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**Our ref:** AE/2021/125910/01-L01  
**Your ref:** \*  
**Date:** 02 March 2021

Dear Sir/Madam

## **WRITTEN REPRESENTATIONS FOR THURROCK FLEXIBLE GENERATION PLANT.**

### **LAND NORTH OF FORMER TILBURY POWER STATION, TILBURY, ESSEX**

Thank you for the opportunity to comment on the application for a Development Consent Order for the proposed Thurrock Flexible Generation Plant development. We have inspected the application as submitted and our written representations are provided below.

#### **1.0 The Role of the Environment Agency**

- 1.1 The Environment Agency is a statutory consultee on all applications for development consent orders. We have a responsibility for protecting and improving the environment, as well as contributing to sustainable development.
- 1.2 We have three main roles:
- (i) We are an environmental regulator – we take a risk-based approach and target our effort to maintain and improve environmental standards and to minimise unnecessary burdens on business. We issue a range of permits and consents.
  - (ii) We are an environmental operator – we are a national organisation that operates locally. We work with people and communities across England to protect and improve the environment in an integrated way. We provide a vital incident response capability.
  - (iii) We are an environmental advisor – we compile and assess the best available evidence and use this to report on the state of the environment. We use our own monitoring information and that of others to inform this activity. We provide technical information and advice to national and local governments to support their roles in

policy and decision-making. One of our specific functions is as a Flood Risk Management Authority. We have a general supervisory duty relating to specific flood risk management matters in respect of flood risk arising from Main Rivers or the sea.

## **2.0 Flood Risk**

2.1 The applicant has submitted revised documents related to flooding, since we provided our relevant representation, namely Appendix 15.1: Flood Risk Assessment, dated November 2020 as well as the documents number A8.5: Flood Evacuation Plan, dated November 2020. In response to these revised submissions, we have updated the comments in our previous response, we have the following comments to make.

### Environmental Statement – volume 2 Chapter 2 (Project Description)

2.2 Drawing A2.10 provides an indicative drainage layout. This shows surface water flows being restricted via a flow control device in to existing watercourses (Pincocks Trough and West Tilbury Main). In our previous response we commented that further information regarding where these watercourses ultimately discharge should be provided. Whilst we do not normally comment on the adequacy of surface water management schemes themselves, we feel it is important that during design it is noted that the outfalls to the Thames are reaching the end of their design lives. This means they may not be sufficient to ensure drainage of the surface water system over the lifetime of the development. It is important that the condition and functionality of the outfalls from the proposed drainage system are considered so that they can be ensured that flooding will not occur from pluvial sources. If outfalls are not expected to provide sufficient capacity for as long as required under the development lifetime, then the developer should consider the possibility of upgrading outfalls to ensure they are fit for purpose and/or consider of providing additional on-site storage for periods when surface water flows may not freely discharge from the site.

### Environmental Statement Volume 6. Appendix 15.1: Flood Risk Assessment Breach

2.3 The revised Flood Risk Assessment (FRA) provides details of the risk of flooding to the site following a breach in the tidal defences using data from the Strategic Flood Risk Assessment (SFRA). In the original FRA, consideration of flood risk associated with a breach west of the site, known as TIL03 was discounted, as it was considered less likely than a breach at TIL05. Whilst the likelihood of occurrence may be less, the SFRA shows that the consequence of a breach at this location would be greater, and we therefore considered it important to ensure the risk, and associated mitigation measures were included within the FRA.

2.4 The most recent FRA submission (dated November 2020) has included detail of the risk of flooding from both breaches (TIL03 and TIL05), and how the resultant flood depths can be managed across the site. Section 6 of the FRA details mitigation measures that could be applied to the site design to manage the breach flood risk. We are satisfied that workable options have been provided that can be finalised at the detailed design stage.

## Climate change and H++ scenario

2.5 In our relevant representation, we stated the FRA had not demonstrated how the H++ scenario had been considered as required by NPS EN-1. Since our August 2020 response, further clarity has been provided on the methodology for the calculation of the both the required UKCP18 update and the H++ scenario the FRA confirms that the critical elements of the development can be designed to be protected from a 0.1% breach flood event (including the UKCP18 climate change update) and adaptation can occur to protect critical infrastructure from the H scenario also. We are therefore satisfied on this point.

