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20.0 CUMULATIVE AND COMBINED EFFECTS

20.1 Introduction

20.1.1 This chapter of the Environmental Statement (ES) addresses the potential for combined or cumulative effects to occur as a result of the Proposed Development. It draws on the assessment of impacts provided in Chapters 8 to 19 of this ES, and information relating to other known developments that are proposed within the study area. This assessment does not consider developments that are already constructed and operating for the assessment of cumulative effects, as existing operational facilities are accounted for in the baseline conditions established for the main assessments within Chapters 8 to 19 of this ES.

20.1.2 *Combined effects* may arise where several different effects resulting from the Proposed Development (*e.g.* decrease in air quality, increase in noise disturbance) have the potential to affect a single receptor.

20.1.3 *Cumulative effects* have the potential to arise where two or more developments are proposed within close enough proximity to lead to effects of the same type (*e.g.* air quality) on the same receptor.

20.1.4 The cumulative effects assessment therefore considers other proposed developments that are in the public domain, such as planning applications registered with the local planning authorities and/or already consented developments, but not yet constructed or operational.

20.1.5 This chapter is supported by Figure 20.1 (ES Volume II).

20.2 Legislation and Planning Policy Context

20.2.1 The requirement for cumulative and combined impact assessments is clearly stated in the relevant European Directive and domestic legislation as detailed below:

- European Directive 2011/92/EU on the assessments of effects of certain public and private projects on the environment requires an assessment of *"the direct effects and any indirect, secondary, cumulative, short, medium and long term, permanent or temporary, positive and negative effects of the project"*; and
- Schedule 4 Part 1 of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 requires *"A description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from -*

  (a) The existence of the development;
  (b) The use of natural resources;
  (c) The emission of pollutants, the creation of nuisances and the elimination of waste,

  and the description by the applicant of the forecasting methods used to assess the effects on the environment".

20.3 Assessment Methodology

Impact Assessment and Significance Criteria

20.3.2 There is no standard prescriptive method for assessing cumulative and combined effects and the extent to which the effects of other developments can be assessed quantitatively depends on the level of information available about the other developments. Such effects are, therefore, assessed by professional opinion, although matrices and modelling are used where appropriate and where enough information regarding the other developments exists. Where environmental assessment information regarding other developments is not available or uncertain, the assessment is necessarily qualitative.

20.3.3 When considering cumulative and combined effects, the mitigation measures as set out in Chapters 8 to 19 have been taken into account *i.e.* only residual (after mitigation) effects are discussed in this chapter.

20.3.4 Cumulative and combined effects are assessed to be neutral, minor, moderate or major. Moderate or major effects are considered to be significant, using the methodologies outlined in each technical chapter (Chapters 8 – 19 of this ES).

Cumulative Effects

20.3.5 Cumulative effects are those that accrue over time and space from a number of developments.

20.3.6 The Planning Inspectorate Advice Note 17 'Cumulative effects assessment relevant to nationally significant infrastructure projects' (Planning Inspectorate, December 2015) sets out a four stage approach to assessment of cumulative effects:

- Stage 1: identify the Zone of Influence and identify long list of other developments;
- Stage 2: identify short list of other development for cumulative assessment;
- Stage 3: information gathering; and
- Stage 4: assessment.

20.3.7 This approach has been followed in undertaking the cumulative effects assessment presented in this chapter.

20.3.8 The Zone of Influence is discussed in the Study Area section below. A long list of developments was identified prior to the submission of the EIA Scoping Report and an initial shortlist was provided in the Scoping Report (see Appendix 1A – ES Volume III). This has subsequently been reviewed and updated in consultation with the local planning authorities, and the current shortlist of other developments (as at the end of March 2017) is presented in Section 20.4 of this chapter.

20.3.9 In order to assess the potential for cumulative effects to arise in relation to these developments, where a planning application has been made, information presented within the Environmental Statement or environmental reports for the development has been gathered and reviewed. For developments that are known to be proposed (either via screening or scoping opinion requests submitted to the local authority/ Planning Inspectorate or following presentation of information in the public domain) but where an ES (or other environmental reports) has not yet been prepared or submitted, any readily available information has been

utilised. This includes communication with local authorities, public consultation material and material available via the internet.

20.3.10 Following information gathering from available sources (including review of documents submitted to support planning applications/ DCO applications for other developments), the effects of the Proposed Development have been considered in conjunction with the potential effects from other projects or activities that are both reasonably foreseeable in terms of delivery (*e.g.* have planning consent or are in the planning process) and are geographically located in a position where environmental impacts could act together to create an effect that is more (or less) significant overall than the effect of individual developments alone.

20.3.11 Operational impacts are generally long-term, and whilst construction impacts are often short term and temporary, they can potentially be of a large magnitude. Consequently, when cumulative effects that could be associated with construction at one site and operation at another are considered the difference in duration and reversibility is considered within the assessment.

20.3.12 In assessing cumulative effects, it is appropriate to also acknowledge the relative contributions that different projects make to a cumulative effect, and carefully consider whether a cumulative effect occurs at all. For example, effects associated with a large scale project may be significant, and whilst a smaller project may contribute to this effect, the cumulative effect of the smaller project and the larger project is only considered to be significant if it is of greater significance than the effect of either project in isolation.

20.3.13 Where applicable, the assessment considers all other known developments that have potential for cumulative effects with the Proposed Development together, as a worst case.

Study Area

20.3.14 Cumulative effects are generally unlikely to arise unless the other proposed development sites are in close proximity to the Site, recognising that actual distance varies with the nature of the potential effect and the nature of the receptor, *e.g.* cumulative air quality effects could occur for developments a greater distance apart than noise effects. Construction projects are, as a matter of routine, required to employ regulatory and managerial controls and employ good practice to mitigate construction impacts wherever possible. Nevertheless, consideration has been given to the presence of common pathways from nearby developments to a single receptor, and whether there is potential for impacts of a sufficient magnitude whereby a particular receptor could experience cumulative effects.

20.3.15 The study area for the consideration of cumulative and combined effects has been developed taking into account the predicted extent of impacts associated with the Proposed Development, and with the point at which the associated effects become insufficient to contribute in any meaningful way to those of another proposed development.

20.3.16 The study area for each environmental assessment topic is defined in the relevant technical chapter (Chapters 8 – 19). Information on the likely extent of impacts associated with other developments in the area has also been considered.

20.3.17 The largest study area, for the landscape and visual impact assessment, has defined the 'zone of influence' within which the search for other developments has been undertaken for the cumulative assessment. Given the generally flat nature of the surrounding landscape, other

developments within a 15 km zone of influence have been identified for consideration in this chapter.

Consultation

A summary of consultation relevant to the cumulative and combined effects assessment is provided in Table 20.1 below.

Table 20.1: Consultation summary

Consultee	Date	Summary of response	Addressed
North Yorkshire County Council (Scoping Opinion)	August 2016	It is recommended that details of cumulative effects are described first under relative topic headings and that this section in the ES brings together summaries of significant effects and discusses the interactions and combined effects. Whilst the EIA will cover project-specific cumulative effects, cumulative effects nationally will also need to be taken into account under topics such as climate change. EN-1 para 4.2.5 states that the ES should provide information on how the effects of the applicant's proposal would combine and interact with the effects of other development (including projects for which consent has been sought or granted), as well as those already in existence e.g. Drax Power Station. The developments to be taken into account may require further discussion.	Potential cumulative effects with other proposed developments are assessed in this chapter and have been set out under each topic area in the sections below. Projects that are already in existence form part of the baseline conditions for each technical assessment as described in the technical chapters (Chapters 8 – 19). A carbon assessment has been prepared (Appendix 18A – ES Volume III).
The Secretary of State (Scoping Opinion)	August 2016	The following comments were made with regards to cumulative assessment: • The Applicant is referred to additional guidance on the assessment of cumulative effects published by the Planning Inspectorate in Advice Note 17. • The Secretary of State notes the list of reasonably foreseeable future projects in the vicinity of the proposed development	The cumulative assessment follows the guidance set out in Advice Note 17 (Planning Inspectorate, 2015). The methodology for producing the list of

Consultee	Date	Summary of response	Addressed
		provided in the Scoping Report. In the ES, the Applicant is requested to describe and justify the criteria used to produce this list. The Secretary of State also encourages the Applicant to consult the Local Authorities on the list of projects to be included. • The Secretary of State welcomes the inclusion of the decommissioning and demolition of the existing Eggborough coal-fired power station as a development for consideration in the cumulative assessment. • The applicant is encouraged to present clearly the assessment of inter-related effects alongside consideration of cumulative developments (in particular the decommissioning of the existing power station).	other developments is outlined in Section 20.4 of this chapter. The local authorities have been consulted on the list of projects to consider. Cumulative effects with the decommissioning and demolition of the existing coal-fired power station have been assessed in each chapter throughout the ES. Inter-related effects (referred to in this chapter as combined effects) are summarised in Table 20.7.

20.4 Cumulative Effects Assessment (Stages 1-3)

Identification of Short List of Other Developments for Assessment

20.4.1 An initial screening exercise (Stage 1 of the cumulative effects assessment) was undertaken to identify potential major developments within the vicinity of the Proposed Development for consideration within the cumulative impact assessment. This process identified potential major developments within a 15 km radius to create an initial long list for consideration. The long list was subsequently screened based on the potential for impact (*e.g.* cumulative landscape and visual impacts have potential to occur over a greater distance than, for example, cumulative noise or archaeology impacts) and a refined short list was developed for further, more detailed consideration (Stage 2 of the cumulative effects assessment). The initial short list was presented in the Scoping Report (Appendix 1A – ES Volume III). This was then revisited as part of the Preliminary Environmental Information (PEI) Report, submitted in January 2017 and has been updated again since then in this ES chapter to reflect the latest information available on other developments.

20.4.2 The short list of other developments identified at Stage 2 of the cumulative effects assessment are presented in Table 20.2 below, with details of their current status and comments regarding their temporal scope in relation to the temporal scope of the Proposed Development.

