

Thurrock Power Ltd Comments on the Environment Agency's Deadline 2 Submission

Deadline 3



1 THURROCK POWER LTD COMMENTS

1.1 Introduction

- 1.1.1 This document provides the applicant's comments on three matters raised in the Environment Agency's Written Representation at Deadline Two (REP2-081): span bridge for exchange Common Land access; Team2100 considerations and tidal defence crossing details; and Water Framework Directive assessment.

1.2 Span bridge

- 1.2.1 In Section 3.0, paragraph 3.2 of the representation the EA has commented on the disapplication of the flood risk activity permit and specified that a clear span structure should be provided for the pedestrian link from Fort Road to the exchange common land.
- 1.2.2 The applicant confirms that a clear span structure is the intended design; illustrations of typical examples of typical examples are enclosed at Annex A. This will be added to requirement 4 of the draft DCO.
- 1.2.3 Details of other permits are also requested by the EA in paragraphs 3.1 and 3.3 of this section. In the draft DCO (REP2-014), Part 2 clause 10 'Disapplication of legislation etc.' specifies the legislation that is proposed to be disappplied. REP2-032 (Other Consents and Licenses) specifies the other consents and licenses, including permits, that the applicant expects to be required outside the DCO.
- 1.2.4 As noted in the draft SoCG with the EA (REP2-060), the drafting of protective provisions, to ensure that any necessary details, e.g. bridge mounts, are submitted to allow the EA to consider any matters relating to those permits and licences that are proposed to be disappplied, is under discussion between the parties.
- 1.2.5 With regard to the comments in paragraph 3.5 of the representation, a clear span bridge for the temporary construction access across West Tilbury main has been specified in the register of mitigation commitments (REP2-030) and the flood protection matters are provided for by requirements 4 and 11.

1.3 Team 2100 considerations and tidal defence crossing

- 1.3.1 The applicant notes the comments about the future Team2100 / TE2100 / Thames Estuary 2100 considerations in sections 4.0-8.0 in the representation and will continue to engage with the EA on these matters.
- 1.3.2 With regard to the specific point in paragraph 5.3 about details of the design of the flood defence wall crossing, requirement 4(3) in the draft DCO (REP2-014) requires that the detailed design of this must be approved by the relevant planning authority in consultation with the Environment Agency.
- 1.3.3 The applicant notes the comment in paragraph 5.4 about details of the haul road as it passes over and to the rear of the tidal defence wall and information about any loading impacts on the wall. The applicant intends that this would form part of the details to be provided for approval under requirement 4(3).

1.4 Water Framework Directive Assessment

- 1.4.1 The applicant has been in productive discussion with the EA prior and subsequent to Deadline 2 with regard to the Water Framework Directive assessment comments in section 11.0. Updated information has been provided as sought by paragraph 11.14 of the representation and this has been agreed by the EA. The documents enclosed at Annex B show the further information and EA's agreement.

ANNEX A: ILLUSTRATIVE EXAMPLES OF PEDESTRIAN CLEAR SPAN BRIDGES

Data Sheet—Steel & Timber “Standard” Bridges



Steel & Timber—Off the Shelf Bridges

Steel and Timber ‘off the shelf bridges’ are ideal for spans from 10m up to 18m. By utilising readily available steel and timber sizes we can offer this economical range of footbridges to suit locations, budgets, spans & aesthetics.

Steel and Timber ‘Off the Shelf’ bridges start at 10m long and rise in 1m increments to 18m. Widths available are 1m, 1.2m, 1.5m, 2.0m

Bridges are designed with a design live load of 5kN/m²

In order to specify a CTS steel and timber off the shelf bridge – e-mail us with the following information:

Overall length of bridge
Clear walkway width (internal walkway)
Cambered or flat main beams
Parapet Material—Hardwood or softwood
Parapet Style—Type A or Type B
Deck Material —Hardwood or softwood
Deck Finish—Hi-Grip Standard or Excel (non-slip inserts)

CTS provide a design, build and installation service for these bridges.

