KEADBY 3
CARBON CAPTURE POWER STATION

A collaboration between **SSE Thermal** and **Equinor**

Document Ref: 10.8

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The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Proposed Development Changes: Environmental Statement (ES) Addendum – Volume II (Chapters and Appendices)

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

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GLOSSARY

Abbreviation	Description
ABP	Associated British Ports – UK port operator; relevant navigational authority for the River Trent as 'ABP Humber'
ADMS	Atmospheric Dispersion Modelling System - a proprietary model for the assessment of effect of emissions to air from point sources and road sources.
AGI	Above Ground Installation - installations used to support the safe and efficient operation of a pipeline; above ground installations are needed at the start and end of a cross-country pipeline and at intervals along the route.
AGL	Above Ground Level - a height above ground level is a height measured with respect to the underlying ground surface.
AIL	Abnormal Indivisible Load - a load that cannot be broken down into smaller loads for transport without undue expense or risk of damage. It may also be a load that exceeds certain parameters for weight, length and width.
ALARP	As Low As Reasonably Practicable - a term often used in the regulation and management of safety-critical and safety-involved systems. The ALARP principle is that the residual risk shall be reduced as far as reasonably practicable.
ALC	Agricultural Land Classification - part of the planning system in England and Wales which classifies agricultural land into five categories according to versatility and suitability for growing crops.
AOD	Above Ordnance Datum - a spot height (an exact point on a map) with an elevation recorded beside it that represents its height above a given datum.
APFP	Applications: Prescribed Forms and Procedure related to The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
APIS	Air Pollution Information System - provides a comprehensive source of information on air pollution and the effects on habitats and species. It supports the assessment of potential effects of air pollutants on habitats and species.
AQAL	Air Quality Assessment Levels - the baseline level of each pollutant species used during air quality assessments. The results of modelling undertaken to predict concentrations of pollutants are compared against these AQALs.

Abbreviation	Description
AQS	Air Quality Objectives - the target date on which exceedances of an air quality standard must not exceed a specified number.
BAT	Best Available Techniques - the available techniques which are the best for preventing or minimising emissions and impacts on the environment. BAT is required for operations involving the installation of a facility that carries out industrial processes. Techniques can include both the technology used and the way an installation is designed, built, maintained, operated and decommissioned.
BAT-AELS	Best Available Techniques – Associated Emission Levels - Achievable emissions values following the implementation of the best available techniques for preventing or minimising emissions and impacts on the environment.
BEIS	Department for Business, Energy and Industrial Strategy – department of the UK Government.
BMV	Best and Most Versatile - the best and most versatile land is defined as Grades 1 (excellent quality), 2 (very good quality) and 3a (good quality) agricultural land.
BNG	Biodiversity Net Gain - an approach to development that intends to leave biodiversity in a better state than before. It encourages developers to provide an increase (in extent and/or quality) in appropriate natural habitat over and above that required to compensate for the habitat losses that would arise from the development concerned. In so doing, the BNG approach aims to assess the current loss of biodiversity through development and contribute to the restoration of ecological networks.
BS	British Standard - Standard produced by the British Standards Institution based upon the principles of standardisation recognised inter alia in European Policy.
CCGT	Combined Cycle Gas Turbine - a highly efficient form of energy generation technology. An assembly of heat engines work in tandem using the same source of heat to convert it into mechanical energy which drives electrical generators and consequently generates electricity.
CCP	Carbon Capture Plant – plant used to capture carbon dioxide (CO_2) emissions produced from the use of fossil fuels in electricity generation and industrial processes.

Abbreviation	Description
CCUS	Carbon Capture, Usage and Storage - group of technologies designed to reduce the amount of carbon dioxide (CO2) released into the atmosphere from coal and gas power stations as well as heavy industry including cement and steel production. Once captured, the CO2 can be either re-used in various products, such as cement or plastics (usage), or stored in geological formations deep underground (storage).
CEMP	Construction Environmental Management Plan - a plan to outline how a construction project will avoid, minimise or mitigate effects on the environment and surrounding area.
CERC	Cambridge Environmental Research Consultants
CIEEM	Chartered Institute of Ecology and Environmental Management - professional body for ecologists and environmental managers in the United Kingdom.
CO_2	Carbon Dioxide - an inorganic chemical compound with a wide range of commercial uses.
CTMP	Construction Traffic Management Plan - a plan outlining measures to organise and control vehicular movement on a construction site so that vehicles and pedestrians using site routes can move around safely.
dB	Decibel. A unit used to express relative differences in sound power or intensity. The decibel (dB) scale is logarithmic and used to describe the measurement and audibility of sounds within the range of approximately 0-140dB
DBA	Desk Based Assessment - sets out the heritage baseline for the Proposed Development Site in order to identify all known designated and non-designated heritage assets
DCC	Direct Contact Cooler
DCO	Development Consent Order - made by the relevant Secretary of State pursuant to The Planning Act 2008 to authorise a Nationally Significant Infrastructure Project. A DCO can incorporate or remove the need for a range of consents which would otherwise be required for a development. A DCO can also include rights of compulsory acquisition.
DEFRA	Department for Environment, Food and Rural Affairs – the UK government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the United Kingdom. The department's priorities are to grow the rural economy, improve the environment and safeguard animal and plant health.

