stream.[27] Industrial-scale, post-combustion CCS has been implemented at several locations worldwide including the SaskPower coal power plant in Canada (1 $MtCO_2$/y) and the Petra Nova coal power plant in USA (1.7 $MtCO_2$/y).[28] Within the EfW sector, post-combustion carbon capture has been installed at the AVR Netherlands EfW plant (105 $ktCO_2$/y), where the captured CO_2 is supplied to nearby greenhouse horticulture[29] and the Hafslund Oslo Celsio EfW facility (400 $ktCO_2$/y) in Norway is currently being retrofitted with CCS to sequester CO_2 as part of the Northern Lights project.[30]

CEWEP (2022) evaluated the GHG mitigation potential of applying CO_2 capture to the European EfW sector for a range of assumed CO_2 capture rates (50-90%) and market shares (50-90%). They found potential net negative GHG emission rates ranging from -20 to -75 $MtCO_2e$/y, including credits for reduced landfill emissions and energy substitution. However, they did not consider any limitations on ability of facilities to implement CCS.

Muslemani et al. (2023) screened European EfW facilities to assess the feasibility of retrofitting CCS based on three criteria: less than 300 km from a central CCS cluster or hub, available space on-site to physically install CCS equipment, and sufficient plant capacity to economically justify CCS (>100 $ktCO_2$/y). For European EfW facilities meeting those three criteria, they determined potential net negative direct CO_2 emissions of -20 to -28 $MtCO_2$/y based on 1 tCO_2 per tonne of waste and 100% CO_2 capture. Due to the large geographic area of their study, the analysis of transportation options was limited in scope (i.e., considered straight-line pipelines).

This study performs a detailed investigation of potential to apply CCS to EfW facilities in the UK. We follow the general screening framework of Muslemani et al. (2023), but apply a greater level of detail to the analysis to assess the feasibility, cost, and emissions associated with multiple CO_2 transportation options (pipeline, shipping, rail, and truck) for each facility meeting the suitability criteria.

3.1. Minimum capacity requirements

To do this, we used the inventory of 57 operating UK EfW facilities as basis (Table 1). EfW facilities with annual CO_2 emissions greater than 100 $ktCO_2$/y were selected for analysis. The minimum capacity criteria was selected based on the typical scale of CCS facilities in operation and in planning globally (Muslemani et al., 2023). Tolvik (2023) reports the licenced waste capacity of each UK EfW facility and an average CO_2 emission factor of 0.94 tCO_2 per tonne of waste. Here, we considered a range of CO_2 emission factors: 0.7, 0.94, and 1.18 tCO_2 per tonne of waste based on the range of values reported by UK EfW facilities excluding outliers.[31] The proportion of exhaust CO_2 captured at a particular facility would depend on the process and equipment design.

Eventually, we quantify the potential size of the CCS market for UK EfW facilities with the assumption that all net CO_2 produced by each facility could be captured based on recent studies and pilot tests which have shown that post-combustion capture rates near 100% are achievable and economically viable.[32,33,34,35] Here, negative emissions potential was estimated based on the average biogenic content of UK residual waste (52.5%).[36]

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[27] ibid
[28] IEA (2023). CCUS Projects Database. International Energy Agency. Available at: [redacted]
[29] ibid
[30] ibid
[31] ibid
[32] Feron, P., Cousins, A., Jiang, K., Zhai, R., Thiruvenkatachari, R., & Burnard, K. (2019). Towards zero emissions from fossil fuel power stations. *International Journal of Greenhouse Gas Control*, *87*, 188-202.
[33] Gao, T., Selinger, J. L., & Rochelle, G. T. (2019). Demonstration of 99% CO2 removal from coal flue gas by amine scrubbing. *International Journal of Greenhouse Gas Control*, *83*, 236-244.
[34] Danaci, D., Bui, M., Petit, C., & Mac Dowell, N. (2021). En route to zero emissions for power and industry with amine-based post-combustion capture. *Environmental Science & Technology*, *55*(15), 10619-10632.
[35] Su, D., Herraiz, L., Lucquiaud, M., Thomson, C., & Chalmers, H. (2023). Thermal integration of waste to energy plants with Post-combustion CO2 capture. *Fuel*, *332*, 126004.
[36] ibid

Table 1: Statistics for EfW facilities in the UK

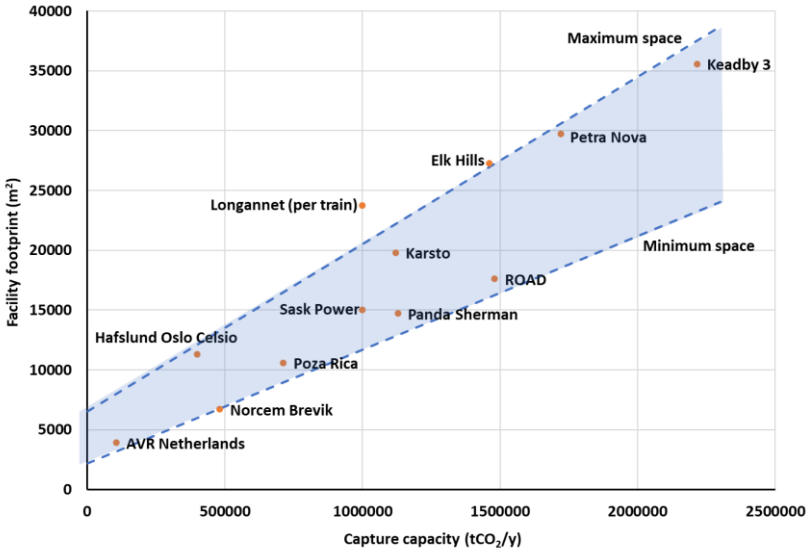
Facilities	Quantity	Permitted waste capacity	Waste processed in 2022
Operating	57	17.5 Mt/y	15.3 Mt
In construction	18	5.7 Mt/y	-

Source: Tolvik (2023)

3.2. On-site space availability for CCS

Each facility meeting the minimum capacity criteria was screened for physical on-site space availability for CCS equipment using satellite imagery (Google Earth). Note that physical space requirements for a particular CCS facility will vary significantly based on the CO_2 capture capacity and site-specific factors such as facility design philosophy and the extent to which existing utility systems can be utilised. Minimum and maximum correlations for space required for the CCS equipment as a function of capacity were developed using existing CCS facilities and detailed front-end engineering design studies for upcoming CCS facilities, as shown in Figure 3.

Figure 3: CCS facility footprint versus capacity



Note: Dashed lines show the minimum and maximum space requirement assumed in this study for given CO_2 capture capacity. Based on existing CCS facilities and detailed front-end engineering design studies for proposed CCS facilities.

- If available space at an EfW facility exceeded the maximum space requirement, we consider that space would be unlikely to constrain CCS installation at that facility;
- If available space at an EfW facility exceeded the minimum space requirement but was less than the maximum space requirement, we consider that there may be sufficient space available, but site-specific investigation would be required to confirm. *Facilities in either of the first two categories were included in the following transportation analysis;*
- If available space for an EfW facility was less than the minimum space requirement, we assume that space is likely inadequate to support CCS installation with current commercially available amine-based technology and thus the facility was not considered further in the analysis. The spatial analysis was considered independently for each CO_2 emission factor.

3.3. CO_2 transport options

As far as CO_2 transport options are concerned, it is important to note that the UK's current CCS cluster sequencing approach assumes pipeline-only transport away from the clusters. Yet, in this analysis, we consider other non-pipeline modes of CO_2 transport especially as the UK CCUS Vision recognises the strategic significance of these solutions to mitigate emissions from 'dispersed emitters'.

As such, four CO_2 transport modes were considered for each facility meeting the above capacity and space requirement criteria: pipelines, ship, rail, and truck. CO_2 was assumed to be transported from each facility to the closest of the four announced CO_2 sequestration hubs within the UK: Teesside, and Viking (Humber), HyNet (Liverpool Bay), and Acorn (Firth of Forth/Peterhead). CO_2 transport for EfW facilities linked to Acorn was based on delivery to Firth of Forth with pipeline transport to Peterhead for EfW facilities located south of Firth of Forth, or directly to Peterhead for EfW facilities located north of Firth of Forth. Pipelines and truck transport were considered for all EfW facilities in England, Scotland, and Wales. Ship transport was considered for Northern Ireland and facilities in England, Scotland, and Wales where the nearest deep-water port was closer than the nearest CO_2 sequestration hub (Figure 4). Rail transport was considered where there is reasonable access to the UK rail network at the EfW facility. Pipeline, rail, and truck transport were assumed to originate at the EfW facility. Ship transport scenarios included either truck or low-capacity pipeline to the nearest deep-water port.

Figure 4: Ship routes considered in this study

Source: Authors' depiction. Note: Originating at deep-water ports located near UK EfW facilities and terminating at deep-water ports within the nearest UK CO_2 sequestration hub (blue markers).

