



Thurrock Flexible Generation Plant

**Preliminary Environmental Information Report
Chapter 18: Summary of Cumulative Effects**

Date: September 2018

Environmental Impact Assessment
Preliminary Environmental Information Report

Volume 4
Chapter 18

Report Number: OXF10872

Version: Final

Date: September 2018

This report is also downloadable from the Thurrock Flexible Generation Plant website at:
<http://www.thurrockpower.co.uk>

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Summary

This document summarises the cumulative effects identified in the preliminary Environmental Impact Assessment. Full details of the cumulative assessment can be found in Section 5 of each individual topic chapter in Volume 3 (Chapters 6 to 16) of this PEIR.

Qualifications

This document has been prepared by David Gabb, BSc, MSc, who has 2 years' experience in environmental impact assessment as an environmental consultant.

It has been checked by Amy Robinson BSc, MSc, a Technical Director who has 18 years' experience of environmental impact assessment, and Tom Dearing, a Chartered Environmentalist and full Member of the Institute of Environmental Management and Assessment, who has eight years' experience.

1. Summary of Cumulative Effects

1.1 Purpose of this chapter

- 1.1.1 This chapter of the Preliminary Environmental information report (PEIR) presents the summary of cumulative effects following the preliminary findings of Environmental Impact Assessment (EIA) work undertaken concerning potential impacts of Thurrock Flexible Generation Plant.
- 1.1.2 The PEIR is being published to inform pre-application consultation. Following consultation, comments on the PEIR will be reviewed and taken into account in preparation of the Environmental Statement (ES) that will accompany the application to the Planning Inspectorate (PINS) for development consent.
- 1.1.3 Table 1.1 summarises the overall cumulative effect and includes the identified cumulative impacts, cumulative developments and assigned development tier. Full details of the cumulative effects assessment can be found in Section 5 of each individual topic chapter in Volume 3 (Chapters 6 to 16) of this PEIR.

1.2 Conclusions

- 1.2.1 As summarised in Table 1.1, overleaf, for each of the identified impacts either no significant effects are concluded, or that the impact to various receptors as a result of Thurrock Flexible Generation Plant is negligible and would not change the significance of the cumulative effect.
- 1.2.2 Therefore, it is concluded that no further mitigation or monitoring measures are considered necessary, beyond those which have been adopted as part of the proposed development, or outlined in the topic chapters (Volume 3, Chapters 6 to 16).

Table 1.1 Summary of Cumulative Effects

Development Phase	Cumulative Impact	Cumulative Development	Development Tier	Cumulative Effect
Landscape and Visual Resources				
Operation and maintenance	Adverse impact to designated landscapes (Kent Downs area of outstanding natural beauty).	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	Thurrock Flexible Generation Plant would not change the significance level of the cumulative effect, which is not significant.
Operation and maintenance	Adverse impacts to non-designated landscapes (NCA 81: Greater Thames Estuary, LCA C5: Tilbury Marshes, LCA D7: West Tilbury Urban Fringe).	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	Thurrock Flexible Generation Plant would not change the significance of the cumulative effect, level, which is not significant.
Operation and maintenance	Adverse impact to views and groups of receptors (Viewpoint 11, Viewpoint 14, Viewpoint 19, and Viewpoint 22; and Viewpoint 6, Viewpoint 8, Viewpoint 9, Viewpoint 12, Viewpoint 24, and Viewpoint 26)	Tilbury2 port expansion Tilbury Energy Centre	Tier 1 Tier 2	Thurrock Flexible Generation Plant would be screened by other the cumulative developments or intervening infrastructure, so Thurrock Flexible Generation Plant would not increase the significance of effects on visual receptors.
Operation and maintenance	Adverse impact to views and groups of receptors (Viewpoint 7 and Viewpoint 15)	Tilbury2 port expansion Tilbury Energy Centre	Tier 1 Tier 2	Tilbury Energy Centre has a significant effect on its own. Tilbury2 and/or Thurrock Flexible Generation Plant together with Tilbury Energy Centre would compound or intensify the industrial nature of the view, but this does not change the significance level (as it already significant).
Decommissioning	Adverse impact to landscape and visual resources.	Tilbury2 port expansion Tilbury Energy Centre Mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 1	It is unlikely that decommissioning activities would overlap in time and significant effects are not expected.
Historic Environment				
Construction	Adverse impact to below ground archaeology and impacts to palaeoenvironmental record.	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	As no significant effects on near surface remains or more deeply buried remains with palaeoenvironmental potential are predicted to be caused by Thurrock Flexible Generation Plant, no significant contribution to cumulative effects with any other developments are predicted.
Construction and operation	Adverse impacts to settings of heritage assets and on the overall historic landscape	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1 Tier 2 Tier 2	Moderate to adverse effect on Tilbury Fort predicted due to cumulative developments, to which Thurrock Flexible Generation Plant would make a limited contribution and not increase the significance of effect. No significant cumulative effect due to Thurrock Flexible Generation Plant predicted for other heritage assets and historic landscape.

