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for people and wildlife

Environment Agency

Planning Inspectorate
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Our ref: SL/2023/122661/05-L01
Your ref: EN010128
Interested party ref: 20049138

Date: 17 January 2025

Dear Examining Authority

Application by Cory Environmental Holdings Limited (CEHL) for an Order Granting Development Consent for the Cory Decarbonisation Project
The Examining Authority's written questions and requests for information (ExQ1)

Please find attached our response to the Examining Authority's First Written Questions on behalf of the Environment Agency in relation to the application for an Order Granting Development Consent for the Cory Decarbonisation Project

I hope this is helpful.

Yours sincerely

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Question no.	Question to	Question	Consultee comments
Q1.01.1.8	The applicant & Environment Agency	**Use of Amine products within Carbon Capture** By what mechanisms are the use of Amine products controlled (do they form part of the Environmental Permit controls)? Should the control of Amine products be dealt with through the dDCO? If so, please provide a method for doing so.	The environmental permit will control emissions of the amine solvent and its degradation products, including specifying relevant emission limits. The environmental permitting process will include an assessment of the techniques proposed by the operator for preventing or minimising emissions of these substances, along with consideration of their modelled impacts. The Environment Agency will not issue a permit if the proposed installation could have a significant impact on the environment or human health. The Environment Agency does not see any need for the dDCO to replicate the environmental assessments and controls pertaining to the use of the amine solvent that will be covered by the environmental permitting process.
Q1.3.1.5	The Applicant, NE and EA	**Effects of lighting on Water Voles** Would the lighting strategy required by Requirement (R) 11 in the dDCO be capable of mitigating effects of lighting on water voles? If so, please provide a full and detailed justification and if not, what alternative arrangements are proposed?	The Outline Lighting Strategy (APP-123). has followed guidance from the Bat Conservation Trust. Assurances with regards to lighting 'timers' and shielding will help to mitigate for any significant disturbance. Therefore, suitable lighting strategy information has been provided to mitigate for Bats, Birds, possibly fish species and any Water Voles that will still be present within any remaining habitat on site. The main issue is with Bats and over lighting of the watercourse. As we understand, a s number of ditch networks within the development boundary are proposed to be infilled triggering. Water Vole displacement and offsite mitigation. Please note we will require a similar strategy for lighting over the jetty with regards to impacts on fish species. We would recommend that during periods the jetty is not used (at night) that the majority

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			of all non-essential lighting is turned off. Lighting overspill has the potential to affect fish movements. We note that the applicant has acknowledged this and stated that this will be considered 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.
Q1.4.0.2	EA	**Carbon cost of development platform vs disruption to CCF plant during flooding** Has the Applicant's Response to Interested Parties Deadline 1 Submissions document [REP2-019] addressed the EA's observations [REP1-035] relating to the relative carbon costs of land raising and any equipment being temporarily out of action due to flooding caused by a breach in the flood defences?	We note that the extent to which the carbon capture equipment could be out of action due to flooding caused by a breach of the Thames Tidal defences has not been determined. That exercise would logically include establishing which pieces of equipment would be vulnerable to flooding and the options for protecting them, including raising the key elements to a higher level. The applicant has previously told the Environment Agency that they have yet to determine the method of ground raising and that that is to be considered as part of the detailed design. Ground raising on marsh land presents technical challenges and it is noteworthy that the improvements to Norman Road for the first Energy From Waste power station included deep soil mixing to strengthen the subsoil to support the road. Significant engineering works may therefore be required to raise the development platform as proposed. At face value the contextual information provided by the applicant indicates that the ground raising equates to about 1 day of C02 emissions from the two Energy from Waste power stations without the CCF.