Table 20.2: Refined short list of projects within the 15 km zone of influence identified at Stage 2 of cumulative effects assessment

Name of development	Distance from closest part of the Site	Status (at time of assessment)	Description of development	Overlap in temporal scope with Proposed Development?	Cumulative effects to be assessed?	Environmental information available to inform assessment
Eggborough Coal-Fired Power Station Decommissioning and Demolition	Within part of the Site	Yet to enter the planning process	Decommissioning and demolition of existing coal-fired power station	Demolition may occur at the same time as the construction and/or initial operation of the Proposed Development	Yes	Information from Eggborough Power Limited (EPL)
Residential development of 55 dwellings (2016/0875/FUL)	50 m south-west	Planning application submitted in July 2016, decision pending	Residential development of 55 dwellings – located on land immediately to the south-west of the A19/ A645 Weeland Road junction, at the Site's south-western corner	Construction may occur at the same time as the Proposed Development	Yes	Planning Statement Ecology Report Flood Risk Assessment Noise Survey
Extension to Euro Auctions site (2016/1441/FULM)	50 m west	Planning application submitted January 2017, decision pending	Extension to Euro Auctions site including development of office building, workshop, auction arena, access arrangements, car parking, hardstanding and associated landscaping.	Construction may occur at the same time as the Proposed Development	Yes	Transport Statement Ecological Appraisal Noise Impact Assessment
Advanced Thermal Treatment Plant (NY/2016/0052/ENV)	100 m west	Planning application submitted and approved in 2016	Advanced Thermal Treatment Plant Located <100 m south-west of the Tranmore Lane/ A19 junction, between North Point Business Park and Euroauctions	Construction may occur at the same time as the Proposed Development	Yes	Environmental Statement

Name of development	Distance from closest part of the Site	Status (at time of assessment)	Description of development	Overlap in temporal scope with Proposed Development?	Cumulative effects to be assessed?	Environmental information available to inform assessment
Hydro-electricity generation scheme (2014/1101/FUL)	100 m east	Planning application submitted and approved in 2014. Construction completed and scheme commissioned in late 2016.	Hydro-electricity generation scheme at Chapel Haddlesey Weir - including installation of three Archimedian screws and a fish pass - Located immediately to the east of the existing and proposed cooling water abstraction point on the River Aire	Construction of the Proposed Development may lead to cumulative effects on the operation of the hydro-electricity generation scheme.	Yes	Planning Statement Ecology Report
Residential development of 64 dwellings (2015/0356/OUT)	150 m west	Outline planning application submitted and approved in 2015	Erection of a residential development on 2.62 hectares of land off Selby Road, Eggborough, to the west of the Site	Construction may occur at the same time as the Proposed Development	Yes	Planning Statement Flood Risk Assessment Contaminated Land Report
Single storey production facility (2015/1392/EIA)	250 m south	Planning application submitted and approved in 2015. Under construction in 2016.	Single storey production facility – located on land at the Saint Gobain glass factory, approximately 250 m east of the A19/ A645 Weeland Road junction at the Site's south-western corner	Construction may occur at the same time as the Proposed Development	Yes	Environmental Statement

Name of development	Distance from closest part of the Site	Status (at time of assessment)	Description of development	Overlap in temporal scope with Proposed Development?	Cumulative effects to be assessed?	Environmental information available to inform assessment
Knottingley Power Station and Pipeline	2 km west	DCO granted in 2015	A proposed 1,500 MW CCGT power station including an 8 km gas supply pipeline and associated infrastructure located at former Oxiris Chemical Works, Knottingley	Construction may occur at the same time as the Proposed Development	Yes	Environmental Statement
Solar farm (15/01403/STPLF)	4 km south-east	Planning application submitted and approved in 2015	Installation and operation of a solar farm and associated infrastructure, including photovoltaic panels, mounting frames, inverters, transformers, substations, communications building, access tracks, pole mounted CCTV cameras and fencing	Construction may occur at the same time as the Proposed Development	Yes	Planning Statement Landscape and Visual Impact Assessment Ecological Appraisal
Thorpe Marsh Gas Pipeline	4.6 km east	DCO granted 2016	A proposed 19 km buried steel pipeline to transport gas to the proposed Thorpe Marsh CCGT Power Station	Construction may occur at the same time as the Proposed Development	Yes	Environmental Statement
Kellingley Colliery Business Park (2016/1343/OUTM)	5 km west	Planning application submitted November 2016, decision pending	Outline application including access (all other matters reserved) for the construction of an employment park of up to 1.45 million sq ft (135,500 sq m) gross floor space comprising of	Construction may occur at the same time as the Proposed Development	Yes	Planning Statement Air Quality Assessment Transport

Name of development	Distance from closest part of the Site	Status (at time of assessment)	Description of development	Overlap in temporal scope with Proposed Development?	Cumulative effects to be assessed?	Environmental information available to inform assessment
			B2 , B8 and ancillary B1 uses, ancillary retail facilities (A1 - A4) including ancillary infrastructure and means of access.			Assessment Landscape Visual Impact Assessment
Southmoor Energy Centre (NY/2012/0318/SCO)	5.4 km west	Planning consent granted in 2015	A proposed 26 MWe Energy from Waste facility with CHP potential, located at Kellingley Colliery	Construction may occur at the same time as the Proposed Development	Yes	Scoping Report
Ferrybridge Multifuel 2	9.1 km west	DCO granted in 2015 Under construction in 2016.	A 90 MWe multifuel power station, located at Ferrybridge Power Station	Construction may occur at the same time as the Proposed Development although construction on FM2 has commenced and is due to be completed in early 2019.	Yes	Environmental Statement
Thorpe Marsh CCGT Power Station	13.9 km south-east	Section 36 consent granted in 2011	A proposed 1,500 MW CCGT power station adjacent to the site of a former coal-fired power station (now been decommissioned and demolished)	Construction may occur at the same time as the Proposed Development	Yes	Environmental Statement

20.4.3 All the developments identified in Table 20.2 are considered to be of such a nature and proximity to the Site to have the potential to generate significant cumulative effects when considered in context with the Proposed Development. These have therefore been subject to assessment for each environmental topic in Section 20.5 below. The location of the other developments in relation to the Site is shown in Figure 20.1 (ES Volume II).

20.5 Cumulative Effects Assessment (Stage 4)

Air Quality

Construction Effects

20.5.1 The assessment of construction air quality effects at sensitive receptors has considered the emissions associated with the Proposed Development together with construction of the other proposed developments listed in Table 20.2 including:

- the emissions from dust generated by demolition and construction activities;
- the emissions from construction Non Road Mobile Machinery (NRMM); and
- the emissions from construction road traffic.

Dust and Emissions from NRMM

20.5.2 The cumulative effects due to emissions from NRMM and activities associated with the demolition of the existing Eggborough coal-fired power station and potentially concurrent construction of the Proposed Development have been considered within the air quality assessment (Chapter 8: Air Quality) and identified impact avoidance measures will be adopted to control the effects so that they are **not significant**.

20.5.3 With the exception of the demolition of the existing coal-fired power station and the construction of the proposed residential developments in Eggborough, there is not considered to be any potential for cumulative effects with other proposed developments arising from emissions from NRMM and dust from demolition and construction activities because these emissions have negligible adverse effect at receptors beyond 200 m of the activities and no such receptors have been identified that are within 200 m of both the Site and the other identified developments.

20.5.4 Measures to control dust and emissions from the Proposed Development construction and existing coal-fired power station demolition to acceptable (not significant) levels are listed in Section 8.5 of Chapter 8: Air Quality. **No significant** cumulative effects are anticipated due to the potential concurrent construction of the Proposed Borehole Connection at the south-west limit of the Site and the construction of the two proposed residential developments, due to the short term and minor nature of the Proposed Borehole Connection works, which will also be managed using the same dust control techniques as described in Section 8.5 of Chapter 8: Air Quality.

Construction Traffic Emissions

20.5.5 The transport assessment (see Chapter 14: Traffic and Transportation, and the Traffic and Transportation cumulative assessment section below) includes traffic generated from the following other proposed developments for which traffic data is available and which could

contribute additional traffic to the same road network that will be affected by construction traffic for the Proposed Development:

- decommissioning and demolition of Eggborough coal-fired power station;
- Knottingley CCGT Power Station;
- Southmoor Energy Centre;
- Single-Storey Production Facility; and
- Kellingley Colliery Business Park.

20.5.6 The air quality effects of the total predicted cumulative traffic impact with these other developments at the peak of construction of the Proposed Development (which is assumed for the purposes of assessment to coincide with the peak of demolition activity at the existing coal-fired power station) have been assessed. The results of this cumulative assessment indicate that whilst the effects at the majority of the identified receptors were unchanged (no significant effect), the effects from nitrogen dioxide emissions at two receptor locations (properties adjacent to the A19, Low Eggborough) are predicted to change from negligible adverse (not significant) to **moderate adverse (significant)**, as detailed in Table 20.3 below, because the total concentrations of nitrogen dioxide are predicted to be at 96-103% of the National Air Quality Strategy (NAQS) objectives at these receptor locations.

20.5.7 It should be noted that this conclusion is based on a number of worst-case assumptions included within the air quality model including:

- use of a conservative estimated factor for model verification in the absence of suitable measured data;
- the assumption that peak construction traffic from the Proposed Development will occur at the same time as peak construction traffic from the other identified developments and also the anticipated peak demolition traffic from the adjacent existing Eggborough coal-fired power station demolition; and
- the assumption of no change (improvement) in the background nitrogen dioxide concentration (traffic contributions removed) between 2013 and 2020.

Table 20.3: Change in annual mean NO_2 predicted concentrations with Proposed Development (peak of construction) and other proposed developments

Receptor ID (see Chapter 8: Air Quality)	Annual mean predicted concentration NO_2 / NAQS		Magnitude of change	Effect
	Change	Total		
25	2.8%	96%	Low	**Moderate adverse**
26	3.0%	103%	Low	**Moderate adverse**

20.5.8 As such, while the potential air quality effects of construction traffic associated with the Proposed Development are screened from further assessment and therefore assessed to be negligible with or without concurrent demolition of the existing coal-fired power station (see Chapter 8: Air Quality), it is recognised that there is potential for cumulative air quality effects to result from these other developments at receptors adjacent to the A19 in Low Eggborough. EPL is not in a position to influence the timing or routing of traffic to other developments but

they do have the potential to influence the timing and routing of demolition traffic associated with the existing coal-fired power station. It is therefore proposed that, once the timing of the existing coal-fired power station demolition activities is known, EPL will evaluate the need to prepare a Travel Plan for construction and demolition traffic accessing the site and to coordinate traffic flows to the two activities, to reduce cumulative air quality impacts associated with the two activities.

20.5.9 As described in Chapter 8: Air Quality, EPL has undertaken a NO_2 diffusion tube survey in order to supplement the baseline assessment and to review the verification factors assumed for the construction road traffic emissions assessment. The results of the diffusion tube survey are presented in Chapter 8: Air Quality; they show that the background air quality in the vicinity of the existing coal fired power station site is generally good with no exceedance of any air quality objectives identified.

Opening and Operation Effects

20.5.10 A qualitative assessment has been made of the operational Proposed Development air quality effects at sensitive receptors in combination with other proposed developments, through consideration of the nature, location and scale of these other developments, as described below:

- the existing coal-fired power station would not be operational at the same time as the Proposed Development and therefore is scoped out of the assessment;
- the Knottingley Power Station, Ferrybridge Multifuel 2 and Southmoor Energy Centre proposed power stations lie over 5 km west of the Proposed Power Plant Site. Given the distance between the developments and assuming the same wind direction would disperse emissions from each at any one time, it is considered that any emissions from operation of these other power stations would be unlikely to interact with emissions from the operation of the Proposed Development; the effects from emissions from the operational Proposed Development have been determined as not significant, therefore the potential for cumulative effects from these developments to be considered significant is very low and no further cumulative impact assessment has been undertaken;
- similarly the Thorpe Marsh CCGT proposed power station lies approximately 14 km from the Proposed Power Plant Site and therefore given this distance and the determination of the operational Proposed Development emissions as not significant, it is considered very unlikely that significant cumulative impacts would occur and no further cumulative impact assessment has been undertaken;
- the operational Advanced Thermal Treatment Plant is likely to emit similar pollutants to the operational Proposed Development and lies over 600 m to the west of the Proposed Power Plant Site (approximately 100 m west of the Site). The application for this other development has considered the potential air quality effects, taking into consideration the emissions from the existing Eggborough coal-fired power station within the background assessment; therefore as the Proposed Development will not be operational at the same time as the existing coal-fired power station, and the air quality effects from the operational Proposed Development will not be worse than those resulting from the existing coal-fired power station, it is considered that the cumulative effects will be **not significant**; and
- the other proposed developments listed in Table 20.2, including residential developments, Thorpe Marsh Gas Pipeline, single storey production facility, solar farm, Kellingley Colliery Business Park, extension to Euro Auctions site are unlikely to result in

emissions of pollutants within the impact zone of the operational Proposed Development and are therefore scoped out of further cumulative assessment.