## Flood Compensation

2.6 In our August 2020 response we raised concerns over the raising of land on site, and the impact that land-raising could have on flood depths within the flood cell and flood characteristics. A DCO requirement (10) has been proposed to secure the provision and approval of the further drainage and flood flows information. We are satisfied that this requirement will be sufficient to ensure that details are submitted to ensure that off site risks are not increase as a result of land raising on site at the detailed design stage. As the flood cell is large relative to the area of land proposed to be raised, we are satisfied that a workable option can be found at the detailed design stage to ensure off-site risk is not increased, and on-site risk can be managed. This assessment should consider whether there will be any areas of the site where water may be routed should a flood occur, and whether this may result in parts of the site flooding sooner than others in the event of a breach. This information should be used to inform the emergency plan to, for example, ensure that an evacuation route for people from the site, isn't through an area of the site which would be likely to flood first, to greater depths, and/or with faster flowing water, as a result of the ground profiling works. Information on ground levels should be used to inform the emergency plan, for example to show that an evacuation route for people from the site, Isn't through an area which would be likely to flood first, to greater depths and/or with faster flowing water, as a result of ground profiling.

## Flood Evacuation Plan

2.7 Since our response provided in August 2020, the Flood Evacuation Plan has been updated (November 2020, version 3) to include flood characteristics associated with both a breach at TIL03 and TIL05m and has included reference to deploying any non-permanent flood management, such as flood gates. Details of the preferred flood route from the site have also been provided. Whilst we do not comment on the adequacy of flood evacuation plans themselves, as our role is to issue flood warnings, we consider the plan has provided data to inform the plan, which should be useful to Emergency Planners when considering the suitability of the plan.

2.8 Emergency plans are iterative documents and should any details of the flood characteristics change as a result of detailed design to follow (such as altered flood routes/propagation across the site as a result of the detailed drainage and land raising design), the plan should be re-visited to ensure it is still considered the most suitable route to take. As with all Emergency Plans, they should be reviewed

periodically, post development to ensure they still provide the most up-to-date advice and procedures.

### **3.0 Environmental Permitting Regulations 2016**

3.1 As outlined in our Relevant Representations, a number of works proposed under the Development Consent Order will require an Environmental Permit. We are aware that it is the intention of the applicant to dis-apply the need for flood risk permits outside of the DCO application, but at this stage, insufficient detail has been provided to enable this process.

3.2 It is proposed to install a new footbridge connection to Fort Road (Page 4 of the Environment Statement, volume 2, chapter 2: Project description). Application Document Number: A2.3 of the Works Plans, sheet 6 for work No.13 shows the location for the pedestrian link, but does not provide detail of the crossing. It should be noted that we would expect a clear span structure to be installed at this location.

3.3 As previously highlighted, We expect a full list of any permits to be submitted, together with supporting drawings and statements, and details of maintenance responsibilities, so that we may consider whether such elements can be covered within the DCO application. Currently, insufficient evidence has been submitted to enable us to make further comments or agree to dis-application.

#### **Flood Storage Area**

3.4 In our Relevant Representation, we stated the importance of ensuring the capacity and function of the flood storage area is not reduced, including through landscaping planting and changes to ground levels. We note that full details of habitat planting and enhancement shown in figure 4.1 of the Outline Ecological Management Plan will be confirmed through discharge of DCO requirement 14. We will welcome early discussion with the Applicant on these plans to ensure they are compatible with the ongoing maintenance of the flood storage area and to agree the detail once it is available.

3.5 If the DCO application gains approval, then we would seek for the following requirements to be included with the permission to ensure the development is 'designed and constructed to remain operational and safe in times of flood', as required by Table 3 of the 'Flood and Coastal Change Guidance document:

- The critical elements of the development must be designed to remain operational during a flood up to a level of at least 2.84mAOD.
- Any additional non-fixed flood risk mitigation measures e.g. demountable flood barrier, which may be required across the site to reduce the impact of flooding should be clearly detailed within the Flood Evacuation Plan for the site.
- Details of a clear span bridge shall be provided and approved for the crossing at the top of West Tilbury Main as detailed in the letter dated 6 November 2020 to us and Thurrock Council (APP-045 (ES Chapter 2: Project Description)).