Table 2: CO_2 transport costs assumed in this study

Mode	Cost basis
Low-capacity pipeline	0.028 £/km-tCO_2
High-capacity pipeline	0.0065 £/km-tCO_2
Low-capacity ship	6.6 £/tCO_2 fixed plus 0.0045 £/km-tCO_2 travel
High-capacity ship	4.0 £/tCO_2 fixed plus 0.0036 £/km-tCO_2 travel
Rail	0.043 £/km-tCO_2
Truck	1.0 £/h-tCO_2 plus 0.015 £/km-tCO_2

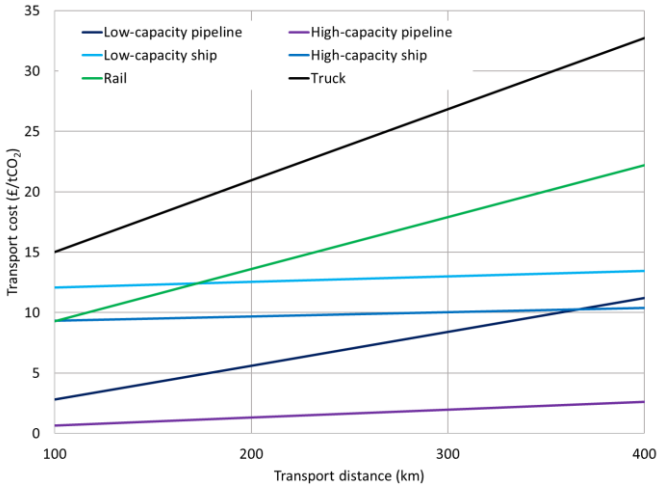
Note: Pipeline and ship estimates based on ZEP (2019) with currency conversion based on purchasing power parity (OECD, 2022). Rail estimate based on revenue and net freight volume for DB Cargo (UK)[37,38] Truck estimate based on MDS Transmodal (2019)[39].

[37] DB Cargo (2023a). DB Cargo (UK) Limited Annual Report for the year ended 31 December 2019. Available at: https://find-and-update.company-information.service.gov.uk/company/02938988/filing-history

[38] DB Cargo (2023b). Our company in numbers. DB Cargo (UK) Limited. Available at [redacted]

[39] MDS Transmodal (2019). 2019. Understanding the UK Freight Transport System. Report commissioned by UK Goverment Office for Science. Available: https://assets.publishing.service.gov.uk/media/5c614f7340f0b676c66a2620/fom_understanding_freight_transport_system.pdf

Figure 5: CO_2 transport cost versus distance



Note: Based on cost assumptions in Table 1 with 5 £/tCO_2 for additional processing to liquify the CO_2 (rail, ship, and truck). Truck transport assumes average speed of 70 km/h, one hour at each end to load/unload, and empty return from the CO_2 sequestration hub to the EfW plant.

CO_2 emission factors for each transport mode were based on distance traveled and empty returns for rail, ship, and truck (Table 2).

Table 3: CO_2 emission factors for transport modes assumed in this study

Mode	CO_2 Transport	Empty return	Total
Pipeline	0.005	N/A	0.005
Ship	0.018	0.002	0.020
Rail	0.021	0.003	0.024
Truck	0.058	0.009	0.067

Note: All values in kgCO_2/km-tCO_2 based on distance from the EfW plant to the CO_2 sequestration hub. Based on Freer et al. (2021)[40].

3.4. Results of technical assessment

In this analysis, 60-65% of the 57 UK EfW facilities were found to meet the minimum capacity and available space criteria in this study for installation of CCS depending on the assumed CO_2 emission factor (Table). These facilities represent 74-78% of the total CO_2 emissions from all UK EfW facilities (Table 4).

Table 4: Number of UK EfW facilities meeting the minimum capacity and available space criteria for inclusion in this study

	Minimum	Average	Maximum
Facilities meeting criteria	23	24	25
Detailed spatial analysis required	10	10	14
Total facilities included	**34**	**35**	**37**
Facilities not meeting criteria	23	22	20

Note: Breakdown of screening results for the three CO_2 emission factor scenarios: minimum (0.70 tCO_2/t waste), average (0.94 tCO_2/t waste), and maximum (1.18 tCO_2/t waste).

[40] Freer, M., Gough, C., Welfle, A., & Lea-Langton, A. (2021). Carbon optimal bioenergy with carbon capture and storage supply chain modelling: How far is too far?. *Sustainable Energy Technologies and Assessments*, *47*, 101406.

Table 5: CO_2 emissions (megaton) from UK EfW facilities meeting the minimum capacity and available space criteria for inclusion in this study

	Minimum	Average	Maximum
Emissions from facilities meeting criteria	5.98	7.82	8.65
Detailed spatial analysis required	3.58	4.21	6.70
Total emissions included (Mtpa)	**9.56**	**12.03**	**15.35**
Negative CO_2 potential (Mtpa)	**5.02**	**6.32**	**8.06**
Facilities not meeting criteria	2.70	4.44	5.33

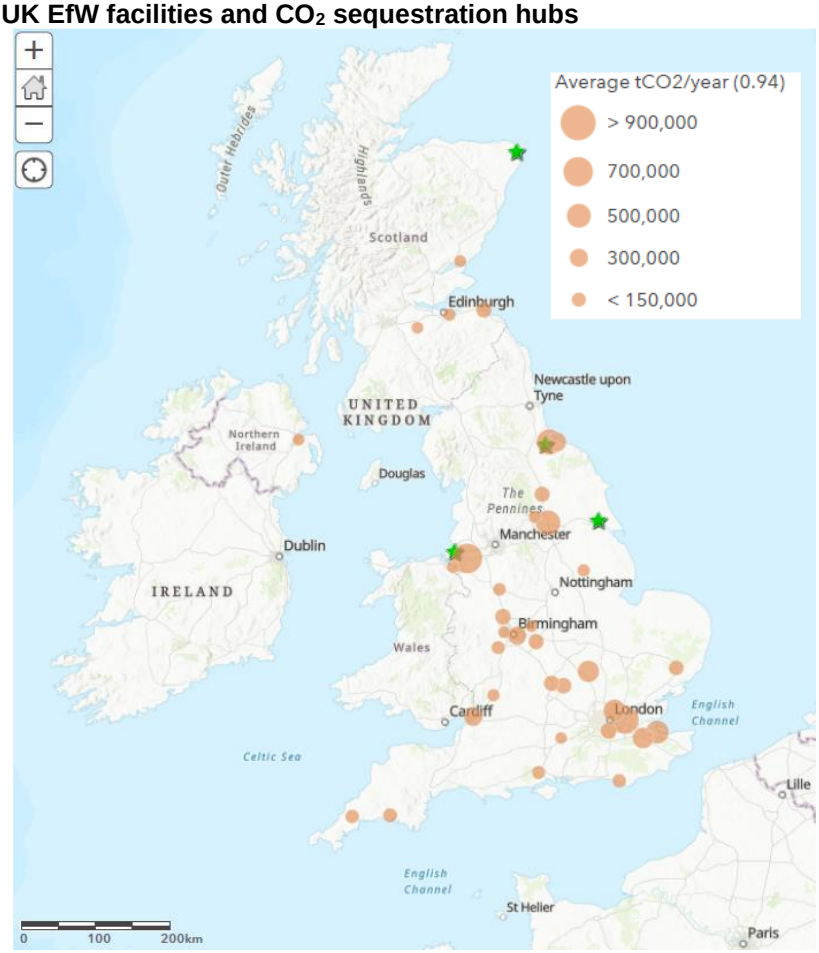
Note: Breakdown of screening results for the three CO_2 emission factor scenarios: minimum (0.70 tCO_2/t waste), average (0.94 tCO_2/t waste), and maximum (1.18 tCO_2/t waste). All values in $MtCO_2$/y.

CO_2 transport distances for UK EfW facilities vary widely – from 7 to 665 km – depending on the transport mode and proximity of the nearest sequestration hub (Figure 6). **High-capacity pipelines are the most economical CO_2 transport mode for all UK EfW facilities outside Northern Ireland** – less than 3.6 £/tCO_2 to the nearest CO_2 sequestration hub (Figure 7).

Ship transport costs are less affected by distance than pipeline, truck, or rail. The variability in CO_2 transport via ship is primarily due to distance from EfW facilities to the nearest deep-water port. Using low-capacity pipelines to transport CO_2 from EfW facilities to deep-water ports reduces the overall transport cost by an average of 5.4 £/tCO_2 compared to trucking. It is noteworthy that, when comparing costs for ship transport with other modes, the average distance for cases where ship transport is viable is significantly larger than land-based modes (484 km v. 239-267 km for truck, pipeline, and rail) because those facilities are generally further away from sequestration hubs (Figures 8-11).