Images (top to bottom) :-

18m x 1.5m Steel beams, Hardwood Type A parapet and deck with Hi-Grip Excel non-slip inserts—Client South Tipperary Council—Ref 3061

10m x 1m Steel beams, Hardwood Parapet Type B (Post and rails) and Hardwood Standard Deck—Client Strutt and Parker—Ref 215

18m x 1.2m Steel beams, Hardwood Type B (post & 3 rail) parapet, hardwood Hi-Grip Excel deck—Client Chalmers Construction—Ref 3015

18m x 2.0m Steel beams, Hardwood Type A parapet (vertical infills), Softwood Hi-Grip Plus Deck—Client Mansell Construction Services — Ref 3056

Below: 11m x 1.2m Steel beam, softwood Type B parapet, softwood Excel deck at Chorley, Lancashire—Client Capita—Ref 4314

For further details please contact CTS Bridges

Tel: 01484 606416

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web: www.ctsbridges.co.uk



ANNEX B: FURTHER WFD INFORMATION



Tom Deering – RPS group
Via e-mail

Our ref: AE/2021/125990/02-L01
Your ref: *

Date: 08 April 2021

Dear Mr. Deering

**WRITTEN REPRESENTATIONS FOR THURROCK FLEXIBLE GENERATION
PLANTS - WATER FRAME REVIEW- FURTHER REVIEW.**

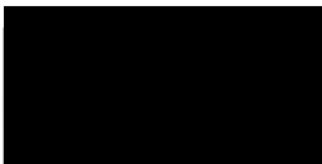
LAND NORTH OF FORMER TILBURY POWER STATION, TILBURY, ESSEX.

Thank you for your further correspondence in regards to the Water Framework Directive (WFD) for the Thurrock Flexible Generation Plant received by e-mail on 1 April 2021.

Our marine team have reviewed the updated information. We note that the applicant has addressed the concerns we raised and added further detail to the assessment, enabling us to reach the conclusion that the associated capital dredge activity will be compliant for WFD water quality.

We trust this information is useful.

Yours Sincerely



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Planning Advisor

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RPS – FURTHER WFD INFORMATION SUBMITTED TO EA

Introduction

This technical note provides additional information and justification to support the conclusions presented within the Environmental Statement (Chapter 17: Marine Environment, ref. PDC-019 in the examination library; and Appendix 17.3: Water Framework Directive Assessment, PDC-027) for Thurrock Flexible Generation Plant (hereafter referred to as ‘the proposed development’) that proposed capital dredging of the dredge pocket will have a minor direct impact on water quality and a minor indirect impact on ecology. This was due to the stated conclusion at paragraph 4.1.64 of Chapter 17 that the release of sediment bound contaminants during construction is predicted to be of local spatial extent, short term duration, intermittent and reversible.

Specifically, the note provides further supporting information for the response to ExQ1.16.4 (*‘Please explain how baseline water quality data has informed the assessment of water quality effects and the WFD assessment’*) and in so doing will also address queries provided by the Environment Agency on the 12 August 2020 in their Relevant Representation to the Planning Inspectorate (EA ref. AE/2020/125294/02-L01; PINS ref. RR-013) relating to the Water Framework Directive and associated topics of water quality. These queries are summarised as follows:

1. The concentrations of contaminants identified in the sediments proposed for dredging if transferred to the water column will not elevate levels significantly beyond the permitted Environmental Quality Standard (EQS) limits
2. Chemicals mobilised into water by the activity need consideration in relation to current 2013 EQSD, not historical 2008 EQSD limits.
3. Consideration of compliance with Maximum Allowable Concentrations (MAC) should these be adopted for WFD compliance reporting for the next River Basin Management Plan cycle
4. Further consideration of impacts on the chemical status of the adjoining downstream Thames Lower water body

Current Water Framework Directive (WFD) water body status

Thames Middle water body (GB530603911402) is currently classified as Moderate overall classification for 2019 (Cycle 2). However, the water body fails for chemical status under Priority Hazardous Substances for the following chemicals:

- Polybrominated diphenyl ethers (PBDE)
- Perfluorooctane sulphonate (PFOS)
- Benzo(b)fluoranthene
- Benzo(g,h,i)perylene
- Mercury and its compounds
- Tributyltin compounds

Sediment sampling was undertaken within the proposed 13,200 cu m dredged berth area for the proposed development as reported in the Phase 1 Intertidal Survey Report comprising Appendix 17.1 of the Environmental Statement (APP-119). Chemical analysis of the sediment samples collected showed the presence of benzo(b)fluoranthene (up to 0.197 mg/kg), benzo(g,h,i)perylene (up to 0.338 mg/kg) mercury (up to 0.50 mg/kg) and tributyltin compounds (up to 0.0103 mg/kg).

These concentrations are representative of baseline sediment concentrations with the Thames Middle water body. For comparison, sediment contamination testing undertaken to support the DCO for the neighbouring Tilbury2 project 113,000 cu m dredge, as reported in Appendix 11.C of this project’s Environmental Statement, identified benzo(b)fluoranthene (up to 1.11 mg/kg), benzo(g,h,i)perylene (up to 0.548 mg/kg), mercury (up to 0.41 mg/kg) and tributyltin compounds (up to 0.006 mg/kg).

Additional historical sediment testing data for Tilbury Power Station dredge site is reported for 2012 within the Port of London Authority report Maintenance Dredge Protocol and Water Framework Directive Baseline Document

(<http://pla.co.uk/assets/r2238afinalmdpbasedocument7oct2014.compressed1.pdf>). This reported concentrations for benzo(g,h,i)perylene (up to 0.83 mg/kg) and mercury (up to 2.97 mg/kg). Tributyltin compounds were not reported above a limit of detection of 0.01 mg/kg.

Reasons for the Thames Middle water body not achieving good status are provided by the Environment Agency via the Catchment Data Explorer web site (<https://environment.data.gov.uk/catchment-planning/WaterBody/GB530603911402>) for tributyltin compounds, as follows (note that no reasons for deterioration are provided):

Id	Swmi	Swmi Certainty	Activity	Activity Certainty	Category	Category Certainty	Business Sector	Classification Element
508594	Diffuse source	Probable	Contaminated water body bed sediments	Probable	Urban and transport	Probable	Urban	Tributyltin Compounds
508595	Diffuse source	Probable	Urbanisation - urban development	Probable	Urban and transport	Probable	Urban	Tributyltin Compounds
508597	Point source	Suspected	Use of restricted substance	Suspected	Navigation	Suspected	Inland Waterways	Tributyltin Compounds
508599	Point source	Suspected	Contaminated land	Suspected	Industry	Suspected	Other industry, manufacturing and Business	Tributyltin Compounds
508601	Point source	Suspected	Landfill leaching	Suspected	Waste treatment and disposal	Suspected	Landfill - Non hazardous landfill	Tributyltin Compounds
508602	Point source	Probable	Sewage discharge (continuous)	Probable	Water Industry	Probable	Waste water treatment	Tributyltin Compounds

The impact of diffuse sources of contaminated water body bed sediments within the river channel is identified as the reason for tributyltin compounds contributing to the failure of the water body's chemical status. Given the presence of Polynuclear Aromatic Hydrocarbons (PAH) compounds, including benzo(b)fluoranthene and benzo(g,h,i)perylene, as well as mercury compounds that are routinely observed in low concentrations within river bed sediments associated with historical industrial or urban development on the tidal Thames, it is considered a reasonable likelihood that the failure of these compounds' EQSs within the Thames Middle water body and therefore the failure of overall chemical status can be attributed to the same diffuse sources as for tributyltin.