Noise and Vibration

20.5.11 The majority of the other developments listed in Table 20.2 can be scoped out due to the distances from the Site.

20.5.12 Cumulative noise and vibration effects associated with the decommissioning and demolition of the existing coal-fired power station are included in the assessment in Chapter 9: Noise and Vibration.

20.5.13 The other developments that have been scoped in to the cumulative noise and vibration assessment due to their close proximity to the Site are:

- extension to Euro Auctions site, Roall Lane, Kellington (construction and operation);
- Advanced Thermal Treatment Plant (construction and operation);
- hydro-electricity generation scheme (operation only as construction of the scheme has been completed); and
- single storey production facility (operation only as construction is expected to be completed in advance of construction of the Proposed Development).

20.5.14 The two proposed residential developments have been scoped out of the cumulative noise assessment due to the short term and minor nature of the Proposed Development construction works in this area (Proposed Borehole Connection only).

Extension to Euro Auctions Site

20.4.18 With respect to the Euro Auctions proposal to increase the size of the existing auctions site south of Roall Lane, there is the potential for adverse noise effects at NSR3 (1 Roall Waterworks) and other nearby NSRs to the west of the Site, depending upon the nature and timing of the works. AECOM has reviewed the Noise Impact Assessment undertaken by Dragonfly Consulting in December 2016 for the extension to the Euro Auction site, however, assessment of potential construction noise and vibration levels is beyond the scope of that assessment and therefore the potential impacts are unknown. Nevertheless, if the construction timings of the Proposed Development and the Euro Auctions site extension overlap, it is considered unlikely that noise from construction of the Proposed Development would be a significant factor in causing possible exceedance of the 65 dB $L_{Aeq,12hr}$ weekday daytime and Saturday morning noise limit at the NSR, as set out in Table 9.27 of Chapter 9: Noise and Vibration. This is on the basis that the highest predicted construction noise level associated with combined construction of the Proposed Development and demolition of the existing coal-fired power station (excluding noise from possible explosions during demolition of the existing cooling towers) is 56 dB $L_{Aeq,12hr}$ at NSR3 (as presented in Table 9.24 of Chapter 9: Noise and Vibration). This level may be further reduced by construction noise mitigation and is not anticipated to lead to significant cumulative construction noise effects. Where cumulative evening, night-time or extended weekend working is proposed, then further assessment will be made by the Proposed Development contractor when further details of the construction works related to the Euro Auction site extension are known.

20.4.19 With respect to proposed operation of the extended Euro Auctions site, AECOM has reviewed the operational Noise Impact Assessment undertaken by Dragonfly Consulting. The assessment concludes that predicted noise levels from the extended Euro Auctions site could be up to 3 dB above the measured ambient noise levels at the local receptors assessed (one of which appears to be the residential property 1 Roall Waterworks near ML3 (as considered in this assessment), or the adjacent property to the south-east of the proposed Euro Auctions extension). However, it is also stated that this predicted noise level due to auction activities considers an "extreme worst case scenario", and that any change will be lower than this and "not significant".

20.4.20 Predicted noise from operation of the Proposed Development at 1 Roall Waterworks is 37 dB $L_{Aeq,T}$ and 36 dB $L_{Aeq,T}$ due to operation of the indicative concept layouts shown in Figure 4.1a (single-shaft) and Figure 4.1b (multi-shaft) respectively. With respect to absolute noise levels, assuming a maximum noise level during auction activities of up to 3 dB above the measured ambient noise levels at ML3, predicted noise levels due to activities at the proposed Euro Auctions extension site would be between 62 – 66 dB $L_{Aeq,T}$ (see range of baseline ambient daytime noise levels in Table 9.17 of Chapter 9: Noise and Vibration). 62 – 66 dB $L_{Aeq,T}$ summed with the predicted 37 dB $L_{Aeq,T}$ and 36 dB $L_{Aeq,T}$ due to operation of either of the two indicative concept layouts for the Proposed Development at 1 Roall Waterworks, would result in no change to existing ambient noise levels. Therefore **no significant** cumulative operational effect is predicted at this receptor location.

20.4.21 Cumulative operational effects at other receptors to the north of Roall Lane may vary, potentially due to traffic accessing the extended Euro Auctions site on auction days (potentially 15 days per year, as referenced in the Dragonfly Consulting report) and during preparation of 'lots' for auction day. However, based upon the daytime ambient noise level measurements of 62 dB $L_{Aeq,T}$ and 65 dB $L_{Aeq,T\ near}$ at Roall Manor and another residential property north of Roall Lane respectively, as provided in Table 5.1 of the Dragonfly Consulting report, operational noise from the Proposed Development would be expected to result in no change to existing ambient noise levels and consequently is not anticipated to result in significant cumulative operational noise effects.

Advanced Thermal Treatment Plant

20.5.15 The proposed Advanced Thermal Treatment Plant to the south of Roall Waterworks has the potential to results in adverse noise effects at NSR3 1 Roall Waterworks (see Chapter 9: Noise and Vibration) and other nearby NSRs to the west of the Site, depending upon the nature and timing of the works. However, no assessment of potential construction noise and vibration levels is provided within the noise assessment for the Advanced Thermal Treatment Plant and therefore the potential impacts are unknown. If the construction timings of the Proposed Development and the Advanced Thermal Treatment Plant overlap, it is considered unlikely that noise from construction of the Proposed Development would be a significant factor in causing possible exceedance of the 65 dB $L_{Aeq,12hr}$ weekday daytime and Saturday morning noise limit at the NSR, as set out in Table 9.27 of Chapter 9: Noise and Vibration. This is because the highest predicted construction noise level associated with combined construction of the Proposed Development and demolition of the existing coal-fired power station (excluding noise from possible explosions during demolition of the existing cooling towers) is 56 dB $L_{Aeq,12hr}$ at NSR3 as presented in Table 9.24 of the Chapter 9: Noise and Vibration, which may be further reduced by construction noise mitigation. Where cumulative evening, night-time or extended weekend working is proposed, then further assessment will be made by the

contractor if the construction of the Advanced Thermal Treatment Plant is concurrent with the Proposed Development construction and when further details of the construction works related to the Advanced Thermal Treatment Plant are known.

20.5.16 With respect to potential cumulative operational effects, the Advanced Thermal Treatment Plant is predicted to result in a rating level of 39 dB $L_{Ar,Tr}$ day and night at the nearby properties at Roall Waterworks. Predicted rating levels from the operation of the Proposed Development at 1 Roall Waterworks is 40 dB $L_{Ar,Tr}$ and 39 dB $L_{Ar,Tr}$ due to operation of the indicative concept layout shown in Figure 4.1a (single-shaft layout) and indicative concept layout shown in Figure 4.1b (multi-shaft layout) respectively. Therefore there is the potential for some cumulative noise due to the intermittent use of the Advanced Thermal Treatment Plant, which is to be used to generate electricity only during peak demand times (stated as typically being in the order of 1,000 hours per annum), when assessed in accordance with BS 4142. However, the greatest effects will be on different facades of the properties at this location due to the position of the two proposed developments. Furthermore, with respect to absolute noise levels, the predicted specific sound levels of 37 dB $L_{Aeq,T}$ and 36 dB $L_{Aeq,T}$ from the Advanced Thermal Treatment Plant and the operation of the Proposed Development respectively, summed with the existing ambient night-time level of 54 dB $L_{Aeq,8hr}$ (see Table 9.27 of Chapter 9: Noise and Vibration) at 1 Roall Waterworks, would result in less than a 1 dB increase in existing ambient noise levels. This level of change would be negligible above existing average ambient $L_{Aeq,8h}$ night-time noise levels, and **no significant** cumulative effects is therefore predicted.

Hydro-Electricity Generation Scheme

20.5.17 With respect to the hydro-electricity generation scheme in Chapel Haddlesey, predicted rating levels from this development range between 29 – 35 dB $L_{Ar,Tr}$ at nearby properties. Predicted rating levels from the Proposed Development at the NSRs assessed in Chapel Haddlesey are 30 – 31 dB $L_{Ar,Tr}$, therefore there is the potential for some cumulative noise from operation of both developments together. However, combining the maximum predicted specific noise levels from the two developments at nearby NSRs assessed (i.e. 35 dB $L_{Aeq,T}$ at NSRs due to the hydro-electricity generation scheme and 28 dB $L_{Aeq,T}$ from the Proposed Development) with the lowest measured ambient noise level in Chapel Haddlesey at night of 43 dB $L_{Aeq,8hr}$ (as presented in Table 9.26 of Chapter 9: Noise and Vibration), would result in less than a 1 dB increase in existing ambient noise levels. This level of change would be negligible above existing average ambient $L_{Aeq,8h}$ night-time noise levels.

20.5.18 With respect to the potential cumulative effects of construction of the Proposed Development (specifically the cooling water abstraction point infrastructure including cofferdam) with operation of the hydro-electricity generation scheme at nearby receptors, the relatively low level noise from operation of the hydro-electricity generation scheme would cause no increase in the predicted temporary construction noise levels of 73 dB $L_{Aeq,12h}$ and 50 dB $L_{Aeq,12h}$ at NSRs 5 and 6 (as presented in Table 9.25 of Chapter 9: Noise and Vibration) assessed in Chapel Haddlesey, and **no significant** cumulative effects are predicted.

Single Storey Production Facility

20.5.19 With respect to the Saint Gobain Production Facility, the predicted operational specific sound level at the nearest properties to the south-east of the Facility, in the area of NSR2 (Brimmond/ residential properties, Hazel Old Lane, Hensall), is 25 dB $L_{Aeq,T}$. This would not

increase the rating levels predicted as a result of the operation of the Proposed Development at NSR2 of 40 dB $L_{Ar,Tr}$ and 39 dB $L_{Ar,Tr}$ for the two indicative concept layouts, and therefore **no significant** cumulative effect is predicted.

Cumulative Traffic Effects

20.5.20 The assessment of the Proposed Development construction traffic and existing coal-fired power station demolition traffic in Chapter 9: Noise and Vibration predicted maximum increases in traffic noise levels on the A19 north of Wand Lane of +0.4 dB $L_{A10,18hr}$, and on the A19 south of Wand Lane of +0.1 dB $L_{A10,18hr}$, resulting in negligible adverse effects (not significant) at nearby NSRs. With respect to Wand Lane, the assessment showed that the change in Basic Noise Level (BNL) was predicted to be higher at +3.7 dB $L_{A10,18hr}$, but there are no local NSRs that could be affected by this potential increase.

20.5.21 Additional traffic on the local road network associated with other developments in the area during construction of the Proposed Development and demolition of the existing coal-fired power station are predicted to increase noise levels slightly further from +0.4 dB to +1.6 dB $L_{A10,18hr}$ on the A19 north of Wand Lane, and from +0.1 dB $L_{A10,18hr}$ to +1.0 dB $L_{A10,18hr}$ on the A19 south of Wand Lane. Such increases would represent a **minor adverse** effect (**not significant**). No further increase in noise from traffic using Wand Lane is predicted due to other proposed developments.

20.5.22 The assessment presented in Chapter 9: Noise and Vibration with respect to the cumulative effect of operational traffic from the Proposed Development and traffic related to the demolition of the existing coal-fired power station predicted maximum increases in traffic noise levels on Wand Lane was less than 1 dB, but with no nearby NSRs to be affected by the change.