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			The Environment Agency welcomes the commitment by the applicant to review and seek to reduce the ground raising required. We believe that that exercise should be extended to determine the extent to which the carbon capture equipment will be out of action and the opportunities to protect the different equipment from damage during flooding
Q1.8.3.10	The Applicant, NE and EA	**R11 - Lighting strategy** Would this R, either as proposed or suitably amended, be capable of satisfying the particular issue of sensitivity of water voles as pointed out in EA's Written Representation, section 6 [RE1-035]? Should EA or NE be required consultees on any strategy?	R11 as proposed would satisfy the particular issue of sensitivity of water voles and the Environment Agency would like to be a statutory consultee on any strategy. The removal of habitat and translocation of Water Voles means that any impact of the proposed lighting is reduced due to Water Vole populations being displaced. We note that no lighting is proposed in the Mitigation and Enhancement Area and that Requirement 11 already provides for a Lighting Strategy to be submitted and approved, in substantial accordance with the Outline Lighting Strategy (APP-123). More information is to be received regarding off site compensation for Water Vole habitat lost to the development. This is our primary ongoing concern. Ideally no habitat for a protected species should be degraded or destroyed. However, if this is unavoidable justification to address this will need to be provided along with robust offsite mitigation and onsite biodiversity enhancement.
Q1.8.3.18	The Applicant and EA	**R17 – River wall** Why is the R to seek approval from the EA rather than the LPA (who may consult with the EA)?	The Environment Agency is the public body tasked with regulating works affecting the flood defences and that is why the EA rather than the LPA are proposed to be the approving body for Requirement 17 (River Wall). That approach is being carried forward from the previous DCO for the construction of the

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			Riverside 2 Energy from Waste Power Station where uniquely Requirement 20 requires the approval of the EA.
Q1.8.5.1	EA	**Suitability of protective provisions** Please can the EA clarify what changes to protective provisions they are seeking as mentioned in their written representation [REP1-035]?	The Environment Agency has produced a set of Standard Protected provision along with an Explanatory note which we will provide with this response
Q1.9.0.1	The applicant & EA	**Flood Risk** Bearing in mind the Applicant's Response to Interested Parties' Deadline 1 Submissions document [REP2-019], please can the Applicant and EA advise what further progress has been made regarding the matters set out in the EA's written representation [REP1-035] and what matters remain outstanding?	Limited further progress has been made on the outstanding Flood Risk issues. The Environment Agency remain concerned over what we see as excessive flexibility created by the wording of the Design Principles and the Design Code in terms of how close the ground raising and the works can extend towards the watercourses. The applicant's response restates their position but does not offer a change or any further comfort over the impacts the Environment Agency has highlighted in our previous comments. Based on the document 'Appendix A: Coastal Processes Technical Note' received in December 2024, we are now satisfied that the sediment modelling and it's interaction around the proposed jetty and the possibly demolition of the existing Belvedere power station jetty (disused) in respect of the scour and deposition of sediment on the intertidal mudflat is a reasonable assessment of change. The assessment shows that, any sedimentation will be on the subtidal or the very edge of the intertidal and won't affect the Great Breach outfall. We are no longer

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			concerned about sedimentation in front of the Great Breach outfall as a result of the Cory Carbon Capture proposal. Resultantly, we are strongly in favour of the demolition of the Belvedere power station jetty (disused) as a biodiversity enhancement/Biodiversity Net Gain improvement which is a sensible option to open up currently shaded intertidal mudflat. The previous modelling showed that jetty's demolition causing apparent siltation in front of the Great Beach outfall. This is not now the case. On 23/12/2024, the Environment Agency e-mailed the Applicant with issues that need to be resolved with their breach flood modelling and the FRA based on that. Those issues include incomplete, inconsistent and poorly represented structures within the modelling, missing files preventing the model being run and consistent timing of the breach occurring. Based on the modelling received we also disagree with the conclusion that the changes to flood risk in the floodplain are minimal. We await a substantive response from the Applicant. The other flood modelling has yet to be submitted by the Applicant. The Environment Agency are seeking to maximise the space around the Great Breach pumping station and the raising mains to the north that discharge to the Tidal Thames to allow for future maintenance and upgrade works. Whilst the protective provisions will provide a degree of control the intention is that the controls within a DCO should as far as possible not frustrate or significantly hinder the project once approved. We would therefore ask that the Applicant is