Environmental Quality Standards (EQS)

In 2013, a new Directive, 2013/39/EC, amended the Directives 2000/60/EC and 2008/105/EC as regards priority substances in the field of water policy. Newly identified substances were added, including the setting of EQSs, and EQSs of some existing substances were revised. The Thames Middle water body is defined as a transitional (estuaries) and coastal water (TraC). EQSs are set for TraCs for the above listed Priority Hazardous Substances within The Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015 as follows, where benzo(a)pyrene is used as an indicator compound for both benzo(b)fluoranthene and benzo(g,h,i)perylene:

Benzo(b)fluoranthene	0.00017 µg/l annual average (AA); 0.017 µg/l maximum acceptable concentration (MAC)
Benzo(g,h,i)perylene	0.00017 µg/l annual average (AA); 0.00082 µg/l maximum acceptable concentration (MAC)
Mercury and its compounds	0.07 µg/l maximum acceptable concentration (MAC)
Tributyltin compounds	0.0002 µg/l annual average (AA); 0.0015 µg/l maximum acceptable concentration (MAC)

Middle Thames Baseline Water Quality near the Proposed Development

Since October 2018, the Environment Agency continuously monitor, on a monthly basis, water quality within the Thames at Gravesend (NGR 564900, 174600) located approximately 1.5km upstream of the proposed development's dredging area. This data is published via their Water Quality Archive (<https://environment.data.gov.uk/water-quality/view/sampling-point/TH-PTTR0021>). For the above listed Priority Hazardous Substances, identified with sediments at the proposed development, the water quality is tabulated as follows for the previous five years. These have been screened against the 2013 EQSD. Mercury is WFD compliant and the organic compounds (with the exception of one tributyltin result in July 2016) are not compliant at all monitoring rounds. Only tributyltin has been analysed for since April 2019.

Water quality data for identified Priority Hazardous Substances (PHS) within the Thames at Gravesend

PHS	Monitoring date and concentration in µg/l										EQS µg/l
	3 May 2016	1 Jun 2016	14 Jul 2016	15 Aug 2016	15 Sep 2016	13 Oct 2016	11 Nov 2016	12 Dec 2016	10 Jan 2017	8 Feb 2017	
BbF	0.0159	0.0125	0.0153	0.0253	0.0239	0.0281	0.0153	> 0.02	0.0421	0.0222	0.00017
BghiP	0.0154	0.0134	0.0176	0.0251	0.0252	0.0305	0.0158	> 0.02	0.0446	0.0262	0.00017
Mercury	-	-	-	-	-	-	-	-	-	-	0.07
TBT	0.00083	0.0006	< 0.0002	0.00949	0.00069	0.00055	0.00061	0.00093	0.00202	0.0008	0.0002
	10 Mar 2017	7 Apr 2017	5 May 2017	6 Jun 2017	4 Jul 2017	3 Aug 2017	18 Sep 2017	3 Oct 2017	14 Nov 2017	30 Nov 2017	
BbF	0.0343	-	-	-	-	-	-	-	-	-	0.00017
BghiP	0.0386	-	-	-	-	-	-	-	-	-	0.00017
Mercury	-	-	-	-	-	-	-	-	-	-	0.07
TBT	0.0008	0.00069	0.00148	0.00063	0.0005	0.00068	-	0.00078	0.00139	0.00083	0.0002
	4 Jan 2018	12 Feb 2018	27 Feb 2018	9 Apr 2018	11 May 2018	11 May 2018	11 Jun 2018	9 Jul 2018	8 Aug 2018	6 Sep 2018	
BbF	-	-	-	-	-	0.0107	0.0112	0.0174	0.0476	0.0355	0.00017
BghiP	-	-	-	-	-	0.0124	0.0127	0.0176	0.043	0.0363	0.00017
Mercury	-	-	-	< 0.01	< 0.01	-	< 0.01	< 0.01	< 0.01	< 0.01	0.07
TBT	0.00087	0.00072	0.0017	0.00052	0.00075	0.00072	0.00048	0.00046	0.00051	0.00087	0.0002
	5 Oct 2018	5 Nov 2018	3 Dec 2018	16 Jan 2019	15 Feb 2019	15 Mar 2019	12 Apr 2019	13 May 2019	12 Jun 2019	2 July 2019	
BbF	0.0275	0.0239	> 0.05	0.0124	0.0271	0.0201	-	-	-	-	0.00017
BghiP	0.0292	0.0265	> 0.05	0.0145	0.0286	0.0233	-	-	-	-	0.00017
Mercury	< 0.01	0.0183	< 0.01	< 0.01	< 0.01	< 0.01	-	-	-	-	0.07
TBT	0.00067	0.00054	0.00112	0.0005	-	0.00068	0.00074	0.00037	0.00062	0.00037	0.0002
	30 Jul 2019	5 Sep 2019	7 Oct 2019	12 Nov 2019	9 Dec 2019	8 Jan 2020	7 Feb 2020	8 Mar 2020	29 Sep 2020	12 Nov 2020	
BbF	-	-	-	-	-	-	-	-	-	-	0.00017
BghiP	-	-	-	-	-	-	-	-	-	-	0.00017
Mercury	-	-	-	-	-	-	-	-	-	-	0.07
TBT	0.0004	0.00083	0.00043	0.0012	0.00053	0.00084	0.00057	-	-	-	0.0002