Abbreviation	Description
DML	Deemed Marine Licence – licence provided by the Marine Management Organisation (MMO), granted as part of a DCO.
EA	Environment Agency - a non-departmental public body sponsored by the United Kingdom government's Department for Environment, Food and Rural Affairs (DEFRA), with responsibilities relating to the protection and enhancement of the environment in England.
EIA	Environmental Impact Assessment - a term used for the assessment of environmental consequences (positive or negative) of a plan, policy, program or project prior to the decision to move forward with the proposed action.
EPR	The Environmental Permitting (England and Wales) Regulations 2016 - Regulations that came into force in 2008 combining Pollution Prevention and Control and Waste Management Licensing regulations.
ExA	Examining Authority
ES	Environmental Statement - a report in which the process and results of an Environment Impact Assessment are documented.
FRA	Flood Risk Assessment - an assessment of the flood risk from all sources of flooding for a development
FRAP	Flood Risk Activity Permit – permit to work in, under and over a main river or if work could affect flooding from a main river or sea.
GHG	Greenhouse Gases - atmospheric gases such as carbon dioxide, methane, chlorofluorocarbons, nitrous oxide, ozone, and water vapour that absorb and emit infrared radiation emitted by the Earth's surface, the atmosphere and clouds.
Ha	Hectare – a metric unit of measurement, equal to 2.471 acres or 10,000 square metres.
HE	Historic England - an executive non-departmental body of the British Government tasked with protecting the historical environment of England.
HGV	Heavy Goods Vehicle - vehicles with a gross weight in excess of 3.5 tonnes.

Abbreviation	Description
HLCP	Humber Low Carbon Pipelines – a Nationally Significant Infrastructure Project promoted by National Grid Ventures intended to help decarbonise industry by connecting major emitters and power stations in the Humber region (including the Proposed Development at Keadby) to enable transportation of captured carbon dioxide to the East Coast for onward connection to an offshore pipeline.
HRSG	Heat Recovery Steam Generator - an energy recovery heat exchanger that recovers heat from a hot gas stream. It produces steam that can be used in a process (cogeneration) or used to drive a steam turbine (combined cycle).
HRA	Habitats Regulations Assessment - the assessment of the impacts of implementing a plan or policy on a Natura 2000 site required under the Habitats Directive.
HSE	Health and Safety Executive - the body responsible for the encouragement, regulation and enforcement of workplace health, safety and welfare.
IAQM	Institute of Air Quality Management - professional body for air quality air professionals.
IEMA	Institute of Environmental Management and Assessment
IED	Industrial Emissions Directive – European Union Directive (2010/75/EU) committing member states to control and reduce the impact of industrial emissions on the environment.
INNS	Invasive Non-Native Species - species that have occurred outside of their natural range. Invasive species have the potential to hinder or prevent survival of others within the ecosystem.
ISO	International Organization for Standardization - an international standard setting body composed of representatives for various national standards organisations.
JNCC	The Joint Nature Conservation Commission - the public body that advises the UK Government and devolved administrations on UK-wide and international nature conservation.
KGL	Keadby Generation Limited
kV	Kilovolt - unit of electrical potential. There are 1,000 volts in a kilovolt.
kW	Kilowatt - unit of power.
LBMEP	Landscaping and Biodiversity Management and Enhancement Plan

Abbreviation	Description
LVIA	Landscape and Visual Impact Assessment – the process of evaluating the effect of a proposal upon the landscape and views of it.
LWS	Local Wildlife Site - defined areas, identified and selected for their nature conservation value, based on important, distinctive and threatened habitats and species with a national, region.
MA&D	Major Accidents and Disasters - the potentially significant effects of a development.
mAOD	Metres above Ordnance Datum
MCA	Maritime Coastguard Agency - an Executive Agency of the Department for Transport concerned with maritime safety.
MHCLG	Ministry of Housing, Communities and Local Government
MW	Megawatt - unit of energy.
National Highways	Formerly Highways England – National Highways operate, maintain and improve England's motorways and major A-roads.
NEP	The Northern Endurance Partnership - a partnership between bp, Eni, Equinor, National Grid, Shell and Total to develop infrastructure to transport and store CO2 emissions.
NGC	National Grid Carbon
NGCL	National Grid Carbon Limited
NGR	National Grid Reference - system of geographical grid references.
NH_3	Ammonia
NLC	North Lincolnshire Council
NO_2	Nitrogen Dioxide
NOx	Oxides of Nitrogen
NPPF	National Planning Policy Framework - the NPPF came into effect on 27 March 2012 (with some transitional arrangements), replacing the majority of national planning policy other than NPS. The NPPF is part of the Government's reform of the planning system intended to make it less complex, to protect the environment and to promote sustainable growth. It does not contain any specific policies on Nationally Significant Infrastructure Projects, but its policies may be taken into account in decisions on DCOs if the Secretary of State considers them to be both important and relevant.