## **4.0 Thames Estuary 2100 considerations**

### **Future Thames Flood Barrier**

4.1 As raised previously in our Relevant Representations this development site has the potential to overlap with the construction of a new flood barrier in the Tilbury Reach.

4.2 The [Thames Estuary 2100 Plan](#) (the Plan) sets out how we (the Environment Agency) and our partners can work together to manage tidal flood risk in the Thames Estuary, from now until the end of the century. It is an adaptive plan, ensuring current standards of flood protection provided by the existing tidal defence system are maintained or improved taking into account the effects of climate change e.g. sea level rise. We expect the Thames Barrier to continue to protect London from tidal flooding up until 2070, but over the longer term the Plan, published in 2012, sets out the strategic direction and several options for managing tidal flood risk in the Thames Estuary.

Beyond 2070, two leading options are for the modification of the existing Barrier at Woolwich or for siting a new barrier within the Long Reach area of the River Thames. However, with higher sea level rise scenarios, the Tilbury area would then become a preferred option.

Currently, all 3 locations continue to be investigated and assessed given that the decision on a preferred option is not planned until 2040 when such a decision will be informed by the data and information available at the time.

4.3 Paragraph 1.2.13 of Environmental Statement Volume 2 Chapter 2: Project Description complements Figure 1.5: Development zones and describes the proposed development's Zone G as a:

*“roll-on roll-off barge and transport to the main development site (zone A). It includes the construction and operation of a permanent causeway on the foreshore of the River Thames, the dredging of a berthing pocket to enable barges to access the causeway, a local modification to the existing sea defences, and a haul road from the causeway to zone A.”*

4.4 Paragraphs 3.1.1, 3.1.8 & 3.1.9 describe an earliest start of construction in 2021, completed in 2022 under a single phase construction or possibly by 2027 at the latest under a three-phase construction approach. Paragraph 3.6.1 then outlines “The proposed development has an initial design lifetime of 35 years. Extension of its operation beyond this timescale will be dependent on prevailing market conditions” Assuming a 2021 start and a 35 year design lifetime, this would end in 2056. Therefore, the initial construction may not adversely impact a possible future barrier or barrage location on the Gravesend / Tilbury reach but any future life extension may well do so. Paragraph 3.6.4 and possible retention of the causeway structure may be advantageous to some preliminaries for such barrier construction work. Nevertheless, we would suggest discussion with the TE2100 Safeguarding Project team for further guidance on this matter.

## **5.0 Thames Estuary 2100 Considerations**

## Tidal defences

5.1 It is noted that both paragraphs 3.1.27 of Environmental Statement Volume 3 Chapter 15: Hydrology and Flood Risk and 4.3.3 of Environmental Statement Volume 6 Appendix 15.1: Flood Risk Assessment state that “the EA has a duty to maintain these defences”. The applicant’s attention is drawn to Table 1.4: Key points raised during scoping and consultation to date within of Environmental Statement Volume 3 Chapter 15: Hydrology and Flood Risk which contains the following key information from our 5 September 2018 EA EIA Scoping Response:

### Thames Estuary 2100 Plan / TEAM2100

A point to clarify in section 8.145 is that we have permissive powers available to us via section 165 of the Water Resources Act 1991 as amended by the Flood and Water Management Act 2010 which allow us to maintain and improve existing works as well as to construct new works on a designated main river or tidal flood defence.

5.2 It is also noted that paragraph 4.3.4 of Environmental Statement Volume 6 Appendix 15.1: Flood Risk Assessment states the following:

“Considerable investment has been made in the provision of the Thames Tidal Defences (TTD) to protect Greater London from tidal flooding. The tidal defences downstream of the Thames Barrier are maintained to a level of 7 m AOD, which, at the current time, provides a Standard of Protection (SoP) equivalent to the 0.1% AEP (1 in 1,000 year) tidal event.”

The applicant is referred to the preceding paragraph 4.3.2 which correctly outlines that the local tidal defence crest levels range between 6.48 m AOD to 6.70 m AOD. It should be noted that these defences afford a current day Standard of Protection (SoP) equivalent to the 0.1% AEP (1 in 1,000 year) tidal event and do not need to be 7mAOD (as stated) to provide that same SoP.