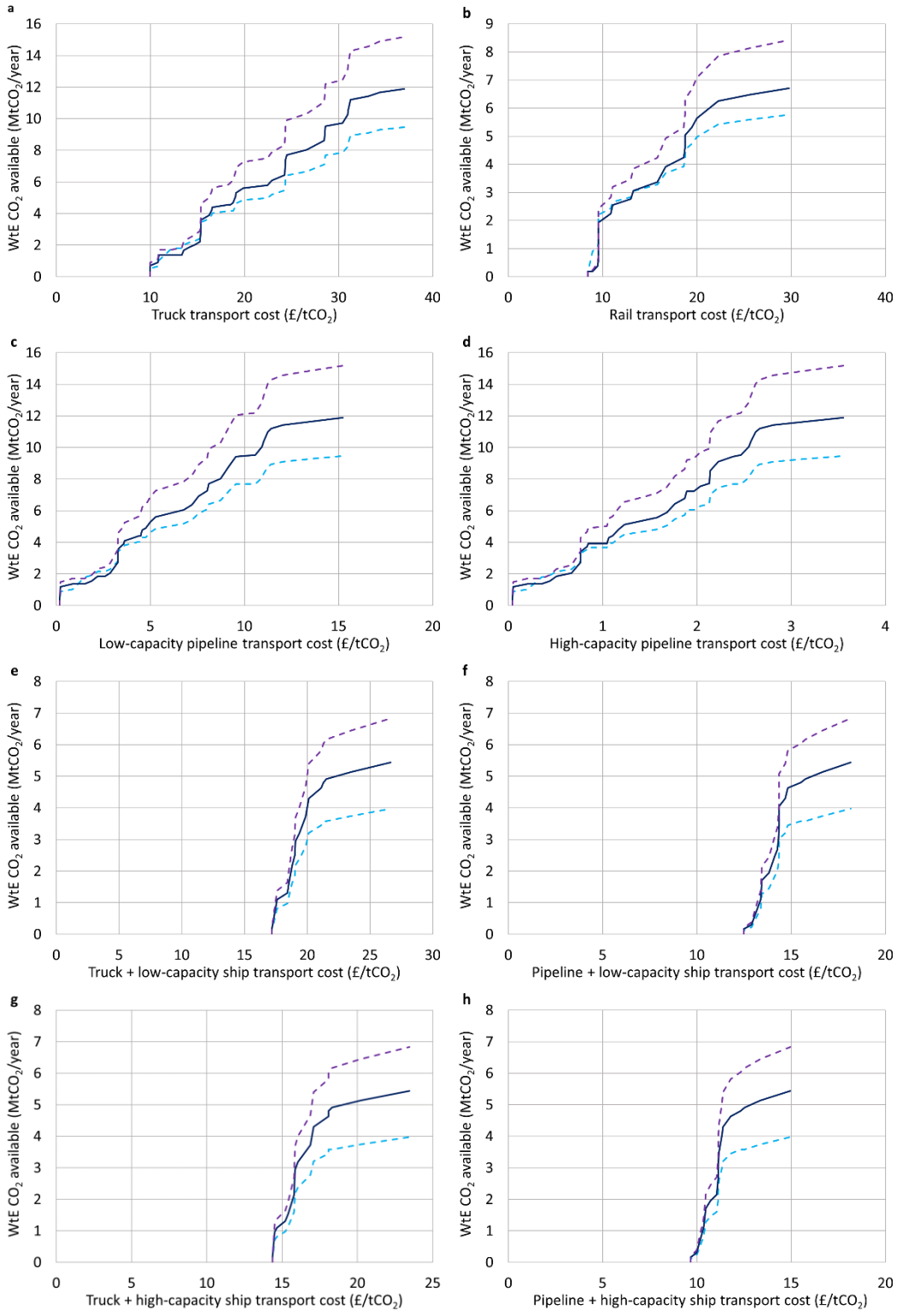
Logistical constraints limit the opportunity to use rail and ships to transport CO_2 from UK EfW facilities to approximately 55% and 53% of the total CO_2 available respectively. Among sites where all modes are viable, the typical cost merit order is ***pipeline < ship < rail < truck***. However, for 9 out of the 38 EfW facilities considered in the transportation analysis (19% of permitted waste capacity) the only viable options identified in this study are pipeline or truck.

Figure 6: Map of UK EfW facilities and CO_2 sequestration hubs



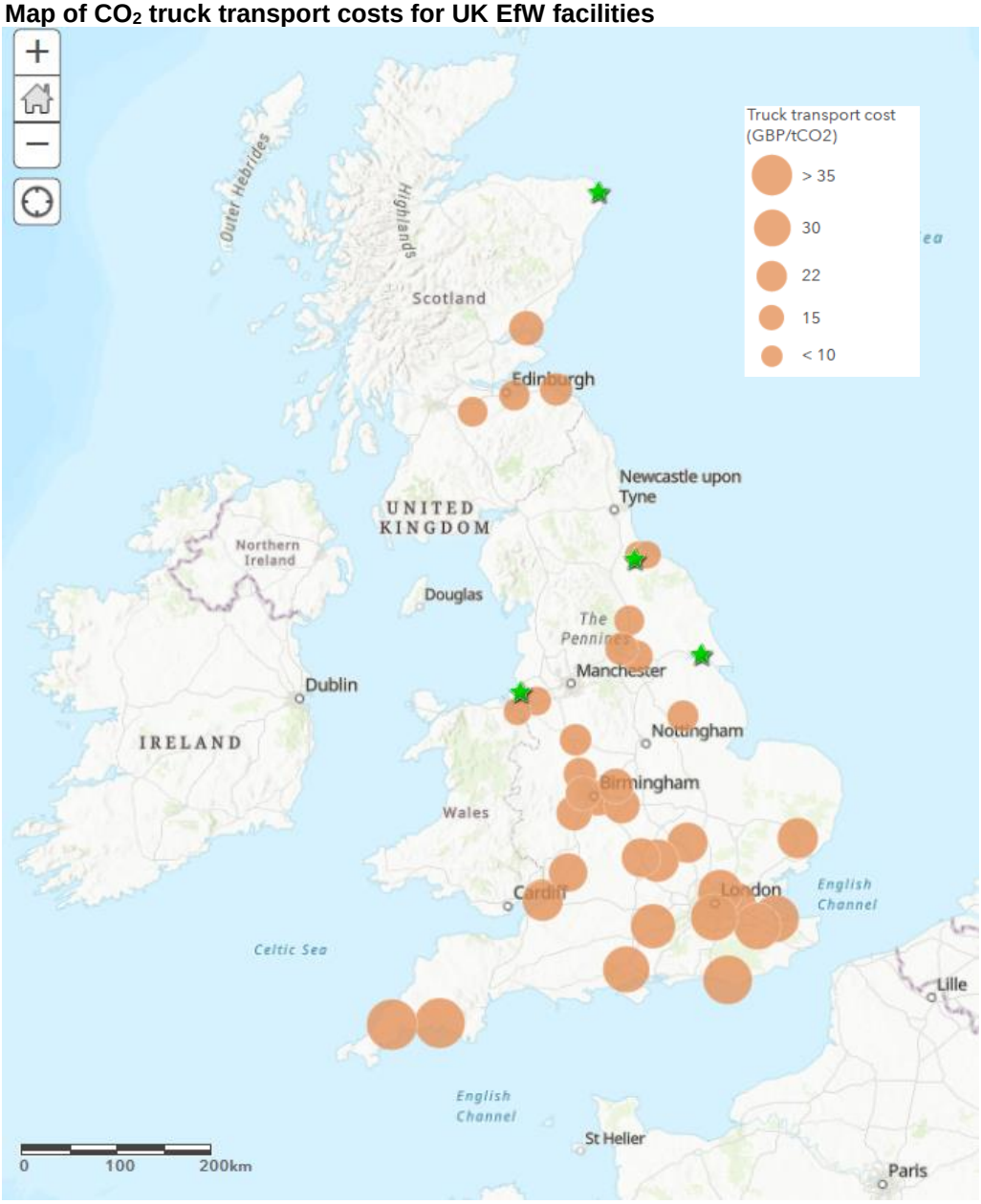
Note: Location of UK EfW facilities meeting the capacity and available space criteria for inclusion in this study (brown circles) relative to CO_2 sequestration hubs (green stars). Size of EfW facility symbols based on CO_2 emissions (tCO_2/y) using permitted waste capacity and 0.94 tCO_2 per tonne of waste.

Figure 7: Cumulative UK EfW CO_2 emissions available versus CO_2 transport cost for each mode