Abbreviation	Description
NPS	National Policy Statement - Statement produced by Government under the Planning Act 2008 providing the policy framework for Nationally Significant Infrastructure Projects. They include the Government's view of the need for and objectives for the development of Nationally Significant Infrastructure Projects in a particular sector such as energy and are used to determine applications for such development.
NRA	Navigation Risk Assessment - assesses the hazards and risks affecting vessel navigation.
NSIP	Nationally Significant Infrastructure Project - defined by the Planning Act 2008 and cover projects relating to energy (including generating stations, electric lines and pipelines); transport (including trunk roads and motorways, airports, harbour facilities, railways and rail freight interchanges); water (dams and reservoirs, and the transfer of water resources); wastewater treatment plants and hazardous waste facilities. These projects are only defined as nationally significant if they satisfy a statutory threshold in terms of their scale or effect.
NSR	Noise Sensitive Receptor - locations or areas where dwelling units or other fixed, developed sites of frequent human use occur which may be sensitive to noise impacts.
NTS	Non-Technical Summary - a summary of the Environmental Statement written in non-technical language for ease of understanding.
OEP	Office for Environmental Protection - new, independent statutory body with the principal objective of contributing to environmental protection and the improvement of the natural environment under the Environment Act 2021
OMH	Open Mosaic Habitats - found mainly in urban and formerly industrial areas and have high biodiversity value.
Opening Year	The year of opening (post-construction) of a scheme when it becomes operational.
OS	Ordnance Survey - the national mapping agency for Great Britain.
PC	Process Contribution - represents the change caused by the Proposed Development.
PCC	Power and Carbon Capture
PEA	Preliminary Ecological Appraisal - an ecological assessment method which evaluates the existing ecological value of a site.

Abbreviation	Description
PEC	Predicted Environmental Concentration – the Process Contribution (PC) plus background concentration.
PHE	Potentially Harmful Elements – for example arsenic (As), cadmium (Cd) and copper (Cu).
PHEA	Preliminary Hazard and Environmental Assessments - determines the scope of hazards and environmental impacts related to a project.
PIA	Personal Injury Accident - an incident to the body, mind or emotions.
PINS	Planning Inspectorate - executive agency of the Department for Communities and Local Government of the United Kingdom Government. It is responsible for determining final outcomes of town planning.
PRoW	Public Right of Way - a highway where the public has the right to walk. It can be a footpath (used for walking), a bridleway (used for walking, riding a horse and cycling), or a byway that is open to all traffic (including motor vehicles).
SAC	Special Area of Conservation - high quality conservation sites that are protected under the European Union Habitats Directive, due to their contribution to conserving those habitat types that are considered to be most in need of conservation.
SoS	Secretary of State - the decision maker for DCO applications and head of Government department.
SPA	Special Protection Area - strictly protected sites classified in accordance with article 4 of the EC birds directive. Special Protection Areas are Natura sites which are internationally important sites for the protection of threatened habitats and species.
SSSI	Site of Special Scientific Interest - nationally designated Sites of Special Scientific Interest, an area designated for protection under the Wildlife and Countryside Act 1981 (as amended), due to its value as a wildlife and/or geological site.
SWMP	Site Waste Management Plan - a plan setting out how resources will be managed, and waste controlled at all stages during a construction project..
TTWA	Travel to Work Area - statistical tool used by UK Government agencies and local authorities to indicate an area where the population would generally commute to a larger town or city for employment purposes.

Abbreviation	Description
UK	United Kingdom
UKHSA	The UK Health Security Agency is an executive government agency sponsored by the Department of Health and Social Care that commenced operation on 1 October 2021, taking over the responsibilities of Public Health England whose remit was to protect and improve the nation's health and wellbeing and reduce health inequalities.
WHO	World Health Organisation - an agency of the United Nations focusing on public health.
WSI	Written Scheme of Investigation
ZCH	Zero Carbon Humber - a consortium of energy and industrial companies and academic institutions with a shared vision to transform the Humber region into the UK’s first net-zero carbon cluster by 2040.
ZoI	Zone of Influence - study areas identified for the purposes of the Cumulative and Combined Effects assessment.
ZTV	Zone of Theoretical Visibility - a computer generated tool to identify the likely (or theoretical) extent of visibility of a development.