### Impact of development on flood defences

We refer to the Environmental Statement Vol 2 - Chapter 2 in our comments below

5.3 Section 2.10.7 of this document has a clash with document A7.8 (Concept design for causeway) section 4.3 where it states that the Environment Agency will have the ruling over retention of dropboards after the construction phase. Our current preference is a return to fixed defence unless the applicant agrees to maintain them. It should be noted that the flood defence at this location is expected to require replacement by 2040 and thus provision for dropboards will either need to be designed to facilitate an increase to the future defence height or be accepted that they will cease to exist by 2040. This is based on latest assessment of defence condition drawn from Appraisal Report completed Feb 21.

5.4 Section 3.4.11 to 13 - loading impacts on flood defence from ALLs passing through the gate and along the haul route to rear of tidal defence has not been fully explained or assessed. In previous discussions with the applicant we have requested that movement monitoring of the defences be provided. This is important to ensure the integrity of the defences but has not be incorporated.

## **6.0 Thames Estuary 2100 considerations**

### **Future defence raising aspirations**

6.1 Paragraphs 3.1.25 & 4.1.4 of Environmental Statement Volume 3 Chapter 15: Hydrology and Flood Risk both identify the site is located within an area benefitting from tidal defences and is considered at high risk of tidal flooding should those defences breach. The Environmental Statement Volume 6 Appendix 15.1: Flood Risk Assessment makes no direct reference to the TE2100 Plan nor the specific aspirations for the Plan's Purfleet, Grays and Tilbury policy unit.

6.2 The recommended flood risk management policy for the Purfleet, Grays and Tilbury policy unit is policy P4, to take further action to keep up with climate and land use change so that flood risk does not increase. The Plan's current aspiration to deliver the recommended flood risk management policy is to raise local flood defences affording benefit to the applicant's order limits in two phases, a low-raise by 2040 and a higher raise by 2070.

6.3 It is noted from paragraph 3.6.1 of Environmental Statement Volume 2 Chapter 2: Project Description that an initial design life of 35 years, assumed to 2056, is proposed – with a possible life extension dependent upon market conditions at the time. It is noted that paragraph 3.1.38 of Environmental Statement Volume 3 Chapter 15: Hydrology and Flood Risk proposes “flood resilience and/or resistance measures to ensure critical assets are afforded an appropriate level of flood protection to meet this level”. Paragraph 6.3.3 of Environmental Statement Volume 6 Appendix 15.1: Flood Risk Assessment further elaborates upon a “design objective of providing up to 0.84 m resilience for critical infrastructure assets where appropriate” Nevertheless, when comparing the breach outputs referred to in paragraph 6.1.2 of Environmental Statement Volume 6 Appendix 15.1: Flood Risk Assessment it is apparent that other key aspects within the applicant's order limits shown in Figure 1.5 of in Environmental Statement Volume 2 Chapter 2: Project Description would remain at residual risk of tidal flooding. Such aspects include:

- Zone C - corridor of land for a permanent access road and underground gas pipeline
- Zone F - habitat creation or enhancement
- Zone G - infrastructure required for delivery of abnormal indivisible loads

6.4 The TE2100 Plan is an aspirational document, rather than a definitive policy, so whether the defences are raised in the future will be dependent on cost benefit analysis as well as eligibility and availability of central government Grant in Aid to deliver the required works. We are looking to work in partnership with beneficiaries throughout the Thames Estuary, to explore potential contribution options. Therefore, we would welcome a further strategic conversation with the applicant to explore how we can work in partnership to identify a proportionate contribution towards delivering the longer-term TE2100 Plan defence crest level raising aspirations. Such a contribution to these Flood Risk Management works means investing in flood

defences which will protect the applicant's infrastructure vital to the functioning of and access to the site through to at least the mid-2050s.

## **7.0 Thames Estuary 2100 Considerations**

### **Future drainage asset aspirations**

7.1 It is noted that paragraphs 3.1.16 & 3.1.18 of Environmental Statement Volume 3 Chapter 15: Hydrology and Flood Risk describes that the majority of the proposed development is currently drained by channels that are within the West Tilbury Main and Bowaters Sluice catchment. Paragraph 3.1.18 also outlines the operational challenges experienced at Bowaters Sluice but it should be noted that the asset is no longer part of the TEAM2100 programme.