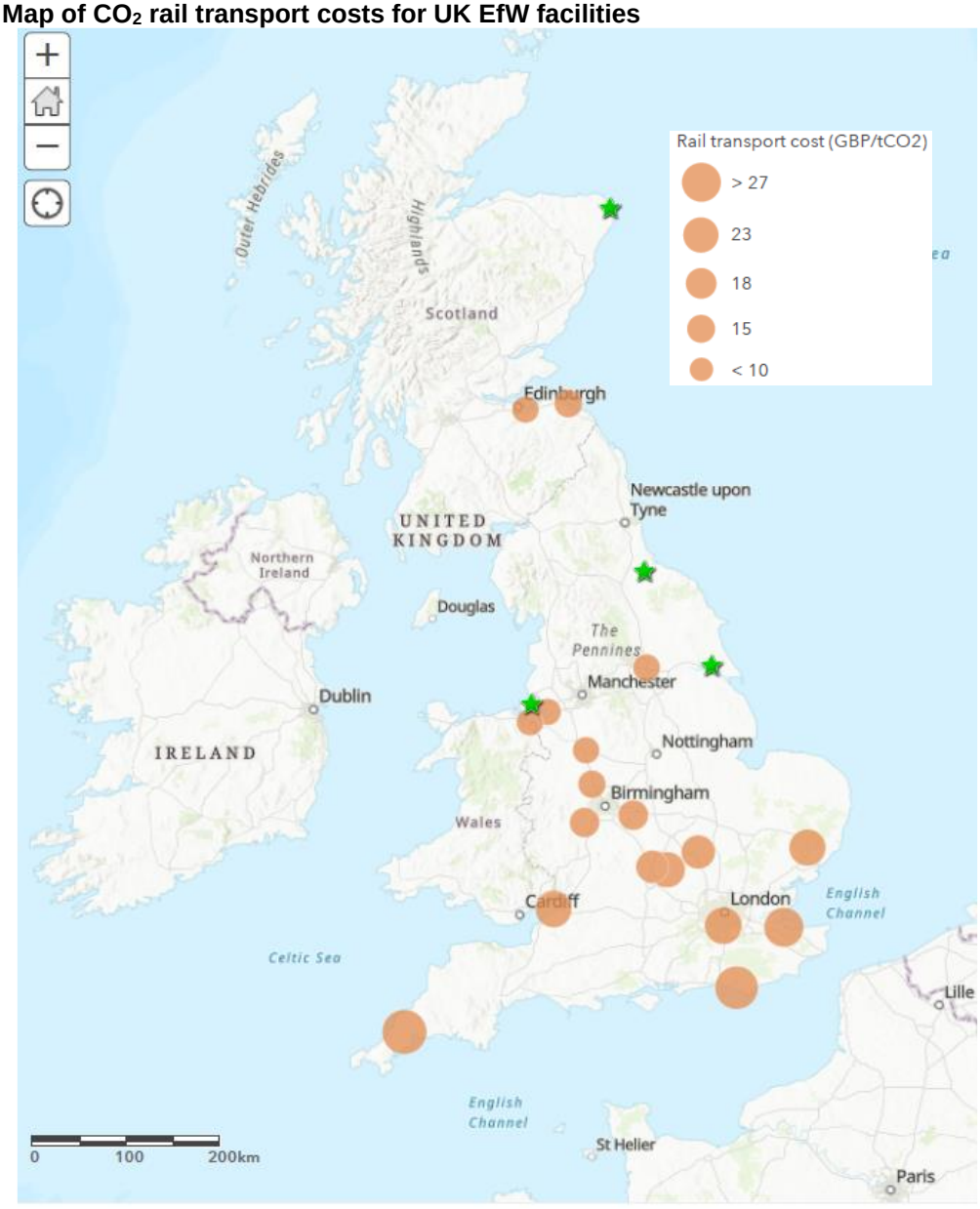
CO_2 emissions based on facility licenced capacity and three CO_2 emission factors: average (0.94 tCO_2 per tonne waste, solid dark blue line), maximum (1.18 tCO_2 per tonne waste, dashed purple line), and minimum (0.7 tCO_2 per tonne waste, dashed light blue line). **a**, truck. **b**, rail. **c**, low-capacity pipeline. **d**, high-capacity pipeline. **e**, low-capacity ship with truck transport to port. **f**, low-capacity ship with pipeline transport to port. **g**, high-capacity ship with truck transport to port. **h**, high-capacity ship with pipeline transport to port.

Figure 8: Map of CO_2 truck transport costs for UK EfW facilities



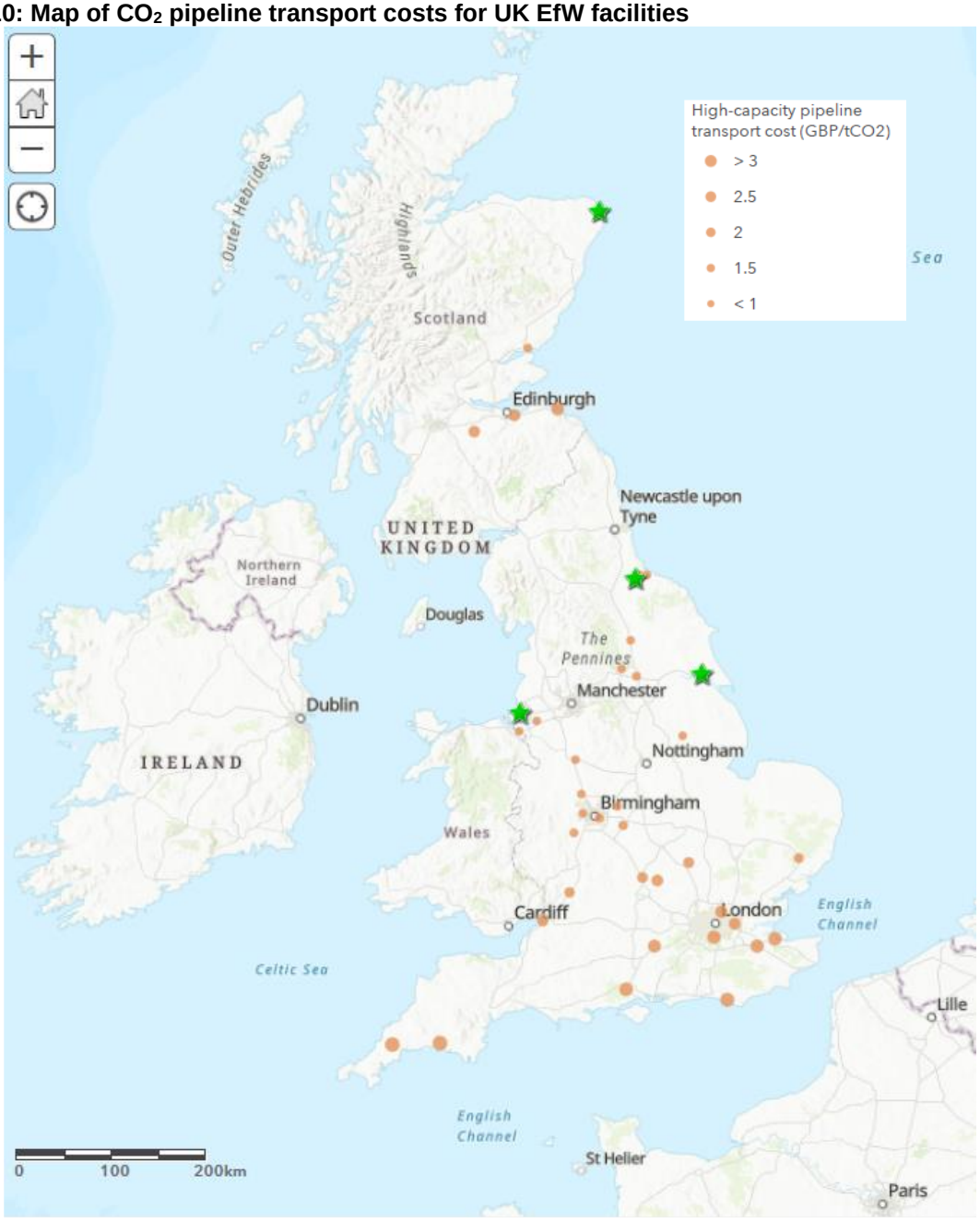
Note: Location markers for UK EfW facilities (brown circles) scaled by cost to transport CO_2 by truck to nearest CO_2 sequestration hub (green stars).

Figure 9: Map of CO_2 rail transport costs for UK EfW facilities



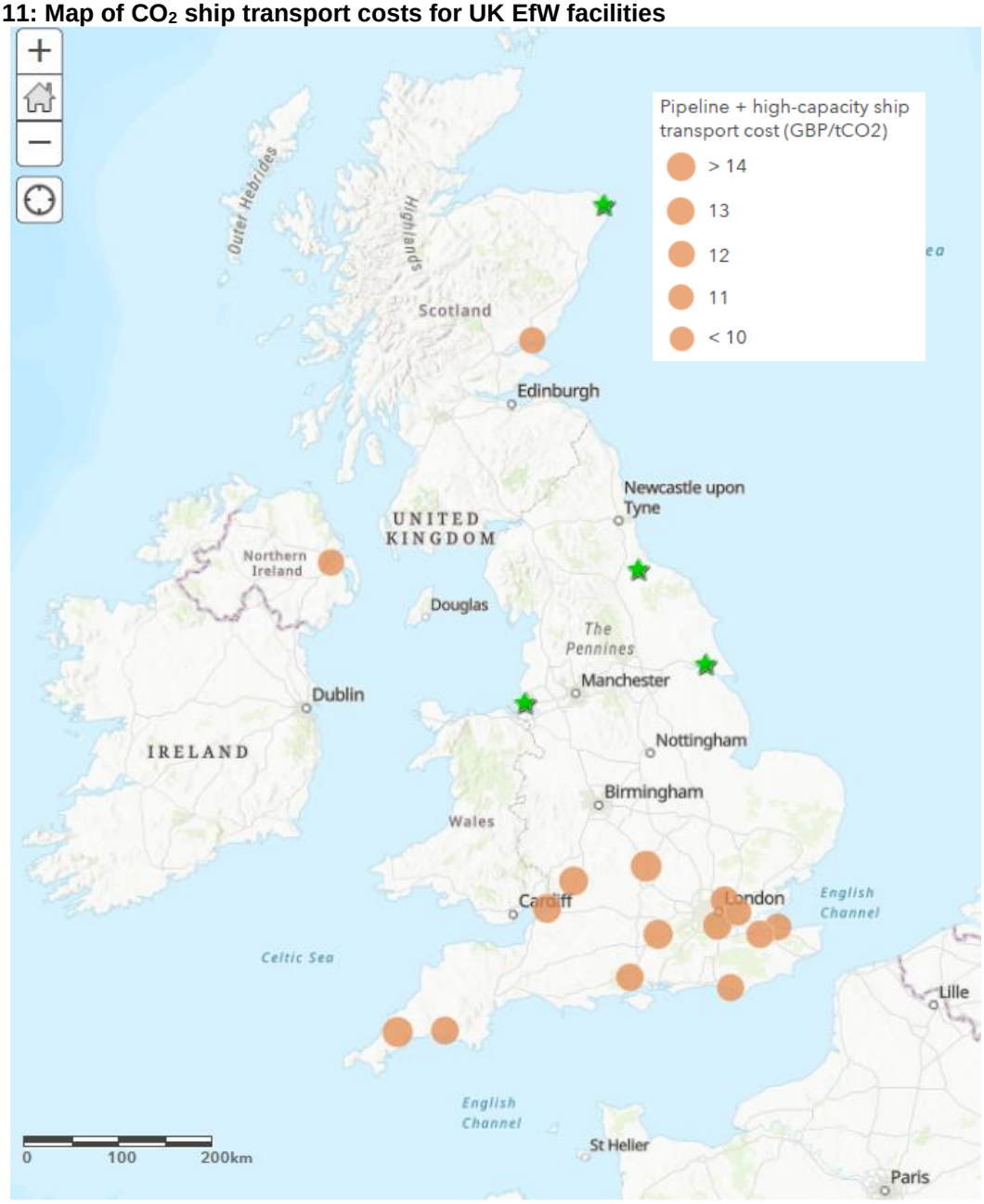
Note: Location markers for UK EfW facilities (brown circles) scaled by cost to transport CO_2 by rail to nearest CO_2 sequestration hub (green stars).