Development Phase	Cumulative Impact	Cumulative Development	Development Tier	Cumulative Effect
Land Use, Agriculture and Socio-Economics				
Construction	Adverse impact to the best and most versatile agricultural land	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	The permanent loss of land associated with Thurrock Flexible Generation Plant would only be likely to affect a negligible area of best and most versatile land and therefore there would be no cumulative effect.
Operation and maintenance	Adverse impact to the farm holdings through severance and land take, including land within the holding affected by Thurrock Flexible Generation Plant.	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	The effect on the large family farm associated with Thurrock Flexible Generation Plant is negligible and any potential cumulative effects on the farm would be likely to be associated with the development of other proposals, including the Lower Thames Crossing in the vicinity.
Construction	Adverse impact to common land as recreational resource.	Lower Thames Crossing	Tier 2	The loss of common land as a result of the Lower Thames Crossing will require exchange land to be provided under Section 16 of the Commons Act 2006, so no net loss of common land is likely to occur and therefore no cumulative effects on this resource.
Construction	Adverse impact to pool of local and regional construction labour, through increased demand.	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1 Tier 2 Tier 2	Given the relatively lower construction labour demands of Thurrock Flexible Generation plant in the context of other cumulative developments, the pool of local and regional construction labour and the mobility of the construction workforce, the effect on the availability of labour would be negligible.
Ecology				
Construction	Adverse impact to Lytag Brownfield Local Wildlife Site	Tilbury2 port expansion Lower Thames Crossing	Tier 1 Tier 2	No cumulative impact as the Local Wildlife Site effect is entirely due to these two developments, and hence the Thurrock Flexible Generation Plant would not contribute to the cumulative effect.
Construction	Adverse impact to Thames Estuary and Marshes Special Protection Area	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	To be determined following surveys of wintering birds, which are currently ongoing; this will be reported at the ES stage.
Construction	Adverse impact to grassland and ditch habitat	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	Given that the mitigation proposals for Thurrock Flexible Generation Plant include creation of grassland and ditch habitat that more than equals permanent losses from construction within the main development site, it is not considered that there is potential for cumulative effects on these habitat types.