20.5.23 Additional traffic on the local road network from other developments in the area during operation of the Proposed Development are predicted to increase noise levels slightly further from +0.1 dB to +1.4 dB $L_{A10,18hr}$ on the A19 north of Wand Lane, and from +0.0 dB $L_{A10,18hr}$ to +1.0 dB $L_{A10,18hr}$ on the A19 south of Wand Lane. Such increases represent **minor adverse** effects (**not significant**). No further increase in noise from traffic using Wand Lane is predicted due to other developments.

Ecology and Nature Conservation

20.5.24 Seven of the developments identified in Table 20.2 have been scoped out of the cumulative ecological assessment on the basis that there are no pathways by which the other developments could adversely affect ecological receptors within the zone of influence of the Proposed Development. The following other developments have been scoped out of the cumulative effects assessment on this basis:

- residential development of 55 dwellings;
- extension to Euro Auctions site;
- residential development of 64 dwellings;
- single storey production facility;
- solar farm;
- Thorpe Marsh Gas Pipeline; and
- Kellingley Colliery Business Park.

20.5.25 The hydro-electricity generation scheme is also scoped out because construction has been completed and will therefore not overlap with construction of the Proposed Development and there is no potential for cumulative effects during its operation. Natural England indicated in its letter to Selby District Council on 21st November 2014 that it was satisfied that the hydro-electricity scheme will not result in any adverse effects on statutory designated sites. It is therefore concluded that there will be no adverse cumulative effects on the Humber Estuary SAC/ SPA/ Ramsar/ SSSI arising from the hydroelectric scheme and the Proposed Development.

20.5.26 The following other developments are assessed below:

- decommissioning and demolition of Eggborough coal-fired power station;
- Advanced Thermal Treatment Plan (operational air quality effects);
- Knottingley CCGT Power Station (operational air quality effects);
- Southmoor Energy Centre (operational air quality effects);
- Ferrybridge Multifuel 2 power station (operational air quality effects); and
- Thorpe Marsh CCGT Power Station (operational air quality effects).

Eggborough Coal-Fired Power Station Decommissioning and Demolition

20.5.27 The demolition of the existing coal-fired power station could coincide with the construction and/or initial operation of the Proposed Development. However, issues such as fugitive dust management and surface water run-off will be carefully controlled through construction and demolition best practice and environmental legislation as described in Chapter 8: Air Quality and Chapter 11: Water Resources, Flood Risk and Drainage. The ecological impacts have therefore already been assessed. **No potential for significant** cumulative effects on habitats resulting from changes in air quality and surface water pollution are therefore predicted.

20.5.28 There would be some loss of semi-natural habitat associated with the demolition works, but this would be limited to the ornamental pond (Waterbody 5) and the operational cooling water/ surface water discharge ponds (Waterbodies 3 and 4) that have been evaluated to be of negligible ecological value (see Appendix 10C in ES Volume III). The loss of these ponds, in combination with the loss of the lagoon (Waterbody 1) due to the construction of the Proposed Development would **not result in any significant** cumulative effects on ecology features. The golf course and its pond (Waterbody 6), along with Waterbody 2 to the east of the cooling towers would not be affected by the construction or demolition works.

Advanced Thermal Treatment Plant, Knottingley Power Station, Southmoor Energy Centre, Ferrybridge Multifuel 2 and Thorpe Marsh CCGT

20.5.29 The air quality impact assessment (see cumulative air quality assessment above) has concluded that there is no potential for cumulative air quality effects to arise from emissions to air from these other proposed power stations. It can therefore be concluded that there is **no potential for significant** cumulative impacts on the statutory designated sites within the zone of influence of the Proposed Development as identified in Chapter 10: Ecology and Nature Conservation.

Water Resources, Flood Risk and Drainage

20.5.30 Potential cumulative impacts to water resources during demolition and construction processes are associated with the generation of sediments and the release into the sewer drainage network, spillage and leakage of oils and fuels, leakage of wet concrete and cement, disturbance of contaminated land, suspended sediments, and disturbance to groundwater and foul drainage.

20.5.31 The majority of the other developments listed in Table 20.2 can be scoped out of the water resources, flood risk and drainage cumulative assessment due to their distances from the Site, such that no cumulative impacts to the identified water resource, flood risk and drainage receptors are predicted.

20.5.32 The following developments have been identified as being relevant to the cumulative impact assessment for water resources, flood risk and drainage due to their location and nature:

- decommissioning and demolition of Eggborough coal-fired power station;
- residential developments of 55 and 64 dwellings;
- extension to Euro Auctions site;
- Advanced Thermal Treatment Plant;
- hydro-electricity generation scheme (operation only as construction has been completed); and
- single-storey production facility (operation only as construction will have been completed).

20.5.33 All developments will be required to meet the requirements of the National Planning Policy Framework (NPPF) (Department for Communities and Local Government (DCLG), 2012) and local drainage policies to ensure the risk of flooding from all sources does not increase, therefore no further cumulative assessment of flood risk is included below.

Decommissioning and Demolition of Eggborough Coal-Fired Power Station

20.5.34 The demolition of structures associated with the existing coal-fired power station may occur at the same time as the construction of the Proposed Development. Measures to manage and control potential adverse effects on water resources are outlined Chapter 11: Water Resources, Flood Risk and Drainage. These measures will also be adopted during the demolition works through the adoption of a Demolition Environmental Management Plan (DEMP). As such the impact of the demolition of the existing coal-fired power station on the identified water receptors is expected to be no greater than the impact arising from construction of the Proposed Development, and **no significant** cumulative effects are anticipated.

Residential Developments of 55 and 64 Dwellings

20.5.35 Two residential developments are located 50 m south-west and 150 m west of the Site. The developments are not anticipated to result in additional impacts to the identified water resources in the study area as appropriate drainage systems will be installed as part of these developments.

20.5.36 **No significant** cumulative effects are anticipated.

Extension to Euro Auctions Site

20.5.37 The proposed extension works to the Euro Auctions site are located c. 50 m west of the Site, on the opposite side of the A19. The operation of this development is not anticipated to result in additional impacts to the identified water resources in the study area as an appropriate drainage system will be installed.

20.5.38 **No significant** cumulative effects are anticipated.

Advanced Thermal Treatment Plant

20.5.39 This proposed Advanced Thermal Treatment Plant is located approximately 100 m west of the Site and its construction could occur at the same time as the Proposed Development. The concurrent construction of the treatment plant and the Proposed Development will result in a slight increase in construction activity in this area, but will not increase the magnitude of impact to identified water resource receptors that has already been recorded.

20.5.40 The ES for the Advanced Thermal Treatment Plant confirms that a site drainage and containment system will be installed at the start of construction to avoid impacts on water quality, and suitable methods are also proposed for the operation of the development to treat waste water on-site and discharge surface water runoff to Ings and Tetherings Drain, to avoid impacts on water resource receptors.

20.5.41 **No significant** cumulative effects are anticipated as it is not intended that surface water run-off from the Proposed Development is directed to the Ings and Tetherings Drain.

Hydro-Electricity Generation Scheme

20.5.42 The hydro-electricity generation scheme is located on the River Aire at Chapel Haddlesey Weir, approximately 100 m east of the existing and proposed cooling water intake and 450 m west of the Proposed Gas Connection corridor. The construction of the scheme is has recently been completed and will therefore not overlap with the construction of the Proposed Development, and no significant effects on water resources receptors are anticipated during its operation.

20.5.43 **No significant** cumulative effects are therefore anticipated.

Single-Storey Production Facility

20.5.44 The single-storey production facility is located approximately 250 m south of the Site adjacent to the existing Saint Gobain glass factory. The operation of this development is not anticipated to result in additional impacts to the identified water resources in the study area as an appropriate drainage system will be installed.

20.5.45 **No significant** cumulative effects are anticipated.

Geology, Hydrogeology and Land Contamination

20.5.46 The majority of the developments listed in Table 20.2 can be scoped out of the geology hydrogeology and land contamination assessment due to their distances from the Site.

20.5.47 The following developments have been identified as being relevant to cumulative geology, hydrogeology and land contamination assessment due to their proximity to the Site and nature of development:

- decommissioning and demolition of Eggborough coal-fired power station;
- residential developments of 55 and 64 dwellings;
- extension to Euro Auctions site;
- Advanced Thermal Treatment Plant;
- hydro-electricity generation scheme (operation only as construction has been completed); and
- single-storey production facility (operation only as construction will have been completed).

Decommissioning and Demolition of Eggborough Coal-Fired Power Station

20.5.48 The demolition of structures associated with the existing coal-fired power station may occur at the same time as the construction of the Proposed Development. Measures to manage and control potential adverse effects on soils and groundwater are outlined Chapter 12: Geology, Hydrogeology and Land Contamination. These measures will also be adopted during the demolition works through the adoption of a Demolition Environmental Management Plan (DEMP) in accordance with a draft DCO Requirement.

20.5.49 Potential cumulative effects that may result from the simultaneous demolition of the existing coal-fired power station and construction of the Proposed Development include:

- potential increased impact on Proposed Development construction workers and buildings from vapours and contaminated groundwater migrating on to the Site from the adjacent existing coal-fired power station – potentially significant cumulative effects will be avoided through consideration of mitigation measures including use of PPE and engineering controls should any spills or release occur;
- potential increased impact on soils and surface waters at the Site from deposition of potentially contaminated particulates and dust originating from the demolition of the existing coal-fired power station – potentially significant cumulative effects will be reduced through careful control of dusts and particulates that could be generated during demolition works; and
- potential increased impact on soils and groundwater at the Site due to the removal of the existing coal-fired power station's drainage system, but this will be avoided by the implementation of the Outline Drainage Strategy (see Appendix 11A in ES Volume III) and an appropriate drainage strategy for the demolition site.

20.5.50 As such the impact of the demolition of the existing coal-fired power station on soils and groundwater is expected to be no greater than the impact arising from construction of the Proposed Development, and **no significant** cumulative effects are anticipated.

Residential Development of 55 and 64 Dwellings

20.5.51 Two residential developments are located 50 m south-west and 150 m west of the Site. These developments are not anticipated to result in additional impacts to the identified geological and hydrogeological receptors in the Study Area, and **no significant** cumulative effects are anticipated.

Extension to Euro Auctions Site

20.5.52 The proposed extension works to the Euro Auctions Site are located c. 50 m west of the Site, on the opposite side of the A19. This development is not anticipated to result in additional impacts to the identified geological and hydrogeological receptors in the Study Area, and **no significant** cumulative effects are anticipated.

Advanced Thermal Treatment Plant

20.5.53 This proposed Advanced Thermal Treatment Plant is located approximately 100 m west of the Site and its construction could occur at the same time as the Proposed Development's construction. The concurrent construction of these two developments will result in a slight increase in construction activity in this area, but will not increase the magnitude of impact to identified soil and geological receptors already identified.

20.5.54 As described above in the cumulative water resources assessment, the ES for the Advanced Thermal Treatment Plant confirms that a site drainage and containment system will be installed at the start of construction to avoid impacts on water quality, and suitable methods are also proposed for the operation of the development to treat waste water on-site and discharge surface water runoff to Ings and Tetherings Drain, to avoid impacts on water resource receptors. The drainage systems and bunding of chemical storage facilities as detailed in the ES will allow any spillages to be controlled and managed to avoid effects on off-site receptors (including staff and buildings on the Site). **No significant** cumulative effects are predicted.

Hydro-Electricity Generation Scheme

20.5.55 The hydro-electricity generation scheme is located on the River Aire at Chapel Haddlesey Weir, approximately 100 m east of the existing and proposed cooling water intake and 450 m west of the Proposed Gas Connection corridor. The construction of the scheme has been completed and will therefore not overlap with the construction of the Proposed Development, and **no significant** operational effects are anticipated due to the nature of the scheme.