All results in µg/L. BbF=benzo(b)fluoranthene. BghiP=benzo(g,h,i)perylene. TBT=tributyltin. Mercury is dissolved concentration. EQS are for Annual Averages with exception of MAC for mercury. Breaches of EQS in red.

Proposed activity causing or contributing to WFD water quality deterioration

The capital dredging operations that would be authorised by the DCO and deemed marine license for the proposed development will last 17 days. Any future maintenance dredging undertaken in the future, post capital dredging, would be via separate marine licencing and is not considered further here.

Regulatory guidance provided for the Water Framework Directive assessment of estuarine and coastal waters (<https://www.gov.uk/guidance/water-framework-directive-assessment-estuarine-and-coastal-waters>) states that temporary effects due to short-duration activities do not count as deterioration if the

water body would recover in a short time without any restoration measures. Given the short duration of the proposed capital dredging campaign comprising a little more than a single 14-day perigean spring tidal cycle, more significant dispersion on the faster moving spring tides is limited. Similarly, given WFD compliance is assessed against annual average concentrations within the water body, the period of significant impact during the dredging campaign represents no more than one month of effect within a twelve month compliance window, and within a five-year WFD cycle. This therefore also represents very limited potential for long lasting impacts capable of contributing to water quality deterioration.

To predict sediment plume dispersion behaviour, hydrodynamic sediment modelling has been undertaken by HR Wallingford for the Tilbury2 and reported as Appendix 16D to the accompanying Environmental Statement. For the Thurrock Flexible Generation Plant DCO application, the results have been interpreted within Appendix 17.2 of the Environmental Statement (APP-120). At paragraph 5.2.4 it states that the maximum suspended sediment concentration (SCC) in the plume created by the proposed dredging is predicted to be below circa 100 mg/l at any location, except immediately adjacent to the dredge site. Furthermore, the modelling outputs from HR Wallingford (2017) indicate that the SSC, when averaged through the spring/neap cycle, would only exceed 10 mg/l above background within about 1 km up and down river of the dredge site. This is two orders of magnitude lower than background SCC measured at the Tilbury Power Station jetty and reported at Section 3.1.1 of Appendix 16D to the Tilbury2 Environmental Statement where fine sediment concentrations of up to 1,600 mg/l (near bed) and 1,300 mg/l (mid depth) are reported.

Proposed activity jeopardising the water body achieving 'Good Status'

To assist in determining an indicative quantitative impact magnitude, a process contribution from the dredging activities following dilution is proposed to inform significance in the absence of current criteria for these effects. Following discussions with the Environment Agency it has been confirmed that in the absence of specific published guidance, the use of existing environmental permitting methodology for determining significance for point source continuous discharges is adopted. This methodology provides a magnitude of 3% or less to judge whether process contributions impact on baseline water chemistry can be judged as insignificant. Accordingly, a simple dilution calculation is offered based on published estimates of baseline sediment loads and those attributable to dredging.