Figure 10: Map of CO_2 pipeline transport costs for UK EfW facilities



Note: Location markers for UK EfW facilities (brown circles) scaled by cost to transport CO_2 by high-capacity pipeline to nearest CO_2 sequestration hub (green stars).

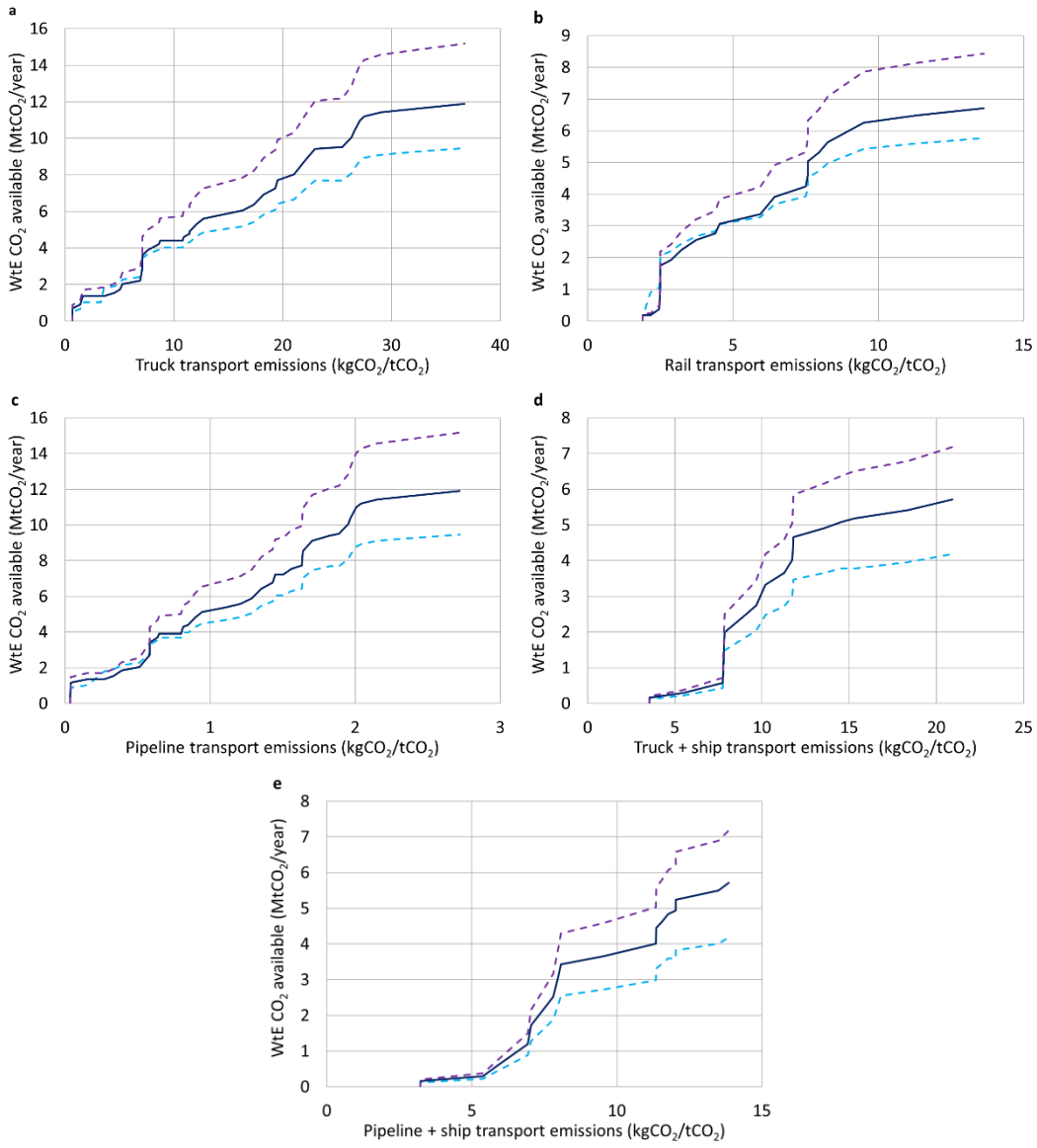
Figure 11: Map of CO_2 ship transport costs for UK EfW facilities



Note: Location markers for UK EfW facilities (brown circles) scaled by cost to transport CO_2 by pipeline to nearest deep-water port and high-capacity ship to nearest CO_2 sequestration hub (green stars).

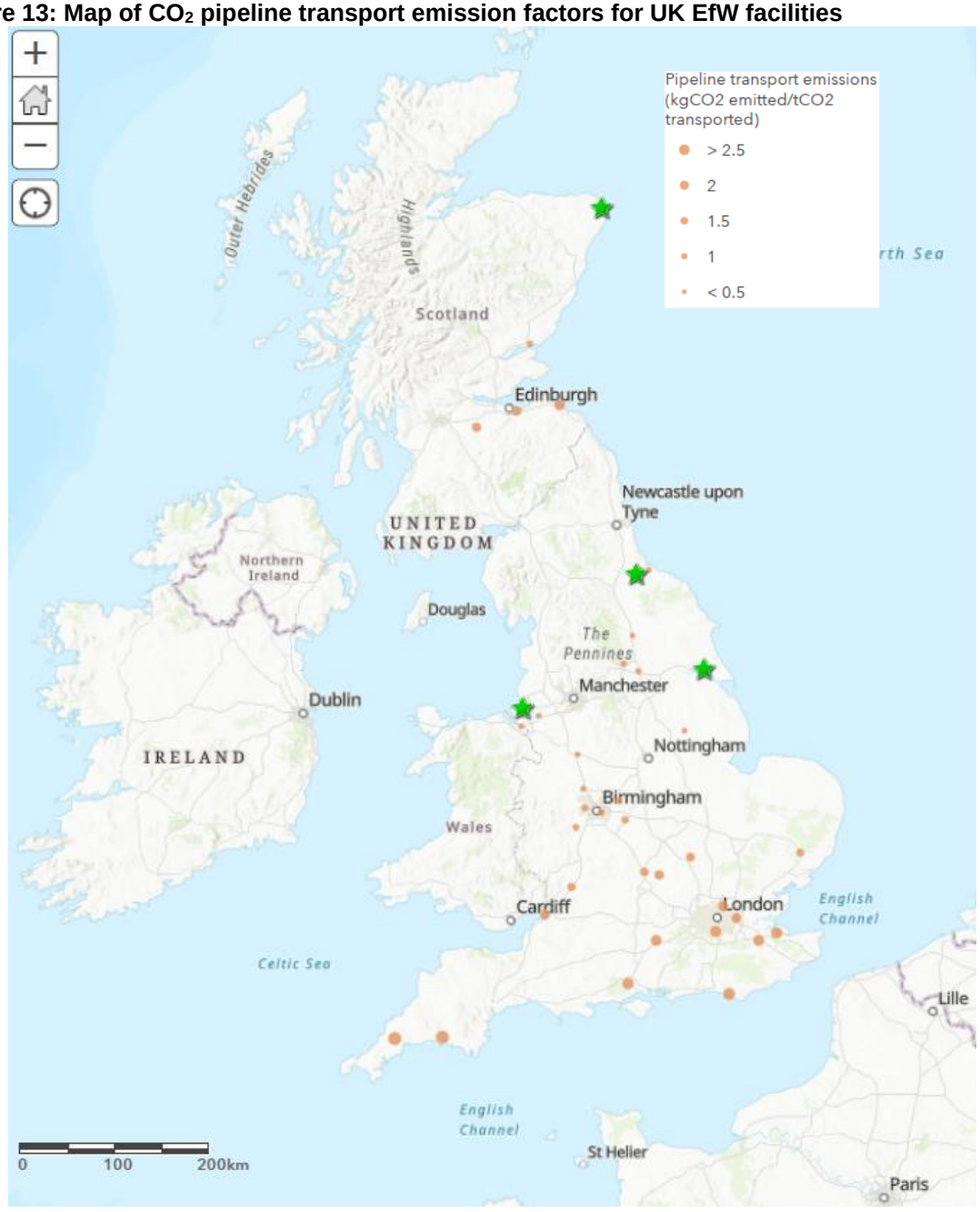
Pipeline transportation also has the lowest carbon footprint of the four CO_2 transportation modes by a significant margin – an average of 1.2 $kgCO_2/tCO_2$ transported versus 5.8-14.7 $kgCO_2/tCO_2$ for the other modes (Figure 12). Direct CO_2 emissions associated the pipeline transportation are less than 2.7 $kgCO_2/tCO_2$ transported from all EfW facilities in England, Scotland, and Wales to the nearest CO_2 sequestration hub (Figure 13). Truck transportation is the most carbon-intensive mode (Figure 14) and increases the carbon footprint of ship transport up to 74% compared to using pipelines to transport CO_2 to the nearest deep-water port. However, transportation emissions with trucking to the nearest sequestration hub are less than 4% of captured CO_2 for all UK EfW facilities. CO_2 emissions for rail and ship transport (Figures 15 and 16, respectively) lie between pipelines and trucks, but the relative merit order is site-specific because the transport distance can be quite different for the two modes depending on geographical features between the EfW facility and the nearest CO_2 sequestration hub.