Single-Storey Production Facility

20.5.56 The development is located approximately 250 m south of the Site adjacent to the existing Saint Gobain glass factory. The operation of this development is not anticipated to result in any greater impacts than those already reported for the construction and operation of the Proposed Development and **no significant** cumulative effects are anticipated as an appropriate drainage system is being installed for this development.

20.5.57 As the development is up-gradient of the Site with respect to groundwater flow, this will ensure any accidental spills or releases of contaminants during operation do not affect groundwater quality and the viability of the continued operation of the groundwater abstraction boreholes for use during the operation of the Proposed Development.

Cultural Heritage

20.5.58 For a cumulative impact to arise as a result of physical impacts during construction, another development would have to share a boundary with the Site in order to potentially impact the same buried archaeological resource during construction. None of the other proposed

developments are immediately adjacent to the Site, so there is no potential for cumulative physical effects on archaeological resources. This assessment therefore focuses on setting impacts.

20.5.59 Cumulative impacts can arise where the above ground built elements of a development, when viewed alongside the above ground built elements of the Proposed Development, contribute to changes to setting that affect an asset's significance (importance).

20.5.60 The majority of the developments listed in Table 20.2 can be scoped out of the cumulative cultural heritage assessment due to distances from the Site.

20.5.61 The following other developments have been identified as being relevant to cumulative impact assessment for cultural heritage:

- decommissioning and demolition of Eggborough coal-fired power station;
- residential developments of 55 and 64 dwellings;
- extension to Euro Auctions site;
- Advanced Thermal Treatment Plant;
- hydro-electricity generation scheme (operation only as construction has been completed); and
- single storey production facility (operation only as construction will have been completed).

Decommissioning and Demolition of Eggborough Coal-Fired Power Station

20.5.62 The demolition of structures associated with the existing coal-fired power station may occur at the same time as the construction of the Proposed Development. The activities associated with demolition, such as the use of tall cranes and potential short term increases in noise and dust, will result in a noticeable change to the visual setting of heritage assets in the study area. However, the activity associated with demolition is temporary and will not result in harm to the significance of heritage assets.

20.5.63 The impact of the demolition of the existing coal-fired power station on the setting of heritage assets is assessed to be no greater than the impact arising from construction of the Proposed Development, and **no significant** cumulative effects are anticipated.

Residential Developments of 55 and 64 Dwellings

20.5.64 Two residential developments are located 50 m south-west and 150 m west of the Site. These developments entail urban infill in an area dominated by residential housing and are not considered to result in additional impacts to the setting of heritage assets in the study area. **No significant** cumulative effects are anticipated.

Extension to Euro Auctions Site

20.5.65 The proposed extension works to the Euro Auctions Site are located c. 50 m west of the Site, on the opposite side of the A19 and its construction could occur at the same time as the Proposed Development. The concurrent construction of the extension works to the Euro Auctions site and the Proposed Development will result in a slight increase in construction activity in this area, but is not considered to increase the magnitude of impact to heritage assets that has already been recorded for the Proposed Development.

20.5.66 The operational extended Euro Auctions site will introduce new structures into views from the Roman fort scheduled monument (1017822), grade II listed gate piers to Roall House (1174474) and a grade II listed milestone on the eastern edge of the A19 carriageway (1430182); however the new elements will not be incongruous with the current visual setting of the assets and will not affect their significance. The impact will be no greater than that recorded previously for the Proposed Development and there will be **no significant** cumulative effect.

Advanced Thermal Treatment Plant

20.5.67 This proposed Advanced Thermal Treatment Plant is located approximately 100 m west of the Site and its construction could occur at the same time as the Proposed Development. The concurrent construction of the Advanced Thermal Treatment Plant and the Proposed Development will result in a slight increase in construction activity in this area, but is not considered to increase the magnitude of impact to heritage assets that has already been recorded for the Proposed Development.

20.5.68 The operational Advanced Thermal Treatment Plant will introduce new structures into views from the Roman fort scheduled monument (**1017822)**, grade II listed gate piers to Roall House (**1174474)** and a grade II listed milestone on the eastern edge of the A19 carriageway (**1430182)**; however the new elements will not be incongruous with the current visual setting of the assets and will not affect their significance. The impact will be no greater than that recorded previously for the Proposed Development and there will be **no significant** cumulative effect.

Hydro-Electricity Generation Scheme

20.5.69 The construction of the hydro-electricity generation scheme will have been completed before the start of construction of the Proposed Development. Its operation is not considered to impact any heritage assets so there is **no potential for significant** cumulative effects with the Proposed Development.

Single Storey Production Facility

20.5.70 The single storey production facility is located approximately 250 m south of the Site adjacent to the existing Saint Gobain glass factory. The operation of this development is not considered to result in any greater impacts that those already reported for the construction and operation of the Proposed Development, and **no significant** cumulative effects are anticipated.

Traffic and Transportation

20.5.71 Of the fourteen developments identified in Table 20.2, two developments fall outside the transport assessment Study Area for the Proposed Development and six were not required to present a transport assessment or transport statement as part of the planning application process. This is assumed to infer that these developments are relatively minor in scale and scope and will not result in significant traffic effects in isolation.

20.5.72 The six other developments for which traffic data is available and which could contribute additional traffic to the local road network in the vicinity of Site during the peak of construction and have been incorporated into the Transport Assessment are as follows:

- decommissioning and demolition of Eggborough coal-fired power station;
- extension to Euro Auction site;
- single-storey production facility;
- Knottingley CCGT Power Station;
- Kellingley Colliery Business Park; and
- Southmoor Energy Centre.

20.5.73 Traffic associated with these other developments has been included in the Future Baseline assessment in Chapter 14: Traffic and Transportation, and as such the assessment presented in Chapter 14 is inherently a cumulative impact assessment. Details of the traffic generation predicted for each other development is summarised below. None of these developments, either individually or cumulatively, are expected to have a significant impact on the A19 with the main junctions along the A19 (*i.e.* A19/ A645 and A19/ M62 Junction 34) operating within their design capacity. On this basis, the cumulative traffic and transport effects are assessed to be **negligible adverse (not significant)**.

20.5.74 As set out in Chapter 14: Traffic and Transportation, traffic generation associated with the operation of the Proposed Development is minimal and therefore no further assessment of cumulative effects during operation of the Proposed Development has been undertaken.

Demolition of Eggborough Coal-Fired Power Station

20.5.75 To ensure a robust assessment, a worst case scenario in terms of traffic has been adopted whereby the peak demolition month is assumed to coincide with the peak construction month.

20.5.76 At the peak of demolition it is expected that there will be 100 two-way vehicle movements per day on the A19 (north of the M62) and 16 two-way vehicle movements per day on the A19 (north of Wand Lane) (information provided by EPL).

Extension to Euro Auctions Site

20.5.77 The increase in traffic associated with this development proposal has been taken from a Transport Statement prepared by Paragon Highways dated 23rd January 2017 (revision 2). The development will not increase the capacity of the operation of the site and will only result in an additional 20 employees at the site on 45 auction days per year. It is concluded that any slight increase in traffic would not be discernible from daily variations in traffic flow.

Single Storey Production Facility

20.5.78 A new single-storey production facility for the manufacture of insulation boarding located on land at St Gobain glass factory, approximately 250 metres east of the A19/ A645 Weeland Road junction, is currently under construction. The additional traffic from the proposed development is predicted to be 110 two-way vehicle movements per day on the A19 (north of M62 J34) and 20 two-way vehicle movements per day on the A19 (north of Wand Lane) (Celotex, 2015).

Knottingley CCGT Power Station

20.5.79 In order to assess the worst case scenario, the proposed construction peak hour traffic flows associated with Knottingley CCGT have been added to the applied to the peak construction month for the Proposed Development.

20.5.80 Information provided in the ES for this development (Knottingley Power, 2013) confirms that part of the road network will be used by construction traffic from both developments. This is the M62 Junction 34 and the A19 between the M62 and the A63.

20.5.81 The additional traffic from the proposed Knottingley Power Station project on the A19 (north of M62) and A19 (north of Wand Lane) is predicted to be 166 two-way vehicle movements per day on both links with the majority of vehicle movements occurring in the peak hours 06:00 – 07:00 and 18:00 – 19:00.

20.5.82 Once operational, Knottingley Power Station will employ around 50 staff, many working on shifts, and traffic generation will be low when compared to the peak construction period.

Kellingley Colliery Business Park

20.5.83 An outline application was submitted in November 2016 for the construction of an employment park of up to 1.45 million sq ft (135,500 m^2) gross floor space comprising of B2, B8 and ancillary B1 uses, ancillary retail facilities (A1 - A4) including ancillary infrastructure. The development is due to be fully operational by 2021. The additional traffic from the development is predicted to be 2,756 two-way vehicle movements per day on the A19 (north of M62 J34) and 1,838 two-way vehicle movements per day on the A19 (north of Wand Lane) (Optima, 2016).

Southmoor Energy Centre

20.5.84 The Southmoor Energy Centre development is due to be fully operational in 2017. The Transport Assessment (Axis, 2013) predicts 134 two-way vehicle movements per day on the A19 (north of the M62) and 20 two-way vehicle movements per day on the A19 (north of Wand Lane).

Land Use, Agriculture and Socio-Economics

20.5.85 The Proposed Development will be located mainly within the existing coal-fired power station site (brownfield), but the Proposed Gas Connection will cross greenfield land to reach the National Grid gas transmission network to the north. The majority of the other developments listed in Table 20.2 are also located within existing industrial sites, with the exception of Thorpe Marsh Gas Pipeline, the residential developments of 55 and 64 dwellings, the hydro-electricity generation scheme and the solar farm. As the Proposed Development does not affect any of the same non-industrial land uses (such as Public Rights of Way) as any of the other developments, so **no significant** cumulative effects are anticipated.

20.5.86 Like the Proposed Gas Connection corridor (approximately 4.5 km long), the gas connections for the Knottingley and Thorpe Marsh CCGT Power Stations must cross agricultural land to reach the National Grid gas transmission network. The Knottingley Power Station gas pipeline is approximately 7.1 km long and the Thorpe Marsh Power Station gas pipeline is approximately 18 km long. However, the majority of this land will be only temporarily affected during construction and will be reinstated to its original condition following completion of construction. The only permanent effects on agricultural land will be the loss of land required for Above Ground Installations (AGIs), and also the loss of agricultural fields for the two residential developments in Eggborough. If all four pipelines were to be constructed simultaneously, the short term cumulative effects on agricultural land may be significant, but **no significant** long term cumulative effects are anticipated.

20.5.87 All other developments will generate additional employment opportunities and associated socio-economic benefits to add to the benefits of the Proposed Development during their construction and operation. The cumulative effects during construction of all fourteen other developments together with the Proposed Development construction are considered to be **significantly beneficial**.

Landscape and Visual Amenity

Landscape

20.5.88 The landscape cumulative assessment assesses the cumulative effects on identified landscape receptors within the Study Area. Landscape receptors that have been assessed as having negligible adverse effects have not been included in the assessment of cumulative effects, as it is considered unlikely that the addition of a negligible adverse effect to the cumulative effects of other developments within the Study Area, would lead to a significant cumulative impact.