Further to the instantaneous or 'spike' impact estimates associated with the dredging works, further temporal dilution is taken into account due to the WFD status compliance criteria being determined over a five year classification cycle. The Environment Agency has confirmed that if it can be shown that the dredge related impacts will not result in a material increase in baseline chemical concentrations of more than 3% over a five year classification cycle, that would be a valid "no deterioration" argument that would be accepted as the basis for WFD compliance.

Using the above TSS conservative data from the modelling of a c. eight-fold larger dredge at Tilbury2, for the calculation of a process contribution, it is concluded that the dredging activities would create a worst case, spring/neap tidal cycle averaged, maximum absolute chemical potential impact during the campaign of 100 mg / 1,300 mg, or c. 8%, assuming the sediment was taken on a mass for mass basis to comprise contaminant. Of course, this is a highly unlikely proposition given the chemical evidence obtained for the sediments within the proposed dredged site where only c. 1 mg/kg of contaminant of concern has been identified in sediments, or 0.0001% by weight and the reasonable expectation that baseline background sediment load in the Thames is principally uncontaminated.

Given the proposed dredging campaign would last 17 days, a temporal contribution within the five year WFD classification cycle of $17 / (5 \times 365)$ can be calculated equal to c. 1%. Taking these two factors together provides a contribution of c. 0.1%. Based on the conservative factors adopted in the derivation of this figure, this allows a conclusion to be drawn that a WFD equivalent process contribution of less than 3% can be reasonably expected and that therefore this contribution would be insignificant on water body good status compliance.

The Thames Middle water body from west to east is over 50 km in length. The boundary between the Middle Thames and Lower Thames water bodies is approximately 8 km downstream of the proposed development. Given the modelling predicted 1% SCC increase within 1 km of the site, it is concluded that given the approaches adopted above, the impact of the proposed dredging has a limited potential for impact on the Middle Thames taken as whole as is the case for WFD compliance determination.

Thames Middle water body: reasons for not achieving good status – tributyltin compounds

	Agriculture and rural land management	Domestic General Public	Industry	Local and Central Government	Mining and quarrying	Navigation	Recreation	Urban and transport	Waste treatment and disposal	Water Industry	Other	No sector responsible	Sector under investigation	Total
Changes to the natural flow and levels of water	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pollution from rural areas	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pollution from abandoned mines	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pollution from waste water	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Physical modifications	-	-	-	3	-	-	-	-	-	-	-	-	-	3
Pollution from towns, cities and transport	-	-	-	-	-	-	-	2	-	-	-	-	-	2
Non-native invasive species	-	-	-	-	-	-	-	-	-	-	-	-	-	0

In summary, it is concluded that the Thames Middle WFD status would not be jeopardised by the proposed dredging owing to:

- the current baseline chemical data for a monitoring site in close upstream proximity to the proposed development has recorded monthly exceedances of EQS for benzo(b)fluoranthene, benzo(g,h,i)perylene and tributyltin for the last five years until monitoring for PAHs ceased in April 2019;
- the limited duration of disturbance of 17 days and thus limited period of effect on water quality;
- the limited lateral effects predicted by the HR Wallingford model based on the Tilbury2 dredging proposals of over 8 times the volume of sediment (113,000 cu m for Tilbury2 compared to 13,200 cu m for the Thurrock Flexible Generation Plant);
- the WFD status is based on annual average concentrations so short-lived events are not as significant on annual monitoring averages or five-year WFD assessment cycles ; and
- the more significant existing pressures on the water body from urban, transport and water industry sources are perennial and widespread and thus more precursors of failure of chemical status.

Impacts on the Thames Lower water body

The Thames Lower water body (GB530603911401), also within the Thames TraC management catchment, shares the same features of chemical status non-compliance as the Thames Middle water body. As for the Thames Middle, the probable reasons stated by the Environment Agency for the Thames Middle water body not achieving good status provided by the Environment Agency via the Catchment Data Explorer web site for tributyltin compounds are the same for the Thames Middle water body as summarised in the following table.