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			more specific over the offsets that can be provided relative to the pumping station and the raising mains.
Q1.9.0.6	EA	**Comments in EA's written representation** The Applicant's Response to Interested Parties Deadline 1 Submissions document [REP2-019] (p10) queries whether some comments in the EA's written representation [REP1-035] may relate to a different project; please can EA clarify and confirm the position.	We note the responses made in reply to the Environment Agency comments. We acknowledge the comments and can confirm that the earlier comments relating to HR Wallingford involvement were made in error (we had confused the capital dredge at belvedere with another smaller Cory dredge at Middleton Wharf which is the subject of ongoing discussions. We apologise for the confusion. We have provided updated comments on WFD in the technical notes section below.
Q1.10.0.4	The Applicant and EA	**Chemicals in watercourse (2)** The Applicant's comments on this matter in their Response to Interested Parties' Deadline 1 Submissions document [REP2-019] are noted. EA's views on Ridgeway Users comments [REP1-069] on chemicals in watercourse are invited, as are any further comments from the Applicant. What are the implications for the Water Frameworks	The Environment Agency notes the Ridgeway Users comments regarding "forever chemicals". These have no implications for WFD which relate to the main water body. There is only an Environmental Quality Standard (EQS) for PFOS, not PFAS or PFOA. These standards apply to the main water body, not discharges. The RSC standard quoted is a drinking water standard and not relevant. Should these discharges reach the main water body, dilution would reduce these values to below the limits of detection. The water discharge activities from the site to ground and to water will be regulated by a permit to prevent deterioration of the environment. The Environment Agency welcomes that further sampling and analysis will be

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		Directive assessment?	carried out by the applicant as part of a future ground investigation.

Comment on the Applicant's Response to Interested Parties Deadline 1 Submissions

In the Applicant's Response to Interested Parties Deadline 1 Submissions, in Table 2-6-2 –Environment Agency the Applicant argues against the practicality of implementing mitigation measures for the flood risk impacts of the ground raising. We note the sentence on page 79,

"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 Environment Agency commissioned Marsh Dykes 2020 Flood Modelling Study included model runs comparing the severity of breach flooding in these sub catchments with and without the pumping stations operating. A significant reduction in the peak extent and level of breach flooding was found with the pumping stations working. We therefore disagree with the Applicants assertion that additional pumping to the Tidal Thames have relatively little benefit.

The Environment Agency's suggestion that improvements to the flood defences could be a mitigation measure is not about the remedial works to the existing structures that have been and will be undertaken. It is rather the approach of extending the defences to create a raised plateau of high ground with far lower vulnerability to failure due to its mass and geometry. The Environment Agency accept that existing development limits the scope to implement such improvements to the robustness of the Tidal Defences.

The Environment Agency member of staff mentioned was part of the group who produced the wording requiring flood modelling for Land Use Planning to be presented as raw results without any modelling tolerance applied and we assert that the Applicants interpretation of the wording on GOV.UK is incorrect. We disagree that the requirement is impractical as other Applicants have complied.

All off the outputs of the Applicant's breach flood modelling are questionable until a sound runnable model has been received and successfully QAed by the Environment Agency.

It is appropriate to exclude floodwater from the raised development platform in the flood model including because upstand flood walls are proposed on the edges of the platform.

The approach of modelling breaches in flood defences as instantaneously is adopted as standard practice to avoid the uncertainty and unmanageable complexity of analysing flood defences and seeking to establish how quickly a breach could develop. It is therefore not realistic to apply any other assumption than instantaneous breach development. Furthermore, the input parameters for breach flood modelling are by their nature quite arbitrary including that the breach width is assumed to be 20 metres wide.

The Environment Agency are still unclear over the distinction that the Applicant is seeking to draw over their desire to partially disapply the Metropolis Management (Thames River Prevention of Floods) Amendment Act 1879). We would ask that the applicant illustrates their arguments with examples of what would be captured by their proposed partial disapplication and what would not.

In response to the Applicant requesting clarification, the Environment Agency can confirm that it is currently maintaining both Green Level and Great Breach Pumping Stations. The Environment Agency are the landowner for the former but not the later. The Environment Agency chooses to maintain flood risk assets according to need and available resources.

The description of the Flue Gas Supply Ductwork within Section 11.3 of Appendix 11-2: Flood Risk Assessment of the Environmental Statement (Volume 3) (AS-023), acknowledges that that may be routed close to or on the tidal defence structures. It was technically challenging to construct elements of the Riverside 1 scheme that were approved encroaching into the back face of the earth flood embankment. Why can the ductwork not be constructed on a different alignment landward, even landward of the two Energy from Waste Power Stations until the route is far enough west to link to the proposed discharge delivery jetty?

Where the Access Trestle crosses the River Thames Flood Defences the Environment Agency remains of the opinion that a clear 5 metre vertical clearance should be provided for operational access and improvement works relative to the existing flood defence crest level, as was provided by the underside of Middleton Jetty as part of the Riverside 1 scheme.