Figure 12: Cumulative UK EfW CO_2 emissions available versus CO_2 transport emissions ($kgCO_2$ emitted per tCO_2 transported) for each mode



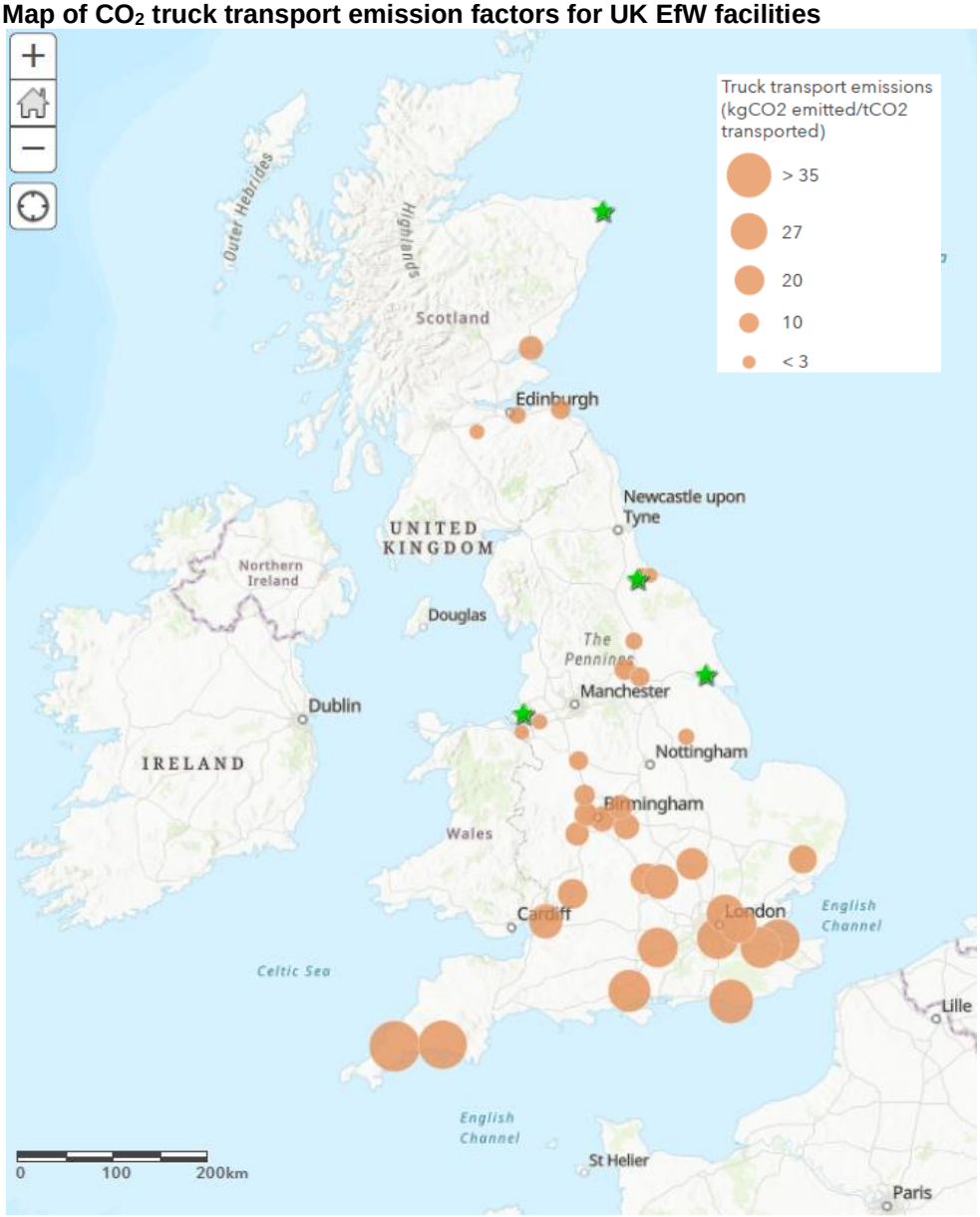
Note: Cumulative CO_2 emissions ($MtCO_2$/year) based on facility licenced capacity and three emission factors: average (0.94 tCO_2 per tonne waste, solid dark blue line), maximum (1.18 tCO_2 per tonne waste, dashed purple line), and minimum (0.7 tCO_2 per tonne waste, dashed light blue line). a, truck. b, rail. c, pipeline. d, ship with truck transport to port. e, ship with pipeline transport to port.

Figure 13: Map of CO_2 pipeline transport emission factors for UK EfW facilities



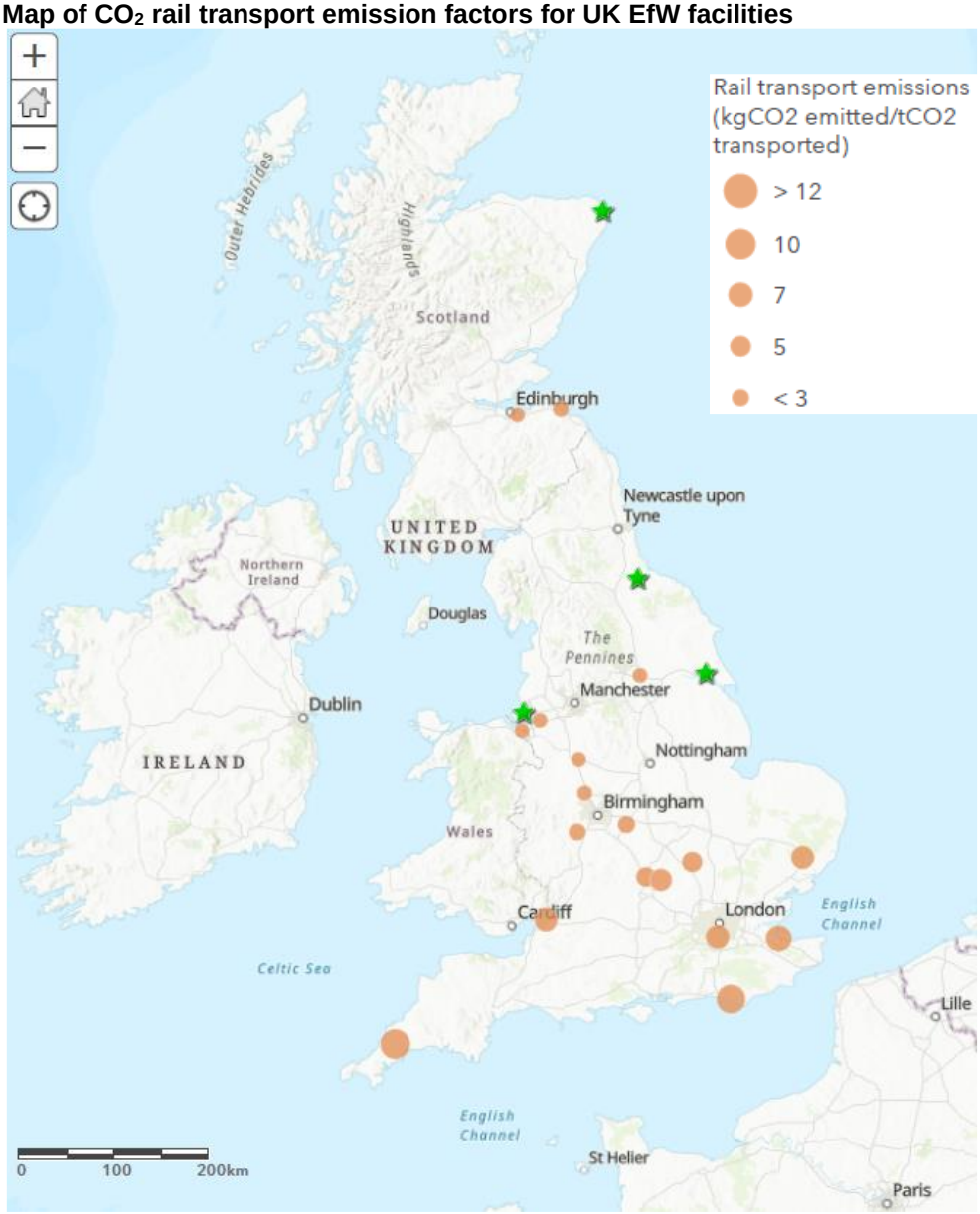
Note: Location markers for UK EfW facilities (brown circles) scaled by emissions to transport CO_2 by pipeline ($kgCO_2$ emitted/tCO_2 transported) to nearest CO_2 sequestration hub (green stars).