7.2 We would welcome further discussion with the applicant and the Lead Local Flood Authority as paragraphs 7.7.3 & 7.7.6 of Environmental Statement Volume 6 Appendix 15.1: Flood Risk Assessment detail a proposed surface water network ultimately discharging into "offsite existing watercourse to the west and east of the development site." Such a discussion would aim to cover the viability of this proposal given the challenges at Bowaters Sluice described in paragraph 3.1.18 of Environmental Statement Volume 3 Chapter 15: Hydrology and Flood Risk and possible options the applicant could explore given that the sluice currently serves a greenfield catchment with little to no residential properties.

## **8.0 Thames Estuary 2100 Consideration**

### **Proposed causeway and flood defences**

8.1 We have held pre-application meetings with the applicant regarding their plans for building a causeway across the flood defences as part of their development. Whilst we do not object to this in principle, insufficient information has been provided on how the integrity of the flood defences will be maintained, and how construction of the proposed floodgate will be achieved. We would require further information to be in a position to agree to this. We are prepared to work with the developer in the production of their plans.

## **9.0 Marine Ecology**

9.1 Our relevant representation highlighted that we previously discussed the impact of the proposed development on Marine ecology in a meeting on 12 November 2019. During the meeting it was discussed that the loss of mudflat habitat to support the creation of saltmarsh, whilst not ideal this was an unavoidable consequence that could, on balance, secure an overall biodiversity net gain with respect to the intertidal environment. We did not suggest that the replacement of mudflat with saltmarsh would achieve a biodiversity net gain, as both are priority habitats. We note that the proposed plan to create saltmarsh has now been withdrawn, as detailed in a letter from Thurrock power dated 20 January 2021.

9.2 The application proposes not to remove the causeway at the end of the development. We do not agree with this approach and believe the structure should



be removed, and the requirements of any future scheme on the site should assess the need for a solid structure compared with an open pier/jetty design that does not require a loss of habitat. We feel there should be a long term commitment to removing the structure, when it becomes obsolete and unnecessary, rather than retaining it, unless compensatory inter-tidal habitats for the loss of mudflat, in a suitable location within the Thames estuary, has been achieved. We do not feel that relying on the accretion of materials around the causeway will lead to habitat creation, as it is uncertain what will develop and what could be retained beyond the 35 year life time. However we do note that the status of the causeway will be reviewed every 5 years and we welcome this.

9.3 Chapter 4.1.31 states: 'The habitat loss/disturbance related to dredging activities and impact on marine ecology receptors is temporary and reversible, being limited to the construction phase only, with sediments expected to infill the vessel grounding pocket within months to a few years following the construction phase'. There is no evidence of how long the existing inter-tidal mud habitats have established on this stretch, and therefore the length of time for the associated fauna to re-colonise and utilise this habitat. The submitted assessment is unclear if this would take months or years for the layers of inter-tidal mud to re-establish. Even if the dredge pocket does re-establish very quickly, the development proposes to retain the use of the causeway. Therefore there will be a certain amount of perpetual disturbance of this site, by future dredge operations and so is not a temporary effect.

9.4 We don't agree that the total loss of inter-tidal area including the dredge pocket represents an insignificant effect. Whilst in terms of the size of the Thames it is small, at the local level of this reach of the Thames, this represents a stretch of inter-tidal area that has little disturbance. In turn this represents a significant change for this immediate environment.

9.5 The vulnerability of fish to the effects of dredging and the increase of suspended sediments will in part depend on what other dredging operations are taking place at the time, as clearly there could be an in-combination effect on fisheries if numerous sites are carrying this out at the same time. The timing of any dredging works will therefore have to take into account what others are doing to ensure that there are sufficient areas for vulnerable marine species to move to.

9.6 We have maintained our position that there needs to be compensation for the loss of inter-tidal habitat. We have recommended investigating the stretches of the Essex coastline along this reach for achieving this but recognise there is considerable difficulty in providing this balance.