Development Phase	Cumulative Impact	Cumulative Development	Development Tier	Cumulative Effect
Construction	Adverse impact to reptiles, water voles, invertebrates and breeding birds	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	Given that the mitigation proposals for Thurrock Flexible Generation Plant include creation of grassland and ditch habitat that more than equals permanent losses from construction within the main development site of habitats that support reptiles, water voles, invertebrates and breeding birds, it is not considered that there is potential for cumulative effects on these species.
Construction	Adverse impact of cumulative projects resulting in greater fragmentation of populations of protected species	Lower Thames Crossing	Tier 2	This would entirely due to the presence of the Lower Thames Crossing link road and the Thurrock Flexible Generation Plant would not contribute additional fragmentation effects.
Construction	Adverse impact to arable land functionally linked by bird species with the Thames Estuary and Marshes SPA/Ramsar	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	To be determined following bird surveys which are currently ongoing and will be reported at the ES stage.
Decommissioning	Adverse impact to species through additional disturbance	Tilbury2 port expansion Lower Thames Crossing	Tier 1 Tier 2	It is not considered that this would give rise to effects of a magnitude or significance greater than that assessed for Thurrock Flexible Generation Plant alone, i.e. not significant.
Traffic and Transport				
Construction	Adverse impact to driver delay, severance of routes, pedestrian delay or accidents and road safety	16/01232/OUT 16/00412/OUT 15/00379/OUT Tilbury2 port expansion	Tier 1 Tier 1 Tier 1 Tier 1	The contribution of Thurrock Flexible Generation Plant construction traffic to cumulative traffic flows from developments including Tilbury2 is predicted to be negligible and no significant cumulative effects on transport due to Thurrock Flexible Generation Plant are predicted.
Operation, maintenance and decommissioning	Adverse impact to driver delay, severance of routes, pedestrian delay or accidents and road safety	16/01232/OUT 16/00412/OUT 15/00379/OUT Tilbury2 port expansion	Tier 1 Tier 1 Tier 1 Tier 1	No significant cumulative effect as Thurrock Flexible Generation Plant traffic would be lower than during construction.
Noise and Vibration				
Construction	Adverse impact of construction noise to sensitive receptors	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1 Tier 2 Tier 2	Any overlap in construction activity and noise impact at individual receptors would likely be of limited duration and therefore cumulative noise effects from Tilbury2 and Thurrock Flexible Generation Plant are unlikely to be significant.
Construction	Adverse impact of construction vibration to sensitive receptors	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1 Tier 2 Tier 2	Vibration effects resulting from the construction of Thurrock Flexible Generation Plant would be likely to be negligible and therefore would not result in an increase of significance of effect at affected receptors.
Construction	Adverse impact of construction traffic to sensitive receptors	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1 Tier 2 Tier 2	Not significant as construction traffic contribution would be negligible.

Development Phase	Cumulative Impact	Cumulative Development	Development Tier	Cumulative Effect
Operation and maintenance	Adverse impact of operational noise to sensitive receptors	Tilbury2 port expansion Tilbury Energy Centre	Tier 1 Tier 2	Any contribution from Thurrock Flexible Generation Plant to a cumulative impact during the operational phase of developments at affected noise sensitive receptors would be negligible and therefore unlikely to result in an increase of significance of effect at any receptor.
		Lower Thames Crossing	Tier 2	Increased vehicle movements as a result of increased traffic flow across the LTC may mask noise from Thurrock Flexible Generation Plant therefore resulting in a lesser perceived effect of operational noise from the proposed development
Operation and maintenance	Adverse impact of operational vibration to sensitive receptors	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1 Tier 2 Tier 2	Vibration effects resulting from the operation and maintenance of Thurrock Flexible Generation Plant would be likely to be negligible and therefore would not result in an increase of significance of effect at affected receptors.
Decommissioning	Adverse impact of decommissioning noise to sensitive receptors	Tilbury2 port expansion Tilbury Energy Centre	Tier 1 Tier 2	Decommissioning effects are considered to be similar to those predicted during construction. As such, it is considered that the decommissioning is unlikely to result in significance cumulative noise effects at affected NSRs.
		Lower Thames Crossing	Tier 2	Decommissioning effects are considered to be similar to those predicted during construction.
Air Quality				
Construction	Adverse impact of dust	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	Not significant with implementation of good practice dust management measures.
Operation and maintenance	Adverse impact of NO ₂ concentrations long-term	Tilbury2 port expansion Tilbury Energy Centre	Tier 1 Tier 2	Moderate to substantial adverse effects but total nitrogen dioxide concentration is predicted to remain within the relevant air quality objectives except at West Street in Gravesend, where the air quality objective would be exceeded with or without the effect of Thurrock Flexible Generation Plant.
	Adverse impact of NO ₂ concentrations short-term	Lower Thames Crossing Tilbury Green Power	Tier 2 Tier 1	
Decommissioning	Adverse impact of dust	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1 Tier 2 Tier 2 Tier 1	Not significant with implementation of good practice dust management measures.
Human Health				
Construction	Adverse impact to human health via changes in environmental pathways	Tilbury2 port expansion Tilbury Energy Centre Lower Thames Crossing	Tier 1	As set out above, no significant contribution to the cumulative effect with Tilbury2 by Thurrock Flexible Generation Plant is predicted for traffic and noise changes, and air pollutant concentrations would remain within the air quality standards set to be protective of health. No significant adverse cumulative impact on health due to Thurrock Flexible Generation Plant is
Operation and maintenance			Tier 2	