Figure 14: Map of CO_2 truck transport emission factors for UK EfW facilities



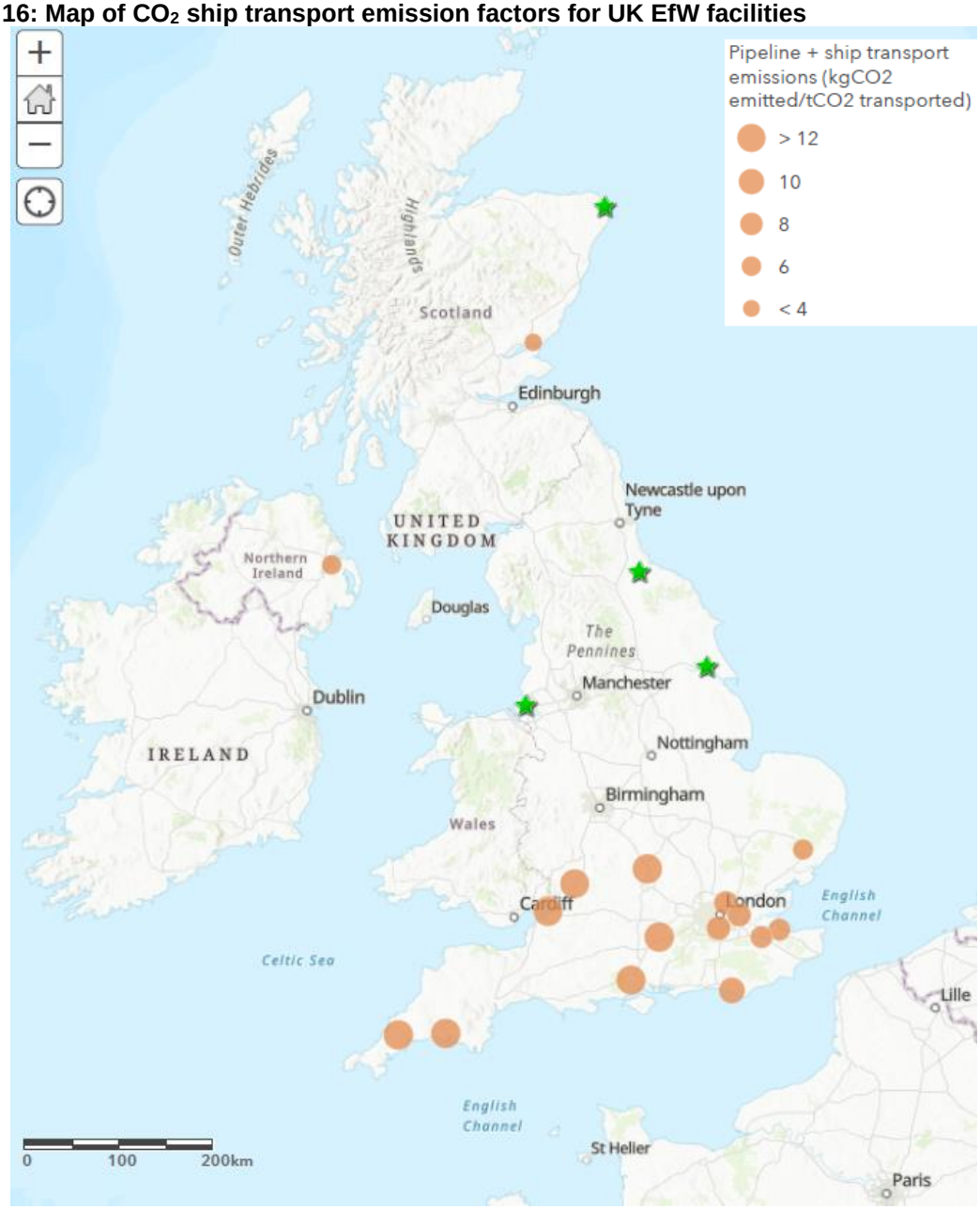
Note: Location markers for UK EfW facilities (brown circles) scaled by emissions to transport CO_2 by truck ($kgCO_2$ emitted/tCO_2 transported) to nearest CO_2 sequestration hub (green stars).

Figure 15: Map of CO_2 rail transport emission factors for UK EfW facilities



Note: Location markers for UK EfW facilities (brown circles) scaled by emissions to transport CO_2 by rail ($kgCO_2$ emitted/tCO_2 transported) to nearest CO_2 sequestration hub (green stars).

Figure 16: Map of CO_2 ship transport emission factors for UK EfW facilities



Note: Location markers for UK EfW facilities (brown circles) scaled by emissions to transport CO_2 by pipeline to the nearest deep-water port and ship ($kgCO_2$ emitted/tCO_2 transported) to nearest CO_2 sequestration hub (green stars).

3.5. Study limitations and other considerations for CO_2 transport

While pipeline transportation of CO_2 provides the lowest cost and lowest CO_2 emissions for EfW facilities in England, Scotland, and Wales, other considerations may limit the opportunity for EfW facilities to utilise pipeline transport. Constructing new long-distance pipelines requires significant time to acquire the necessary regulatory approvals and land agreements and the timeline required for planning and construction may not be consistent with CCS implementation plans. Furthermore, addressing community concerns along proposed rights-of-way could be challenging and delay construction.[41]

Pipelines also require a significant commitment of upfront capital to construct; therefore, certainty in government policy related to CCS and CO_2 emissions is important to mitigate risk and encourage investment

[41] Gough, C., & Mander, S. (2014). Public perceptions of CO_2 transportation in pipelines. *Energy Policy*, *70*, 106-114.

in these long-lived assets. Construction of long-distance CO_2 pipelines would need to be part of a larger strategy for CO_2 transportation (e.g., national) as the scope of these projects is beyond the means of any individual emitter.

Although pipelines were considered for all EfW facilities in this study, they may not be feasible at all locations due to existing development and infrastructure in the surrounding area. Determining feasibility would be particularly important for 24% of EfW facilities which do not appear to have reasonable access to rail or ship transportation. Pipeline transport distances in this study were based on rights-of-way following existing transportation corridors, but this may not be possible in practice and alternative routes may need to be chosen. Nonetheless, there are significant benefits for UK society in reduced cost and emissions for CO_2 transport that would support development of long-distance CO_2 pipeline infrastructure.

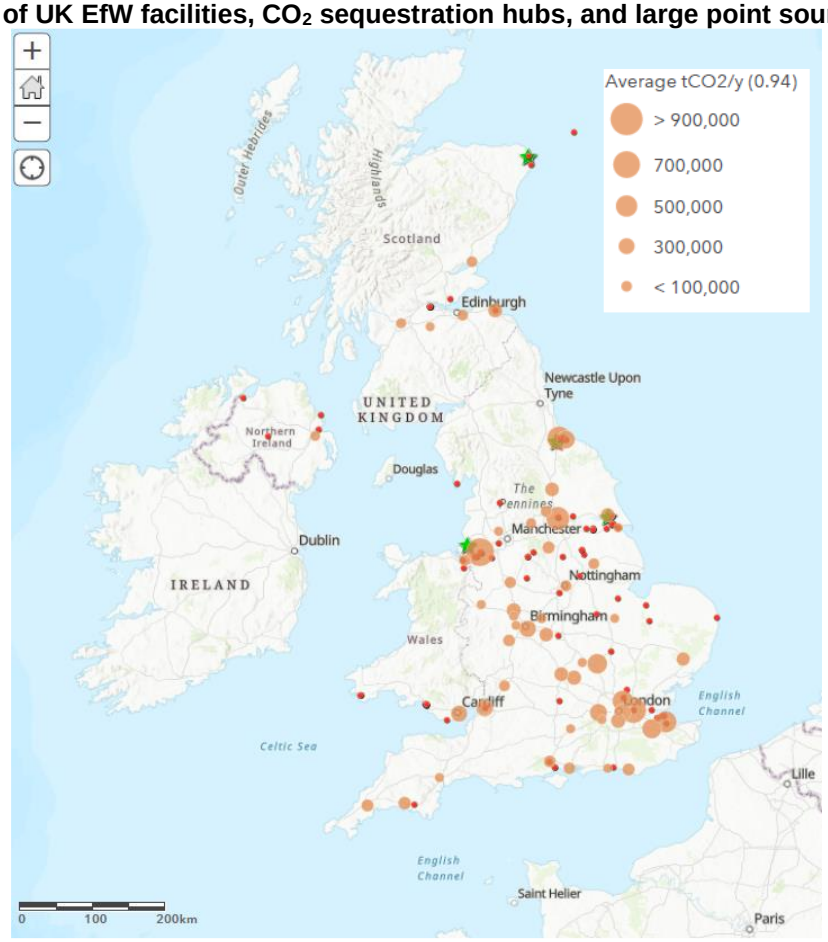
Rail and ship transport are the second-best options for CO_2 transport with site-specific characteristics determining which option is preferable in terms of cost and emissions. Rail and ship transport could offer benefits for project proponents by utilising existing infrastructure to reduce the timeline and risks associated with approval and construction of CO_2 transportation infrastructure. It is economically favourable for EfW facilities located in southern England near deep-water ports to utilise ship transport; however, many facilities are located inland away from ports. Rail is more economical than ship transport for facilities which are located within 100km of a central CO_2 sequestration hub. This study assumed available capacity at existing ports and on existing rail lines, but this may be a limiting factor for specific sites in practice. Site-specific feasibility would need to consider capacity of existing rail and port facilities. Furthermore, alternative combinations of transport options may be preferred based on site-specific circumstances (e.g., pipeline to a rail terminal or rail to a deep-water port).