## **10.0 Terrestrial Ecology**

10.1 It appears our main issue with construction impacts on water voles and long-term habitat have been addressed. There is a stated net gain in ditch habitat which should ensure that the development avoids an adverse impact on the species.

10.2 The applicant mentions that the ditches were dry at the time of the survey (2018) and therefore largely unsuitable for eels and fish. We agree that the ditches are suboptimal for fish due to the weather conditions at this location. However eels

can find their way into watercourses near tidal sluices after water returns. Therefore consideration should be given the design of the ditches for fish, even if surveys are not required.

10.3 We are satisfied there is an absence of invasive plant species on the site. Vigilance during construction is paramount in case they are brought onto site. Check-clean-dry procedures must be adhered to when working near water.

## **11.0 Water Framework Directive**

11.1 We have reviewed the Water Framework Directive (WFD) Assessment, Environmental Statement vol. 6 app 17.3. At present we believe the applicant needs to provide further details in regards to the Water Framework Directive, we are having ongoing discussions with the applicant regarding this.

We note that section, “6.5.8 of the assessment states ‘Disturbance of sediments during the construction phase may result in the release of sediment bound contaminants. Plume modelling has shown that SSC will be quickly diluted and dispersed within the Thames Estuary and the maximum volumes of sediment which may be resuspended are small (i.e. <16,100 m<sup>3</sup>) and therefore any contaminants brought into suspension will also be dispersed to levels which are not harmful to marine ecology receptors and water quality. Water quality objectives of the waterbody will not be affected by the proposed development’. Given that that current and most recent waterbody baseline classification already identifies Environmental Quality Standards Directive (EQS) failures for multiple chemicals we question how this conclusion has been reached.

11.2 The water quality objective of the Thames Middle waterbody was “good chemical status by 2015”. The 2015 River Basin Management Plan claimed good chemical status had already been achieved by 2015, though the applicant needs to be aware that the most recent classification results (referred to here as the “2019” classification- although it encapsulates data collected between 2016-2018) indicates that a number of chemicals are now failing (i.e. chemical status is no longer good). The water quality objectives will be published in 2021 River Basin Management Plan (RBMP), probably towards the end of the year due to covid related delays. These are likely to require a return to good chemical status by 2027, and any activities which may jeopardise achievement of good status would be regarded as non-compliant with WFD.

11.3 Clearly the addition of further chemical load to a chemically failing (for priority hazardous substances) waterbody will not result in “levels which are not harmful to marine ecology and water quality”. No amount of “dispersion” of added material will reduce the pre-existing baseline amounts in the waterbody, it can only elevate them. Water quality objectives will be affected if the activity causes WFD deterioration, and significant worsening of a failing chemical concentration would be regarded as deterioration of the baseline chemical status for the waterbody.

11.4 Dispersion of added loads can only claim to be a mechanism to avoid harmful levels, when the sum of the baseline and the uplift is less than the Environmental

Quality Standards (EQS) limit. When the baseline levels exceed the EQS limit, the uplift caused by the dredge, however small, is still an increase beyond that EQS limit.

11.5 The applicant appears not to have checked the baseline concentrations before making their statement, and has assumed that because the 2015 RBMP chemical class was a fail due to tributyltin (TBT), that TBT is currently the only failing chemical. This is not the case, though even if it were, mobilising more TBT and “dispersing it” would not result in reduction of TBT concentrations in the water column, as the applicant is suggesting will be the case.

11.6 The 2019 classification identifies the following Priority Hazardous Chemicals as being at failing concentrations:

- Benzo(b)fluoranthene
- Tributyltin Compounds
- Mercury Compounds
- Benzo(g-h)perylene
- Polybrominated diphenyl ethers (PBDE)
- Perfluorocfane sulphonate (PFOS)

11.7 Benzo(g,h,i)perylene- this is failing the EQS Maximum Allowable Concentration limit of 0.00082 ug/l in the water column. Maximum Allowable Concentrations (EQS MAC) are based upon the 95<sup>th</sup> percentile of an annual monitoring dataset representative for the waterbody. Where both EQSMAC and EQS Annual Average concentrations are expressed for a chemical in the revised EQSD 2013 Directive, which is now in force.