Development Phase	Cumulative Impact	Cumulative Development	Development Tier	Cumulative Effect
Decommissioning		Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1	therefore predicted. On the same basis, it is anticipated that there would be no significant contribution to the cumulative effect with the Tilbury Energy Centre, Lower Thames Crossing or proposed residential/mixed-use developments. In addition, it is unlikely that the increase in number and proximity of the local population, resulting from proposed residential and mixed-use developments expanding Linford and East Tilbury, would be sufficient to quantify any change in local community health outcomes (due to a greater number of people exposed to environmental changes).
Construction	Adverse or beneficial impact to human health via socio-economic pathways	Tilbury2 port expansion	Tier 1	No significant cumulative effect on the basis that construction employment would only provide population and health benefits on an individual level rather than on a community level.
Operation and maintenance		Tilbury Energy Centre	Tier 2	No significant cumulative effect as Thurrock Flexible Generation Plant employment generation would be minimal and mainly remote-based.
Decommissioning		Lower Thames Crossing	Tier 2	
		Residential and mixed-use developments expanding Linford and East Tilbury	Tier 1	No significant cumulative effect as overlap in decommissioning timescales is unlikely.
Climate Change				
All developments which emit greenhouse gasses (GHGs) have the potential to impact the atmospheric mass of GHGs as a receptor, and so may have a cumulative impact on climate change. Consequently, cumulative effects due to other specific local development projects are not individually predicted but are taken into account when considering the impact of the proposed development by defining the atmospheric mass of GHGs as a high sensitivity receptor in Section 4 of Volume 3, Chapter 14: Climate Change. The net beneficial effect of the assessment of the proposed development takes into account cumulative changes in greenhouse gas emissions from other energy generation sources.				
Hydrology and Flood Risk				
Construction	Adverse impact on flood risk, water quality or drainage networks	Tilbury2 port expansion	Tier 1	No significant cumulative effect on hydrology and flood risk is predicted as all developments are required to provide appropriate flood risk mitigation and safe storage of any potentially-polluting materials.
Operation and maintenance		Tilbury Energy Centre	Tier 2	
Decommissioning		Lower Thames Crossing	Tier 2	
		Other cumulative developments	Various	
Geology, Hydrogeology and Ground Conditions				
Construction	Adverse impact on ground conditions or hydrogeology or mobilisation of contaminants of concern	Tilbury2 port expansion	Tier 1	No significant cumulative effect on geology, hydrogeology or ground contamination is predicted as construction areas would not overlap and Thurrock Flexible Generation Plant is not considered to represent a significant risk in terms of contaminated soil and/or groundwater.
Operation and maintenance		Tilbury Energy Centre	Tier 2	
Decommissioning		Lower Thames Crossing	Tier 2	
		Other cumulative developments	Various	
Construction	Adverse impact of the developments mobilising unexpected ground contamination	16/00186/DMI	Tier 1	No cumulative effects as no construction works associated with 16/00186/DMI
	Adverse impact of the developments causing soil or groundwater contamination			
Operation and maintenance	Adverse indirect impacts as a result of accidental spillages of chemicals during maintenance work	16/00186/DMI	Tier 1	Spillages would not be relevant to demolition works of Tilbury B Power Station.
Decommissioning	Adverse impact of the developments causing soil or groundwater contamination	16/00186/DMI	Tier 1	Soil or groundwater contamination as a result of decommissioning would not be of relevance to the demolition of Tilbury B Power Station.