The analysis of both pipeline and ship transport options for UK EfW facilities highlights the importance of creating central hubs to achieve economies of scale for key infrastructure to reduce costs associated with CO_2 transportation. This study focuses on UK EfW facilities, but CO_2 transportation infrastructure would need to be shared with emission sources in other industries (Figure 17) to achieve the production scale associated with cost forecasts in this study associated with either the “high-capacity” or “low-capacity” scenarios for pipeline and ship transport (25 and 2.5 $MtCO_2$/year respectively).

Note that this study assumed a cut-off of 100 $ktCO_2$/y for minimum facility size for CCS to be feasible, but it may be economic in practice to install CCS at smaller facilities if they are located near large-scale CO_2 transportation and/or sequestration infrastructure (Figure 17). However, this is not expected to materially affect the results of this overall analysis as the facilities excluded based on capacity represent approximately 2% of the overall sector’s CO_2 emissions. Similarly, facilities which were excluded in this study based on space constraints may be viable for CCS using future processes with footprints smaller than conventional amine-based post-combustion CO_2 capture, albeit likely at higher abatement costs.

It is also imperative to highlight that there are 17 new EfW plants under construction in the UK (plus one replacement) with a licenced capacity of 5.7 $MtCO_2$/y which were not included in this study but represent further opportunity for CO_2 capture from the sector. Moreover, this work only considered transportation to the four CO_2 sequestration hubs currently being developed under the UK government’s initial CCS cluster sequencing; however, other CCS hubs may be developed in the future that would reduce cost/emissions for CO_2 transportation from certain UK EfW facilities. This study assumed capacity would be available for CO_2 delivery to the CO_2 sequestration hub nearest each EfW facility, but constraints on sequestration infrastructure capacity would need to be considered in the planning for any specific EfW facility.

Figure 17: Map of UK EfW facilities, CO_2 sequestration hubs, and large point source emitters



Note: Location of all UK EfW facilities (brown circles), excluding Shetland Islands, relative to CO_2 sequestration hubs (green stars) and UK point sources of CO_2 emissions greater than 250 $ktCO_2/y$ in 2021 (red dots). Size of EfW facility symbols based on CO_2 emissions (tCO_2/y) using permitted waste capacity and 0.94 tCO_2 per tonne of waste. Point source emission data from UK NAEI (2023)[42].

4. Concluding remarks

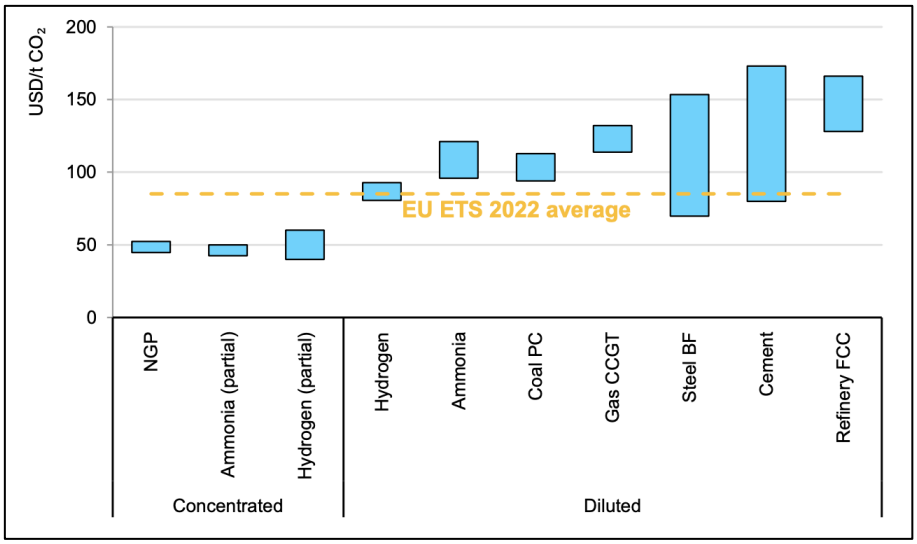
This analysis makes evident that the potential to generate negative emissions from the UK EfW sector is substantial. Under the most conservative scenario in this study, which assumes a low emissions intensity factor of 0.7 tCO_2 emitted per tonne of waste combusted, and only considering facilities where there is high certainty of available on-site space for CCS retrofit, we estimate that around 5 Mtpa of negative emissions can be captured from the entire UK fleet. If a higher emissions intensity factor of 1.18 tCO_2/t is assumed, this estimate increases up to 8 Mtpa; that is while excluding facilities where further analysis on space availability is needed, which may increase this estimate even further.

For perspective, this range (5-8 Mtpa, with a median average of 6.3 Mtpa) is on par with the UK's target of 5-6 Mtpa of deployed engineered greenhouse gas removals (GGRs) by 2030 and translates to 21-34% of the UK's target of 23 Mtpa by 2035, and 8-13% of the 60 Mtpa in GGR capacity by 2050. Meeting those targets will be challenging, especially the near-term ones, as they would require significant scale-up of carbon removal projects, at a time when a pipeline of GGR projects with the necessary scale to meet those targets is still lacking. Moreover, while other nascent GGR solutions may need to undergo long testing and investment stages, EfW+CCS relies on mature, already-proven technology and can be deployed relatively quickly, which speaks to the strategic role that EfW+CCS can play in meeting those targets.

[42] UK NAEI (2023). Emissions from NAEI large point sources. UK National Atmospheric Emissions Inventory. Available: https://naei.beis.gov.uk/data/map-large-source

From an economic standpoint, previous analysis shows that costs of CCS retrofit in EfW can be around £150/t which is comparable to its costs in other industrial sectors (Figure 18),[43] yet it is with the potential to generate negative emissions that the business case for EfW+CCS becomes clear. Negative emissions have become a sought-after asset due to their widely regarded role in climate mitigation and their increasing importance in meeting national and corporate net-zero goals. At the project level, sale of negative emission credits has been at the core of the business case of some existing and in-planning GGR projects such as DACCS where, coupled with government subsidy, it can be the only other revenue stream to support their deployment. In contrast, alternative GGR solutions such as BECCS can rely on other revenue streams such as the sale of energy commodities, while secondary revenue from negative emissions sales is a welcome by-product.

Figure 18: Levelized cost of CCS across different sectors



Source: Figure extracted from International Energy Agency (2023), CCUS Policies and Business Models: Building a Commercial Market. Notes: Notes: BF = blast furnace; CCGT = combined cycle gas turbine; FCC = fluid catalytic cracker; NGP = natural gas processing; PC = pulverised combustion.

To that extent, the business case of BECCS perhaps represents the closest proxy to that of EfW+CCS, where multiple revenue streams exist. However, as noted earlier, if not properly managed BECCS may lead to increased pressure on land use and, depending on the incentives in place to support it, the practice may suffer from public perception issues.[44] Similarly, the role of DACCS as a legitimate climate mitigation solution has been criticized due to its high energy intensity and significantly higher costs than CCS (whether deployed in EfW or other sectors). Compared with both solutions, EfW+CCS alleviates the need for additional land space while also addressing an existing problem (landfilling), and instead of requiring high amounts of energy to operate, it (cleanly) produces it.

In the UK context specifically, at a time when the UK Government has committed to adopting CCS as a main pathway for national decarbonisation – evident by its now-established CCS business models including the Waste ICC contracts framework – this study makes clear that the EfW sector may well be the low-hanging fruit for CCS deployment and the well-needed generation of negative emissions nationally.

[43] As noted earlier, cost of capture of around £150/tCO_2 estimated in a techno-economic analysis study conducted by the authorship team as part of the NEWEST CCUS project, funded by the ERA-NET Accelerating CCS Technologies (ACT2) initiative.
[44] Bellamy, R., Lezaun, J., & Palmer, J. (2019). Perceptions of bioenergy with carbon capture and storage in different policy scenarios. *Nature communications*, *10*(1), 743.

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