20.5.89 The majority of the other developments in Table 20.2 are located within the Levels Farmland (23) Landscape Character Type (LCT) (Chris Blandford Associates, 2011) and the River Aire Corridor Landscape Character Area (LCA) (Woolerton Dodwell Associates, 1999) and as such this LCT and LCA are likely to experience cumulative effects. The detailed landscape cumulative assessment is contained within Tables 20.4 and 20.5 below.

20.5.90 For the assessment of operational effects, the Opening (2022) scenario (with the existing coal-fired power station buildings and structures assumed to still be present) has been selected as a worst case for cumulative landscape assessment (because there would be a greater amount of built development present in the landscape).

Table 20.4: Assessment of cumulative landscape effects – Construction (compared to future baseline with existing coal-fired power station present)

Landscape type	Sensitivity of receptor	Description of impact	Predicted magnitude of impact	Classification of effect
North Yorkshire and York Landscape Character Assessment				
Levels Farmland (23) LCT	Medium	The other proposed developments would introduce further built form into the LCT alongside the construction activity associated with the Proposed Development. It is assessed that the introduction of construction activities associated with the Proposed Development would marginally increase the amount of built development within the LCT, although due to the large scale of the LCT and the existing presence of large scale power, industrial and infrastructure developments it is assessed that the impact of construction activities associated with the Proposed Development would remain at low magnitude of impact.	Low	**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
River Floodplain (24) LCT	Medium	The other proposed developments would introduce views of additional built form into views from the LCT. As a result of the existing views of large scale power complexes and the presence of transport infrastructure which are located in the LCT it is considered that the introduction of the Proposed Development would result in a limited cumulative impact with the other developments and that the assessed impact would remain at low magnitude of impact.	Low	**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Landscape Assessment of Selby District				
River Aire Corridor LCA	Medium	The other proposed developments would introduce further built form into the LCA alongside the construction activity associated with the Proposed Development. It is assessed that the introduction of construction activities associated with the Proposed Development would marginally increase the amount of built development within the LCA, although due to the presence	Low	**Minor adverse (not significant)** – the same as for the

Landscape type	Sensitivity of receptor	Description of impact	Predicted magnitude of impact	Classification of effect
		of other large scale industrial developments and road infrastructure within the LCA it is assessed that the impact of construction activities associated with the Proposed Development would remain at low magnitude of impact.		Proposed Development in isolation
Locally Important Landscape Areas (LILAs)				
Locally Important Landscape Areas	High	The other proposed developments may introduce views of additional built form into views from within the LILAs. As a result of the lack of intervisibility between Hambleton Hough and Brayton Barff due to intervening vegetation and landform and limited intervisibility between the Magnesian Limestone Ridge due to intervening vegetation and distance it is considered that the introduction of the Proposed Development would result in a very limited cumulative impact with the other developments and that the assessed impact would remain at very low magnitude of impact.	Very low	**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Site Landscape				
Woodland plantation screen planting	High	Vegetation removal as a result of the other developments is unlikely to give rise to cumulative effects greater than those assessed for the Proposed Development in isolation.	Low	**Moderate adverse (significant)** – the same as for the Proposed Development in isolation

Table 20.5: Assessment of cumulative landscape effects – Opening (compared to future baseline with existing coal-fired power station present)

Landscape type	Sensitivity of receptor	Description of impact	Predicted magnitude of impact	Classification of effect
North Yorkshire and York Landscape Character Assessment				
Levels Farmland (23) LCT	Medium	The presence of the other proposed developments will marginally increase the amount of built form within the LCT. The addition of the Proposed Development would also marginally increase the amount of built form within the LCT, which is already characterised by large scale industrial developments and road infrastructure. It is assessed that the cumulative impact would remain as that assessed for the Proposed Development in isolation.	Low	**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
River Floodplain (24) LCT	Medium	As with the construction assessment scenario, it is predicted that the increase in built development as a result of the other proposed developments and the addition of the Proposed Development would result in cumulative impacts that are no greater than that assessed in isolation.	Very low	**Negligible adverse (not significant)** – the same as for the Proposed Development in isolation
Landscape Assessment of Selby District				
River Aire Corridor	Medium	The presence of the other proposed developments will marginally increase the amount of built form within the LCA. The addition of the Proposed Development would also marginally increase the amount of built form within the LCA, which is already characterised by large scale industrial developments and road infrastructure. It is assessed that the cumulative impact would remain as that assessed for the Proposed Development in isolation.	Low	**Minor adverse (not significant)** – the same as for the Proposed Development

Landscape type	Sensitivity of receptor	Description of impact	Predicted magnitude of impact	Classification of effect
				in isolation
Locally Important Landscape Areas (LILAs)				
Locally Important Landscape Areas	High	The other proposed developments may introduce views of additional built form into views from within the LILAs. As a result of the lack of intervisibility between Hambleton Hough and Brayton Barff due to intervening vegetation and landform and limited intervisibility between the Magnesian Limestone Ridge due to intervening vegetation and distance it is considered that the introduction of the Proposed Development would result in a very limited cumulative impact with the other developments and that the assessed impact would remain at very low magnitude of impact.	Very low	**Minor adverse (not significant)** – the same as for the Proposed Development in isolation

20.5.91 In summary the identified LCTs, Levels Farmland (23) and River Floodplain (24) and LCA, River Aire Corridor, are not predicted to receive significant cumulative effects.

Visual Amenity

20.5.92 For the assessment of cumulative visual impacts the following other developments have been scoped out as a result of no intervisibility with the Proposed Development, the scale of the cumulative development (mass or height) or distance:

- residential development of 55 dwellings – due to lack of intervisibility;
- extension to the Euro Auction Site – due to scale (height);
- hydro-electricity generation scheme – due to scale (height and mass) and lack of intervisibility;
- single-storey production facility – due to lack of intervisibility and screening as a result of the existing structures associated with Saint Gobain;
- solar farm – due to distance, scale (height) and lack of intervisibility;
- Thorpe Marsh Gas Pipeline – due to distance (and the pipeline is below ground);
- Kellingley Colliery Business Park – due to scale (height);
- Ferrybridge Multifuel 2 – due to distance and lack of intervisibility (but included in the sequential assessment at paragraphs); and
- Thorpe Marsh CCGT Power Station – due to distance (but included in the sequential assessment).

20.5.93 The other developments that have been scoped in to the cumulative visual impact assessment are as follows, including the assumed dates for construction activity based on information contained within the respective planning application documents:

- Eggborough coal-fired power station decommissioning and demolition (assumed to be some time between 2018 and 2024);
- Advanced Thermal Treatment Plant (operation 2017);
- residential development of 64 dwellings (assumed construction during 2019 to 2022)
- Knottingley Power Project (construction 2017 to 2020); and
- Southmoor Energy Centre (construction starting 2017).

20.5.94 The cumulative assessment in relation to the decommissioning and demolition of the existing coal-fired power station has been carried out for both the construction and opening scenarios as a result of the uncertainty around the dates that decommissioning and demolition will occur. A cumulative assessment where the existing coal-fired power station is no longer present has not been carried out as this has been assessed at the operation stage of the Proposed Development as part of Chapter 16: Landscape and Visual Amenity, since this is considered to represent the worst case visual impact scenario for the Proposed Development.

20.5.95 Visual receptors that have been assessed as having negligible effect due to the Proposed Development have not been included in the assessment of cumulative effects, as it is considered unlikely that the addition of a negligible effect to the cumulative effects of other developments within the study area would lead to a significant cumulative impact. This applies to viewpoints 1 (road users at opening only), 2, 9 (road users at construction and opening), 12, and 14.

20.5.96 Potential cumulative visual effects of the Proposed Development in comparison with the future baseline visual context are considered in Table 20.6 by reference to representative viewpoints. The assessments contained within Table 20.6 should be read in conjunction with Figures 16.7 to 16.36 (ES Volume II) which illustrates the baseline conditions at each viewpoint.

Table 20.6: Cumulative visual effects from representative viewpoints

Viewpoint 1: Selby Road (North), Eggborough				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
56431, 423705	Road users, residential	12	0.7	East
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Residential development of 64 dwellings		Low for road users. Medium for residential (existing and new)		
Size/ scale, duration and reversibility of cumulative impact at construction				
From this viewpoint the construction of the proposed residential development of 64 residential properties off Ryecroft Gardens will partially screen views for the existing residential properties. Existing residents will be impacted by the construction operations of the proposed residential development, the demolition of Eggborough Coal-Fired Power Station and the operational stack associated with the Advanced Thermal Treatment Plant. It is predicted that there will be a cumulative impact for the residential properties as a result of the construction operations associated with the proposed residential development. It is predicted that the addition of the Proposed Development would result in a cumulative impact greater than that predicted in isolation, as a result of the scale of construction activity occurring, although, views for the majority of residential receptors will either be oblique or contain clear views of structures associated with the Saint Gobain factory site. Views for road users would be oblique and contain views of the proposed residential development. This impact would be short term and irreversible, as a result of the impacts associated with the removal of Eggborough Coal Fired Power Station.				
Magnitude of cumulative impact at construction				High
Significance of cumulative effect at construction		Road users Residential		**Moderate adverse (significant)** **Major adverse (significant)**

Size/ scale, duration and reversibility of cumulative impact at opening		
From this viewpoint the completed proposed residential development will partially screen views for the existing residential properties. Therefore, there will be a limited cumulative magnitude of change for the existing residents, which is less than that predicted for the Proposed Development in isolation. For the proposed residents, they will potentially gain views of the Advanced Thermal Treatment Plant stack, at 46.5 m, and the demolition of Eggborough Coal Fired Power Station. It is predicted that the addition of the Proposed Development would result in a cumulative impact greater than that predicted in isolation, as a result of the scale of construction activity occurring. Views for road users would be oblique and contain views of the proposed residential development. This impact would be short term and not reversible, as a result of the impacts associated with the demolition of Eggborough Coal-Fired Power Station.		
Magnitude of cumulative impact at opening		High
Significance of cumulative effect at opening	Residential (proposed)	**Major adverse (significant)**

<table>
<tr><th colspan="6">Viewpoint 3: Weeland Road</th></tr>
<tr><td>Grid reference</td><td colspan="2">Receptor type</td><td>Elevation (m AOD)</td><td>Approx. distance from Site (km)</td><td>Direction of view</td></tr>
<tr><td>457775, 422966</td><td colspan="2">Road users, residential</td><td>16</td><td>0.7</td><td>South</td></tr>
<tr><td colspan="3">Other developments</td><td colspan="3">Sensitivity of receptor (2016-2022 existing and future baseline)</td></tr>
<tr><td colspan="3">Eggborough coal-fired power station decommissioning and demolition</td><td colspan="3">Low for road users
Medium for residential</td></tr>
<tr><td colspan="6">Size/ scale, duration and reversibility of cumulative impact at construction</td></tr>
<tr><td colspan="6">The activities associated with the demolition of Eggborough Coal-Fired Power Station will be clearly visible, viewed beyond the construction activities associated with the Proposed Development. These activities will give rise to a cumulative impact greater than that predicted in isolation. The impacts will be short term and irreversible.</td></tr>
<tr><td colspan="4">Magnitude of cumulative impact at construction</td><td colspan="2">High</td></tr>
<tr><td colspan="3" rowspan="2">Significance of cumulative effect at construction</td><td>Road users</td><td colspan="2">Moderate adverse (significant) – the same as for the Proposed Development in isolation</td></tr>
<tr><td>Residential</td><td colspan="2">Major adverse (significant) – the same as for the Proposed Development in isolation</td></tr>
<tr><td colspan="6">Size/ scale, duration and reversibility of cumulative impact at opening</td></tr>
<tr><td colspan="6">The demolition of the Eggborough Coal-Fired Power Station would be partially screened by the Proposed Development and would result in a marginal increase in cumulative impacts, slightly greater than that assessed in isolation. The impacts will be short term and irreversible.</td></tr>
<tr><td colspan="5">Magnitude of cumulative impact at opening</td><td>High</td></tr>
</table>