Thames Lower water body: reasons for not achieving good status – tributyltin compounds

Id	Swmi	Swmi Certainty	Activity	Activity Certainty	Category	Category Certainty	Business Sector	Classification Element
508556	Diffuse source	Probable	Contaminated water body bed sediments	Probable	Urban and transport	Probable	Urban	Tributyltin Compounds
508559	Diffuse source	Probable	Urbanisation - urban development	Probable	Urban and transport	Probable	Urban	Tributyltin Compounds
508562	Point source	Suspected	Use of restricted substance	Suspected	Navigation	Suspected	Inland Waterways	Tributyltin Compounds
508564	Diffuse source	Suspected	Contaminated land	Suspected	Industry	Suspected	Not applicable	Tributyltin Compounds
508566	Point source	Suspected	Contaminated land	Suspected	Industry	Suspected	Other industry, manufacturing and Business	Tributyltin Compounds
508567	Point source	Suspected	Landfill leaching	Suspected	Waste treatment and disposal	Suspected	Landfill - Non hazardous landfill	Tributyltin Compounds
508568	Point source	Probable	Sewage discharge (continuous)	Probable	Water Industry	Probable	Waste water treatment	Tributyltin Compounds

The following table summarises the issues preventing the Thames Lower water body generally reaching good status and the sectors identified as contributing to them. This again lists two counts due to 'urban and transport' and a single count of 'pollution from wastewater' contributed by the water industry. Two counts are due to physical modifications to the watercourse.

Thames Lower water body: issues preventing waters reaching good status

	Agriculture and rural land management	Domestic General Public	Industry	Local and Central Government	Mining and quarrying	Navigation	Recreation	Urban and transport	Waste treatment and disposal	Water Industry	Other	No sector responsible	Sector under investigation	Total
Changes to the natural flow and levels of water	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pollution from rural areas	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pollution from abandoned mines	-	-	-	-	-	-	-	-	-	-	-	-	-	0
Pollution from waste water	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Physical modifications	-	-	-	2	-	-	-	-	-	-	-	-	-	2
Pollution from towns, cities and transport	-	-	-	-	-	-	-	2	-	-	-	-	-	2
Non-native invasive species	-	-	-	-	-	-	-	-	-	-	-	-	-	0

Between October 2018 and November 2019 on six occasions, the Environment Agency monitored the sediment quality within the Thames at Mucking (NGR 572133 179803) located approximately 2.5 km downstream of the proposed development. This data is published via their Water Quality Archive (<https://environment.data.gov.uk/water-quality/view/sampling-point/TH-PTTR0107>). For mercury, the following sediment quality is tabulated as follows. These have been screened against the maximum recorded mercury concentrations for mercury recorded for the proposed dredging area. The results at Mucking are broadly similar, with exceedances recorded on two occasions with a maximum concentration of 0.602 mg/kg.

Sediment quality data for mercury within the Thames at Mucking

PHS	Monitoring date and dry weight concentration in mg/kg										Max. at Prop. Dev.
	2 Nov 2016	1 Nov 2017	31 Oct 2018	31 Oct 2018	31 Oct 2018	31 Oct 2018	7 Nov 2019	7 Nov 2019	7 Nov 2019	7 Nov 2019	
Mercury	-	-	-	0.526	0.602	0.461	-	0.17	0.33	0.32	0.50

Water quality data for identified Priority Hazardous Substances for the Thames at Mucking