Updated comments Water Framework Directive

The response made by the applicant regarding Water Framework Directive (WFD) and water chemistry (that the WFD assessment would be modified and updated in line with findings when sediment samples (planned to be taken march 2025) had been obtained and analysed, does however confirm that the WFD assessment in its current form is not fit for purpose because we do not know currently what levels of contamination will be found in the sediment , and therefore one logically cannot calculate the pollutant load that will be imparted to the waterbody when material is lost back into water from the backhoe method proposed.

Actual volume of losses will be anticipated to be between 6% and 15% of the total dredge volume (this might be at the lower end of the scale if a lidded bucket is used,

or towards the higher end of the scale without a lidded bucket and if the material is predominantly fine sediments).

Considering a total dredge volume of 110 000cu m the losses to water will probably be of the order of 10-15 000 cu m, and we strongly suspect (based on long experience of seeing dredge samples in the Thames) that the sediment analyses will show the material to contain regulated chemicals at levels above Centre for Environment, Fisheries and Aquaculture Science (CEFAS) action level1 (possibly very significantly above- and in any case, grounds for WFD impact assessment to be carried out) and they will probably contain some regulated chemicals (such as the Polycyclic Aromatic Hydrocarbon (PAH) compound benzo(ghi)perylene or possibly Tributyl Tin. The applicant should check the River Basement Management Plan (RBMP) to identify which chemicals are failing) which are already failing their environmental quality standards (EQS) limits in the Thames Middle waterbody.

For such failing chemicals it will be necessary to demonstrate that the losses from the dredge do not elevate the pre-existing (failing) annual baseline by more than 3% at waterbody scale (or else this is WFD deterioration and we would have to object). It will therefore be necessary to do much more work (which will necessarily include consideration of baseline concentrations (not merely baseline pass/fail status for classification as published in the river basin management plan) before any prediction of uplifts can be estimated. For those regulated chemicals present in the dredged material which do not currently fail their EQS limits at baseline concentrations in Thames Middle then the argument for compliance needs to be based on the predicted effect being insufficient elevation of baseline to reach or exceed the EQS concentration limit.

PAH's in the Thames Middle waterbody tend to be quite high, and the EQS limits for water (which include any suspended PAH, not just dissolved PAH) are set quite low for some PAH compounds. Whilst it is often tempting to simply dismiss risk by suggesting there will easily be sufficient dilution of any additional PAH compounds raised (temporarily) into the water column, a more detailed analysis will show that there is in fact very little headroom due to the fact that sediment contains several orders of magnitude more PAH than the overlying water, so a relatively short term "spike" caused by a dredge may translate to significantly large changes to annual average concentrations when the effect is averaged out over a year and the volume of the water body and current baseline concentration is considered.(As an example : benzo(ghi)perylene has an EQS Maximum allowable concentration of 0.00082 microgrammes per litre in water (equivalent to 0.00000082 parts per million) where the CEFAS action level 1 (which tends to be used as a guide to suggest a safe ecological limit under OSPAR guidelines (but these guidelines are NOT aligned with WFD criteria, which are much stricter) for PAH compounds is set at 0.1mg/kg (of dry sediment) which is equivalent to 0.1parts per million.

The inference is that even if the CEFAS interpretation of sediment AT Action Level 1 for benzo(ghi)perylene would suggest it was "suitable for disposal at sea" (and this *really* means at licensed offshore disposal sites *geographically outside of* WFD waterbody designations) the sediment would still require dilution factors in excess of

27000 times before the water column concentration of receiving water (in which there was no pre-existing benzo(ghi)perylene present) would fall below the EQS maximum allowable concentration limit. Should the receiving water contain the chemical already then even higher dilutions would be required. But, in the case of the Thames Middle waterbody, the EQS concentration limit is already failed at baseline concentrations (there are significant amounts already present in the water column, and much more trapped in deposited sediment), so the bar is set at not elevating these concentrations by more than 3%. Although Thames Middle is a large volume waterbody, the dilution factors available when the “spike” may be five or more orders of magnitude above the baseline need careful scrutiny to establish whether an activity *really can* comply.

At this stage, WFD compliance cannot logically be demonstrated. We await the sediment analysis and updated WFD arguments derived from that knowledge in due course. If sampling is to be in March 2025 then no WFD assessment will be likely until at least March 2025.