The EQS Annual Average figures are always lower thresholds than the EQS MAC. EQS MAC is intended to form an upper limit for occasional spikes in waterbody concentration. The fact that the waterbody baseline routinely fails to meet this, suggests benzo(ghi)perylene concentrations may already be at harmful levels in water and underlines the need for caution when considering activities which may cause additional amounts to enter the water column. How long the levels remain elevated and to what degree they are elevated would require justification, since unless the uplift can be argued as insignificant. A significant effect upon the waterbody concentrations would be tantamount to causing WFD deterioration by the “fail worse” principal.

11.8 The 2019 classification is slightly anomalous in that the revised 2013 EQSD permits the use of Benzo(a)pyrene “as a marker for” benzo(g,h,i)perylene when assessing the water column vs the EQS annual average, but in the 2019 classification the alternative biota standard was applied. As there were no biota data for Thames Middle, a decision was taken to estimate the compliance with the biota standard by assuming it will be the same as that for the neighbouring Thames Lower waterbody. Levels of benzo(g,h,i)perylene are generally high in the baseline water column, though since there is no specific EQS AA limit for benzo(g,h,i) perylene itself for benzo(a)pyrene to judge compliance vs the EQS AA. Scrutiny of benzo(a)pyrene results for Thames Middle water column indicate it does not fail the EQS MAC standard, but it does routinely fail to meet the EQS AA standard. This suggests that

both benzo(a)pyrene and benzo(g,h,i) perylene water column levels are already beyond what is considered safe.

11.9 Tributyl tin still fails, as it did in the previous classifications. PDBE's have recently been added to the list of chemicals which we classify, and all TRAC waterbodies fail for this class of chemicals. The PFOS failure is also a new chemical assessed. Mercury and its compounds, and another PAH compound benzo(b)fluoranthene are probably failing as a result of the lowering of EQS thresholds at the adoption of the tighter revised 2013 EQSD standards, so the baselines concentrations in water may not necessarily have increased, the acceptable levels have changed.

11.10 The implications for the applicant is that for any substance which already fails its EQS, they will need to argue why their activity will not cause a significant increase of this failing baseline level. The applicant will need to provide further detail on what increase the proposals are likely to cause. We suggest a coarse level argument based on an immediate imposition of a static load and the average uplift it would cause if instantaneous waterbody wide mixing were assumed. This might be a suitable way to demonstrate the scale of predicted increase in waterbody baseline is small enough to be considered insignificant by us.

11.11 The applicant should demonstrate that where regulated chemicals do not exceed EQS limits and are present within dredged material, that they show that when fully mixed within the waterbody these additions of chemicals to the water column do not take up a disproportionate share of any remaining headroom between baseline and EQS threshold, nor cause a baseline pass to become a baseline fail.

11.12 We note that sediment plume modelling has been used by the applicant but those plumes modelled are not those of the proposed dredge activity but of an entirely different dredge for Tilbury 2 Port. This dredge was much larger, on different sediment within the footprint of the port dredge. Whilst the use of a proxy plume model as a "worst case scenario" for suspended solids could be argued to provide some indication of plume size and duration. There is no standard for suspended sediment levels. The reliance on suspended solids data, is only useful in provision of peak sediment levels, but what we are interested in is the concentrations of regulated chemicals in the water column, and the mass of sediment in suspension is only a barometer for the chemicals that sediment will contain. The applicant needs to take into account the chemicals that will already be in the water column (the baseline concentration) before the dredge adds additional loads, and then predict what will happen to the chemical baselines as a result of those additions. This information wasn't present in the original plume modelling for Tilbury 2 and it isn't present here either. The plume model alone does not provide any insight into water quality other than the quantity of suspended sediment (as milligrams per litre) in the water. The chemical quality of this sediment requires further detailed consideration.

11.13 The applicant will need to demonstrate that the concentration uplifts caused by dredging will be too small to be significant in the context of waterbody classification. We accept that there would be temporary high level spikes in concentration within the dredge plume, and we are certain that EQS limits for maximum allowable concentration would be exceeded for at least some of the

chemicals present in the plume. What we are less certain of, and require the applicant to establish convincingly, is whether these local and temporary small spatial scale “spikes” are likely to generate change in waterbody annual average concentrations that would be anything other than an insignificant amount. As a guide to what might be termed the significance threshold, we highlight that equivalent permitting rules for discharge activities indicate that an uplift less than 3% (of the upstream concentration, in the downstream fully mixed section of the waterbody below the dredge plume) would be unlikely to be considered of concern.