Significance of cumulative effect at opening	Road users	**Moderate adverse (significant) –** the same as for the Proposed Development in isolation
	Residential	**Major adverse (significant) –** the same as for the Proposed Development in isolation

Viewpoint 4: Selby Road, Whitley				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
456262, 420855	Residential	14	3.1	North east
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition		High		
Size/ scale, duration and reversibility of cumulative impact at construction				
Views of the demolition of the Eggborough Coal-Fired Power Station will be visible beyond the construction activities of the Proposed Development resulting in a cumulative impact that is marginally greater than that assessed in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at construction				Low
Significance of cumulative effect at construction				**Moderate adverse (significant)**
Size/ scale, duration and reversibility of cumulative impact at opening				
Views of the demolition of the stacks and cooling towers associated with Eggborough Coal-Fired Power Station will be visible behind the Proposed Development, resulting in a cumulative impact that is marginally greater than that assessed in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at opening				Low
Significance of cumulative effect at opening				**Moderate adverse (significant)**

Viewpoint 5: Gallows Hill				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
458764, 423635	Residential	14	0.5	West
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		Medium		
Size/ scale, duration and reversibility of cumulative impact at construction				
Close proximity views of the demolition of Eggborough Coal-Fired Power Station will be visible, viewed beyond residential properties. Longer range views of the stacks associated with the Thermal Treatment Plant, Knottingley Power Plant and Southmoor Energy Centre may be available, viewed to the left of the Proposed Development. A cumulative impact will arise as a result of the increase in construction activity visible, assessed as greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at construction				High
Significance of cumulative effect at construction				**Major adverse (significant)**
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts will be similar to that assessed at the construction stage, although as a result of the opening of the Proposed Development, the amount of construction activity will be limited to the demolition of the Eggborough Coal-Fired Power Station. The cumulative impact will be greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at opening				Medium
Significance of cumulative effect at opening				**Moderate adverse (significant)**

Viewpoint 6: Ings Lane PRoW (35.36/1/1)				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
459446, 424245	Users of PRoW, road users	16	1	South west
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		High		
Size/ scale, duration and reversibility of cumulative impact at construction				
From this location it is predicted that the long range views of the stacks associated with the Advanced Thermal Treatment Plant, Knottingley Power Project and Southmoor Energy Centre would be viewed between the Eggborough Coal-Fired Power Station and construction activity associated with the Proposed Development. The demolition activities associated with Eggborough Coal-Fired Power Station would be prominent in the view. The addition of the Proposed Development would result in cumulative impacts, greater than those assessed in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at construction				High
Significance of cumulative effect at construction				**Major adverse (significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The demolition of the Eggborough Coal-Fired Power Station will be prominent in the view. The stacks associated with the other cumulative developments will be viewed at a long distance. The addition of the completed Proposed Development will result in cumulative impacts, greater than that assessed at isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at opening				High
Significance of cumulative effect at opening				**Major adverse (significant)** – the same as for the Proposed Development in isolation

Viewpoint 7: St John The Baptist Church Grounds, Millfield Road, Chapel Haddlesey				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
458279, 426072	Residents and church users	8	1.5	South
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition		Medium		
Size/ scale, duration and reversibility of cumulative impact at construction				
The demolition of Eggborough Coal-Fired Power Station will be highly visible within the view resulting in a high magnitude of impact. The addition of the Proposed Development would result in a cumulative impact, although no greater than that assessed for the Eggborough Coal-Fired Power Station in isolation. The impacts will be short term and irreversible.				
Magnitude of cumulative impact at construction				Low
Significance of cumulative effect at construction				**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts assessed for opening would be the same as those assessed at the construction stage as a result of the demolition of the Eggborough Coal-Fired Power Station. The impacts would be short term and irreversible.				
Magnitude of cumulative impact at opening				Low
Significance of cumulative effect at opening				**Minor adverse (not significant)** – the same as for the Proposed Development in isolation

Viewpoint 8: Trans Pennine Trail PRoW 35.14/15/1, Burn Airfield				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
460826, 429075	Users of PRoW and Burn Airfield	7	5.7	South west
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		High		
Size/ scale, duration and reversibility of cumulative impact at construction				
Long distance views of the demolition of Eggborough Coal-Fired Power Station will be prominent in the view whilst views of the construction of the stacks associated with Knottingley Power Project and Southmoor Energy Centre will be visible, viewed to the right of the existing cooling towers. The Advanced Thermal Treatment Plant stack will be barely perceptible, viewed to the immediate right of the cooling towers. The addition of the Proposed Development would result in cumulative impacts, although no greater than those assessed in isolation. The impacts will be short term and irreversible.				
Magnitude of cumulative impact at construction				Very low
Significance of cumulative effect at construction				**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts assessed for opening would be similar to those assessed at the construction stage as a result of the demolition of the Eggborough Coal-Fired Power Station. The impacts would be short term and irreversible.				
Magnitude of cumulative impact at opening				Very low
Significance of cumulative effect at opening				**Minor adverse (not significant)** – the same as for the Proposed Development in isolation

Viewpoint 9: Mill Lane, Brayton				
Grid reference	**Receptor type**	**Elevation (mAOD)**	**Approx. distance from Site (km)**	**Direction of view**
459504, 430067	Residential	8	6.7	South
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		High		
Size/ scale, duration and reversibility of cumulative impact at construction				
Long distance views of the demolition of Eggborough Coal-Fired Power Station will be prominent in the view whilst views of the construction of the stacks associated with Knottingley Power Project and Southmoor Energy Centre will be visible, viewed to the right of the existing cooling towers. The Advanced Thermal Treatment Plant stack will be barely perceptible, viewed to the immediate right of the cooling towers. The addition of the Proposed Development would result in cumulative impacts, although no greater than those assessed in isolation. The impacts will be short term and irreversible.				
Magnitude of cumulative impact at construction				Very low
Significance of cumulative effect at construction		Residential		**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts assessed for opening would be similar to those assessed at the construction stage as a result of the demolition of the Eggborough Coal-Fired Power Station. The impacts would be short term and irreversible.				
Magnitude of cumulative impact at opening				Medium
Significance of cumulative effect at opening		Residential		**Minor adverse (not significant)** – the same as for the Proposed Development in isolation

Viewpoint 10: West Lane, Burn				
Grid reference	**Receptor type**	**Elevation (mAOD)**	**Approx. distance from Site (km)**	**Direction of view**
458100, 428163	Road users	7	3.5	South
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition		Medium		
Size/ scale, duration and reversibility of cumulative impact at construction				
Long distance views of the demolition of Eggborough Coal-Fired Power Station will be visible from this location. The addition of the Proposed Development would result in cumulative impacts, although no greater than those assessed in isolation. The impacts will be short term and irreversible.				
Magnitude of cumulative impact at construction				Medium
Significance of cumulative effect at construction		Road users		**Moderate adverse (significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts assessed for opening would be similar to those assessed at the construction stage as a result of the demolition of the Eggborough Coal-Fired Power Station. The impacts would be short term and not reversible.				
Magnitude of cumulative impact at opening				Medium
Significance of cumulative effect at opening		Road users		**Moderate adverse (significant)** – the same as for the Proposed Development in isolation

Viewpoint 11: Selby Canal Viewing Platform PRoW 35.72/2/1				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
457080, 426412	Users of the PRoW (footpath) and users of Selby Canal at Haddlesey Flood Lock	7	1.6	South
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		High		
Size/ scale, duration and reversibility of cumulative impact at construction				
Medium distance views of the demolition of Eggborough Power Station will be prominent within the view. The operational stack associated with the Advanced Thermal Treatment Plant will be barely perceptible, viewed to the right of the cooling towers. Views of the construction of the stacks associated with the Knottingley Power Project and Southmoor Energy Centre would be at a long distance and viewed successively with the Proposed Development. The addition of the construction operations associated with the Proposed Development would result in a cumulative impact, although no greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at construction				Very low
Significance of cumulative effect at construction		PRoW and canal users		**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts assessed for opening would be similar to those assessed at the construction stage as a result of the demolition of the Eggborough Coal-Fired Power Station. The impacts would be short term and irreversible.				
Magnitude of cumulative impact at opening				Very low

Significance of cumulative effect at opening	PRoW and canal users	**Minor adverse (not significant)** – the same as for the Proposed Development in isolation

Viewpoint 13: Beal Lane, Beal				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
453620, 425259	Residential, road users	12	3.5	East
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		Medium for road users and residential		
Size/ scale, duration and reversibility of cumulative impact at construction				
Long distance views of the demolition of Eggborough Coal-Fired Power Station will be visible from this location. Views of the operational Advanced Thermal Treatment Plant stack will be barely perceptible from this location. The construction of the Knottingley Power Project and the Southmoor Energy Centre will be visible from a medium distance, within successive views. The addition of the Proposed Development would result in a slight cumulative impact, although the magnitude is no greater than that assessed in isolation. The impacts will be short term and irreversible.				
Magnitude of cumulative impact at construction				Low
Significance of cumulative effect at construction		Residential, road users		**Minor adverse (not significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts assessed for opening would be similar to those assessed at the construction stage as a result of the demolition of the Eggborough Coal-Fired Power Station and the close proximity of the operational Knottingley Power Project and the Southmoor Energy Centre. The impacts would be short term and irreversible.				
Magnitude of cumulative impact at opening				Low
Significance of cumulative effect at opening		Residential, Road users		**Minor adverse (not significant)** – the same as for the Proposed Development in isolation

Viewpoint 15: Station Road, Hensall				
Grid reference	**Receptor type**	**Elevation (m AOD)**	**Approx. distance from Site (km)**	**Direction of view**
458794, 423133	PRoW, residential	10	1.1	North west
Other developments		**Sensitivity of receptor (2016-2022 existing and future baseline)**		
Eggborough coal-fired power station decommissioning and demolition Advanced Thermal Treatment Plant Knottingley Power Project Southmoor Energy Centre		Medium		
Size/ scale, duration and reversibility of cumulative impact at construction				
Close proximity views of the demolition of Eggborough Coal-Fired Power Station will be clearly visible. Longer range views of the stacks associated with the Thermal Treatment Plant, Knottingley Power Plant and Southmoor Energy Centre may be available, viewed to the left of the Proposed Development. A cumulative impact will arise as a result of the increase in construction activity visible, assessed as greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at construction				High
Significance of cumulative effect at construction				**Major adverse (significant)** – the same as for the Proposed Development in isolation
Size/ scale, duration and reversibility of cumulative impact at opening				
The impacts will be similar to that assessed at the construction stage, although as a result of the opening of the Proposed Development, the amount of construction activity will be limited to the demolition of the Eggborough Coal-Fired Power Station. The cumulative impact will be greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible.				
Magnitude of cumulative impact at opening				High
Significance of cumulative effect at opening				**Major adverse (significant)** – the same as for the Proposed Development in isolation

Sequential Views

20.5.97 The medium sensitivity East Coast Main Line will gain close proximity views of the demolition of Eggborough Coal-Fired Power Station that will be clearly visible. Longer range views of the stacks associated with the Advanced Thermal Treatment Plant, Knottingley Power Plant and Southmoor Energy Centre may be available. Medium range views of the Thorpe Marsh CCGT Power Station may be available. A cumulative impact will arise as a result of the increase in construction activity visible, assessed as no greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible at both construction and opening assessment scenarios, resulting in a **minor adverse** effect (**not significant**) that is short term and irreversible.