Water quality data for identified Priority Hazardous Substances for the Thames at Mucking												EQS µg/l
PHS	Monitoring date and concentration in µg/l											
										29 Nov 2016 https://environment.data.gov.uk/water-quality/data/sample/TH-PTTR0023-20161129-1236489.html	5 Jan 2017	
	15 Apr 2016	8 May 2016	14 Jun 2016	7 Jul 2016	6 Aug 2016	13 Sep 2016	11 Oct 2016	10 Nov 2016				
BbF	0.00 973	0.00 203	0.00 371	0.01 04	0.01 52	0.00 308	0.00 25	0.00 597	0.00609		0.0219	0.00 017
Bghi P	0.01 08	0.00 256	0.00 438	0.01 2	0.01 7	0.00 32	0.00 295	0.00 664	0.00678		0.0224	0.00 017
Merc ury	-	-	-	-	-	-	-	-	-		-	0.07
TBT	0.00 055	0.00 024	0.00 024	0.00 036	0.00 055	0.00 027	0.00 032	0.00 037	0.00053		0.00064	0.00 02
										4 Oct 2017 https://environment.data.gov.uk/water-quality/data/sample/TH-PTTR0023-20171004-1258207.html	10 Nov 2017	
	10 Feb 2017	1 Mar 2017	28 Mar 2017	2 May 2017	9 Jun 2017	5 Jul 2017	4 Aug 2017	10 Sep 2017				
BbF	0.00 616	0.01 05	-	-	-	-	-	-	-	-	-	0.00 017
Bghi P	0.00 656	0.01 28	-	-	-	-	-	-	-	-	-	0.00 017
Merc ury	-	-	-	-	-	-	-	-	-	-	-	0.07
TBT	0.00 054	0.00 068	-	-	-	-	-	-	-	-	-	0.00 02
	5 Dec 2017	6 Jan 2018	3 Feb 2018	3 Mar 2018	10 Apr 2018	7 May 2018	11 May 2018	10 Jun 2018		7 Jul 2018	6 Aug 2018	
BbF	-	-	-	-	-	-	0.00 56	0.00 273	0.00653		0.00478	0.00 017
Bghi P	-	-	-	-	-	-	0.00 601	0.00 349	0.00721		0.00509	0.00 017
Merc ury	-	-	-	-	< 0.0 1	< 0.0 1	-	< 0.0 1	< 0.01		< 0.01	0.07
TBT	-	-	-	-	0.00 04	0.00 055	0.00 057	0.00 020	0.00032		0.00033	0.00 02
											12 Jun 2019 https://environment.data.gov.uk/water-quality/data/sample/TH-PTTR0023-20190612-1308553.html	
	11 Sep 2018	2 Oct 2018	7 Nov 2018	3 Dec 2018	16 Jan 2019	15 Feb 2019	15 Mar 2019	12 Apr 2019	14 May 2019			

BbF	0.01 27	-	0.03 78	0.02 46	0.01 6	0.01 09	0.01 21	-	-	-	0.00 017
BghiP	0.01 3	0.00 43	0.04 05	0.02 87	0.01 79	0.01 16	0.01 42	-	-	-	0.00 017
Mercury	< 0.0 1	< 0.0 1	< 0.0 1	< 0.0 1	< 0.0 1	< 0.0 1	< 0.0 1	-	-	-	0.07
TBT	0.00 027	0.00 025	0.00 059	0.00 073	0.00 044	-	0.00 067	-	-	-	0.00 02

All results in ug/L. BbF=benzo(b)fluoranthene. BghiP=benzo(g,h,i)perylene. TBT=tributyltin.

Mercury is dissolved concentration. EQS are for Annual Averages with exception of MAC for mercury.

Breaches of EQS in red.

In summary, the same reasoning can be presented to conclude impacts on the Thames Lower water body arising from the proposed dredging at the proposed development will not be of significance compared to the wider pressures identified. Of course, it can also be concluded that the magnitude of any effect within the Thames Lower water body will be materially lower than that of the Thames Middle water body owing to its further distance from the proposed dredge site.

Conclusion

This further evaluation of baseline water quality and the potential for impacts from the proposed capital dredging has supported the conclusion presented in the Environmental Statement for Thurrock Flexible Generation Plant that no significant adverse effects would occur and the proposed development would not affect Water Framework Directive compliance of the Thames Middle or Thames Lower water bodies.