11.14 Overall the applicant needs to provide further information to demonstrate that their activities comply with the WFD. The submitted evidence requires more detail to provide us with more certainty. There has been an assumption in the WFD assessment that the relatively large volume for “dispersion” offered by Thames Middle waterbody in relation to the volume of material dredged, automatically guarantees that relatively high concentrations in the sediment will not cause significant overall longer term concentration uplifts in the wider waterbody when this material is transferred to the water column. However such an assumption may appear much less safe once the background concentrations in water already have been taken into account. It may still be possible to demonstrate that the scale and duration of uplifts to existing baseline concentrations will be of such a small magnitude that we can consider them to be insignificant to the aim of improving chemical status during the next (2021-2027) RBMP cycle to reach good status again, but we feel that requires more detail and transparency than has so far been provided.

11.15 Clearly the method of dredging chosen will determine the amount of sediment liberated to water, which in turn will determine the concentration uplifts of regulated chemicals in water. Whether the scale of difference between dispersive or non-dispersive methods is important in the wider WFD compliance context cannot be judged without a more numerical approach to the scale and duration of waterbody scale uplifts.

## **12.0 Contaminated Land**

12.1 Preliminary intrusive site investigations have shown that over the main construction area of the site there is a very low probability of ground contamination and no remedial proposals are required at this stage. There are other areas that may be subject to contamination and the commitment to carry out further site investigations and produce remediation proposals where necessary should be formalised, as should the proposed scheme for the investigation and remediation of any unexpected contamination that is encountered.

12.2 Our concerns regarding the impact the potential haul routes may have on the adjacent and currently active landfill site are still applicable, as per our previous correspondence and proposals to mitigate the haul routes construction are still required.

12.3 The proposed piling risk assessment should be carried out to determine the most suitable piling methodology for the ground conditions encountered

### **13.0 Environmental Permitting**

13.1 The proposed development will require a permit under section 1.1 Part (A) of the Environmental Permitting (England and Wales) Regulations 2016 (EPR) (as amended). Further details on permitting are available for the applicant at: <http://www.gov.uk/topic/environmental-mangement/environmental-permits>. It should also be noted that the de minimis rule for aggregation of generated megawatts has been changed and there is now no de minimis. This has the potential to impact on the construction phase, as there is the potential to require an Environmental Permit during construction should plant and equipment aggregate to above 50 megawatts.

13.2 We recommend that the applicant enters into discussions on permit requirements with us as soon as possible. The applicant can find advice at: <https://www.gov.uk/government/publications/environmental-permit-pre-application-advice-form>. This development will require a permit to be granted under the Medium Combustion Plant Directive (MCPD).

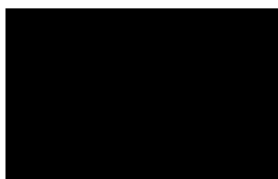
13.3 Air quality modelling is required as part of the Environmental Permit application. As the permit application has yet to be submitted no further comments can be made at this stage in advance of permit determination.

### **14.0 - Protective provisions**

14.1 The Applicant seeks to disapply various pieces of legislation (Article 3 of the draft Development Consent Order submitted with the application). We are currently considering our position in relation to the legislation which is relevant to the Environment Agency and the suggested draft protective provisions included in the draft DCO which accompanies the application. The form of Protective Provisions initially put forward by the applicant were not acceptable to us. We are currently in discussions with the applicant regarding the agreement of a mutually acceptable form of Protective Provisions. We will provide the Examining Authority with an update in due course.

14.2 During the pre-application phase of the DCO we had regular contact with the applicants, including some meetings and telephone discussions regarding the development. We are continuing this process and are having discussions with the applicant, in regards to the issues we have raised in this letter, in regards to agreeing a statement of common ground and with regards to agreeing the Protective Provisions.

Yours faithfully



**Mr. Pat Abbott**  
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