20.5.98 The high sensitivity waterways will gain partial views of the demolition of Eggborough Coal-Fired Power Station, Ferrybridge Multi-Fuel 2 and the Knottingley Power Plant. Longer range views of the stacks associated with the Advanced Thermal Treatment Plant and Southmoor Energy Centre may be available. A cumulative impact will arise as a result of the increase in construction activity visible, assessed as no greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible at both construction and opening assessment scenarios, resulting in a **minor adverse** effect (**not significant**) that is short term and irreversible.

20.5.99 The low to medium sensitivity local roads within the study area will gain close proximity views of the demolition of Eggborough Coal-Fired Power Station, Knottingley Power Plant, Thermal Treatment Plant and Southmoor Energy Centre. A cumulative impact will arise as a result of the increase in construction activity visible, assessed as no greater than that assessed for the Proposed Development in isolation. The impact will be short term and irreversible at both construction and opening assessment scenarios, resulting in a **minor** to **negligible adverse** effect (**not significant**) that is short term and irreversible.

Summary

20.5.100 In summary the cumulative viewpoint assessment identified that viewpoint 3 (residential receptors) would receive a major adverse significant cumulative effect as a result of views of both the Proposed Development construction if concurrent with the decommissioning and demolition of the existing coal-fired power station (the same overall classification of effect as for the Proposed Development alone) and Viewpoint 6 would receive major adverse significant cumulative effects as a result of views of both the Proposed Development construction and operation concurrent with the decommissioning and demolition of the existing coal-fired power station (the same overall classification of effects as for the Proposed Development alone). Viewpoint 1 (residential receptors) would receive a major adverse significant cumulative effect as a result of views of both the Proposed Development construction and opening if concurrent with the construction of the proposed residential development (an increase in classification of effect compared with that for the Proposed Development alone), viewpoint 5 would receive a major adverse significant cumulative effect as a result of views of both the Proposed Development construction and opening if concurrent with the decommissioning and demolition of the existing coal-fired power station (an increase in classification of effect compared with that for the Proposed Development alone) and viewpoint 15 would receive a major adverse significant cumulative effect as a result of views of both the Proposed Development construction and opening if concurrent with the

decommissioning and demolition of the existing coal-fired power station (an increase in classification of effect compared with that for the Proposed Development alone).

20.5.101 Moderate adverse significant cumulative effects are also predicted at viewpoints 1, 3, 4, and 10 as a result of both the Proposed Development and decommissioning and demolition of the existing coal-fired power station. Some of these cumulative effects are greater than the effects of the Proposed Development alone (*i.e.* viewpoint 1 (road users) at construction of the Proposed Development, viewpoint 1 (road users) at opening of the Proposed Development, viewpoint 3 (road users) at construction and opening of the Proposed Development, viewpoint 3 (residential) at opening of the Proposed Development, viewpoint 4 at construction and opening of the Proposed Development and viewpoint 5 at opening of the Proposed Development), whereas the remainder of effects are classified the same as for the Proposed Development alone.

20.5.102 The remaining viewpoints are all predicted to receive minor adverse cumulative effects that are not significant.

Waste Management

20.5.103 As part of their regional planning responsibilities, North Yorkshire County Council (the Waste Disposal Authority) has a responsibility to plan for waste management and to ensure that sufficient sites are available to provide the necessary capacity during the planning period. Further capacity may also be provided on a regional basis by waste transfers within the larger Yorkshire and Humberside region.

20.5.104 Within this larger regional context, the effects of waste generated from the Proposed Development on the regional capacity for waste management are at such a low level that **no significant** cumulative effects with other developments are anticipated.

Sustainability and Climate Change

20.5.105 When the impact on sustainability and climate change from the Proposed Development is considered in relation to the other developments, the national need for diverse and reliable energy supply and the local benefits of job creation in the area, the overall cumulative effect is considered to be **beneficial**.

20.5.106 A Carbon Assessment has been prepared to support the ES (Appendix 18A – ES Volume III). The carbon assessment concluded that the Proposed Development would compare favourably with UK average gas-fired power stations (based on 2014 DECC data, published in 2016), with annual scope 1 carbon savings of between 847 and 988 thousand tonnes CO_2e. The Proposed Development will therefore support Government targets to reduce carbon emissions.

20.6 Combined Effects Assessment

20.6.107 Table 20.7 below identifies where in the ES combined effects are considered in further detail with regard to the Proposed Development, and considers other combined effects that are not discussed elsewhere.

Table 20.7: Potential for significant combined effects

Chapter	Combined effects considered in technical chapter	Other combined effects to be considered
Chapter 8: Air Quality	This chapter considers air quality effects of stack emissions and road traffic emissions, however the receptors of these two types of air quality effects are in different locations and the main road traffic emissions will occur before the plant is operational, so there is no potential for significant combined effects on a single receptor. No significant adverse effects are predicted. The chapter also considers air quality effects on designated nature conservation sites due to stack emissions (no significant effects are predicted). These sites are located several km from the Site so there is no potential for other effects from the construction and operation of the Proposed Development (traffic, dust, noise, visual etc.) to combine with air quality effects, therefore no significant combined effects on designated nature conservation sites are predicted.	There is potential for dust effects during construction to combine with noise and visual effects at individual receptors within 200 m of the Site, namely Eggborough Sports and Leisure Complex (residential receptor), properties in the north of Eggborough village, properties in Chapel Haddlesey and individual properties within 200 m of the Proposed Gas Connection route. As the construction works within 200 m of these receptors will be short term and relatively minor (i.e. pipeline construction), combined effects are not considered to be greater than the noise, dust or visual effects in isolation.
Chapter 9: Noise and Vibration	No combined effects identified.	See discussion above regarding combined noise, dust and visual effects during construction.
Chapter 10: Ecology and Nature Conservation	This chapter considers the combined effects of noise, air quality, disturbance, water contamination and ground contamination on ecological receptors in the vicinity of the Site. No significant effects on ecological receptors are identified.	No other combined effects identified.
Chapter 11: Water Resources, Flood Risk and Drainage	No combined effects identified.	No other combined effects identified.

Chapter	Combined effects considered in technical chapter	Other combined effects to be considered
Chapter 12: Geology, Hydrogeology and Land Contamination	No combined effects identified.	No other combined effects identified.
Chapter 13: Cultural Heritage	This chapter considers both physical and setting impacts on cultural heritage assets. No significant effects are predicted following implementation of mitigation.	No other combined effects identified.
Chapter 14: Traffic and Transportation	This chapter considers a range of different traffic-related effects on roadside receptors (severance, pedestrian amenity, fear and intimidation, highway safety and driver delay). No significant effects are predicted.	There is potential for receptors located close to the road network to experience combined effects from traffic (severance, pedestrian amenity, highway safety etc.) and associated noise, vibration and air emissions during construction of the Proposed Development. The traffic, air quality and noise assessments do not identify any significant effects on sensitive receptors due to construction traffic and the combined effect is also considered to be **not significant**.
Chapter 15: Land Use, Agriculture and Socio-Economics	No combined effects identified.	There is potential for users of three Public Rights of Way (PRoW) (that will need to be temporarily stopped up during the construction of the Proposed Cooling Water and Gas Connections), and users of roads (required for construction access to the Proposed Gas Connection corridor), to also experience construction-related dust, noise and visual effects. However given the relatively short duration of the works, **no significant** combined effects are anticipated.
Chapter 16: Landscape and Visual Amenity	No combined effects identified.	See discussion above regarding combined visual, dust and noise effects during construction, and regarding combined effects on

Chapter	Combined effects considered in technical chapter	Other combined effects to be considered
		PRoW users.
Chapter 17: Waste Management	This chapter refers to good practice measures to avoid water resources, air quality, noise or traffic impacts resulting from the generation, handling, on-site temporary storage or off-site transport of waste. Traffic effects arising from the transport of waste are taken into account in the traffic and transport assessment (Chapter 14), and associated air quality and noise effects are assessed in Chapters 8: Air Quality and 9: Noise and Vibration. Best practice measures for the storage of waste on Site and appropriate drainage systems and bunding of storage areas as necessary will avoid impacts on water or land quality.	No other combined effects identified.
Chapter 18: Sustainability and Climate Change	This chapter considers the combined effects of the Proposed Development on land use, water quality, flood risk, waste, transport, ecology and employment in order to evaluate the overall sustainability of the Proposed Development. No significant effects are identified.	No other combined effects identified.
Chapter 19: Health Impact Assessment	This chapter considers the combined effects of the Proposed Development on the health of the local community.	During the construction phase of the Proposed Development there will be changes in the local environment immediately surrounding the Site, for example noise and visual effects. The key factors (noise, traffic, air quality and landscape and visual) are all identified to primarily affect different receptors and are generally classified as minor (with the exception of some significant noise and visual effects) therefore **no significant** combined effect on health (greater than the individual effects already assessed) is

Chapter	Combined effects considered in technical chapter	Other combined effects to be considered
		anticipated.

20.7 Limitations

20.7.108 Any limitations that were encountered during the individual assessments are detailed within Chapters 8 to 19.

20.7.109 The cumulative assessment is based on the currently available information on other potential or committed developments in the vicinity of the Site.

20.8 Conclusions

20.8.110 The assessment of combined effects has not identified any significant combined effects.

20.8.111 The assessment of cumulative impacts has considered a number of other developments within the vicinity of the Site and the potential for cumulative impacts to arise from one or several of the other developments together with the Proposed Development.

20.8.112 Through consideration of the information available for each other developments (including the Environmental Statements and detailed modelling information where available) it has been concluded there is the potential for:

- significant adverse cumulative air quality effects due to the cumulative traffic impacts associated with other developments (although the Proposed Development itself makes a negligible contribution),
- significant adverse cumulative landscape effects at a Site level during construction (but no greater than for the Proposed Development in isolation); and
- significant adverse cumulative visual effects from viewpoints 1, 3, 4, 5, 6, 10 and 15 as a result of views of both the Proposed Development and other developments during the construction period and opening of the Proposed Development (although note the visual effects on viewpoints 3, 6, 10 and 15 are no greater than for the Proposed Development in isolation).

20.8.113 All other assessment topics have concluded that there is no potential for significant cumulative effects to arise from the construction or operation phases of the Proposed Development when considered alongside other developments proposed within the vicinity of the Site.

20.8.114 Cumulative impacts with existing developments have been accounted for through establishing the current baseline for each technical assessment (presented in Chapters 8 to 19).

20.9 References

Axis (2013) *Southmoor Energy Centre – Transport Assessment and Interim Travel Plan.* Axis.

Chris Blandford Associates (2011) *North Yorkshire and York Landscape Characterisation Project*. North Yorkshire County Council Selby District Council (2005) *Selby District Local Plan, adopted February 2005, saved policies*

Celotex (2015) *Proposed Manufacturing Facility A645 Weeland Road, Eggborough Transport Assessment.* Celotex Ltd.

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Knottingley Power (2013) *Knottingley Power Project Environmental Statement.* Knottingley Power Limited.

Optima (2016) *Redevelopment if Kellingley Colliery Proposed Commercial Development - Transport Assessment.* Optima.

Planning Inspectorate (2015) *Advice Note 17 Cumulative effects assessment relevant to nationally significant infrastructure projects*

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