ES VOLUME II (CHAPTERS AND APPENDICES) CONTENTS

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TABLES

8.0 ES ADDENDUM: AIR QUALITY

8.1 Introduction

8.1.1 This Chapter provides an addendum to the air quality assessment included within the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 8**: Air Quality of the ES Volume I (Application Document Ref. 6.2.8) [**APP-051**]; and
- **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Application Document Ref. 6.3.6) [**APP-070**].

8.1.2 This assessment considers the air quality effects arising from the relevant Additional Information and Proposed Development Changes, as summarised in the sections below.

8.1.3 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

8.1.4 Figures accompanying this chapter of the ES Addendum are referenced within.

8.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

8.2 Changes in Legislation, Planning Policy and Guidance

8.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets on air quality/ water quality, biodiversity, and resource efficiency and waste reduction.

8.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

8.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021, after submission of the Application. Consultation

closed on 29 November 2021 and BEIS is now considering consultation feedback prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

8.2.4 The emerging NPS EN-1 retains the focus on Air Quality and general emissions from development but also adds the requirement of a carbon assessment. Paragraph 5.3.4 instructs applicants to include a carbon assessment as part of any proposal for energy infrastructure projects.

8.2.5 Paragraph 5.3.7 states: "*Any carbon assessment will include an assessment of operational GHG emissions, but the policies set out in Part 2, including the UK ETS, apply to these emissions. Operational emissions will be addressed in a managed, economy-wide manner, to ensure consistency with carbon budgets, net zero and our international climate commitments. The Secretary of State does not, therefore need to assess individual applications for planning consent against operational carbon emissions and their contribution to carbon budgets, net zero and our international climate commitments*". The carbon assessment should be a part of the mitigation strategy to reduce greenhouse gas (GHG) emissions at every stage of development to ensure emissions are minimised as much as possible.

8.2.6 The Applicant has considered the impact of the development on Air Quality through an assessment of carbon emissions included in **Chapter 17**: Climate Change and Sustainability (ES Volume I – Application Document Ref. 6.2) [**APP-060**]. Furthermore, this Proposed Development also purposefully seeks to abate carbon dioxide emissions through the proposed carbon capture plant. Accordingly, the change of policy in EN-1 Paragraph 5.3.7 has no impact on the Proposed Development.

8.2.7 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021). With regard to air quality, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 8**: Air Quality of the ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.3 Proposed Development Changes

8.3.1 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 - 6.2.7 – Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.

8.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for air quality at the Proposed Development Site:

- Proposed Development Change 3 - Increase to the maximum parameters (height) for up to two absorbers/ stacks - This Proposed Development Change is relevant to the assessment of potential operational impacts and effects.

8.3.3 All other Proposed Development Changes described in ES Addendum Volume I, would not alter the assessment of air quality effects and therefore, have not been considered further. This includes Proposed Development Change 4 – increase to the height of the carbon dioxide (CO_2) stripper, since that does not include any release point for emissions to air and is not at a height that is high enough to affect the dispersion of any emissions to air from other sources.

8.3.4 The Air Quality impact assessment carried out for the operational Proposed Development has been revised to take into account the updates to the building dimensions and stack heights associated with Proposed Development Change 3.

8.4 Relevant Additional Information

8.4.1 Since the submission of the Application, Additional Information (background monitoring data for oxides of nitrogen (NOx), nitrogen dioxide (NO_2) and ammonia (NH_3), carried out for the Keadby 2 Power Station project (ERM 2021) has been made available and considered for the Proposed Development. This has not affected any conclusions of the submitted ES but is discussed further in Section 8.6 below.

8.5 Consultation

8.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1- 6.2.7 - Rev 02**).

8.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 8-1.

Table 8-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
UK Health Security Agency (UKHSA)	20 March 2022. Letter response.	The UKHSA suggest that without reviewing the updated ES Air Quality Chapter (and associated technical appendices) they cannot comment on the impact of the Proposed Development Changes.	Noted and submission into examination will enable review.
Environment Agency	14 March 2022. Letter response.	No comments on Proposed Development Change 3 or 4.	Noted.
Natural England	14 March 2022. Letter response.	There should be assessment of changes to air quality impacts which may arise to the designated sites due to the proposed modifications. This should be considered for both the vessel movements, and for the increase in heights of the carbon dioxide absorbers and carbon dioxide stripper column.	Noted. Section 8.8 of this Chapter provides an updated assessment. As reported in the Application, 35 – 40 vessels is significantly lower than the threshold for screening of air quality effects and therefore the assessment of emissions from vessels was screened out of the Application. Change 1 does not change the number or

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
			type of vessels proposed to use the Wharf from those already assessed in the Application and this aspect has therefore not been considered further.
North Lincolnshire Council	24 March 2022. Letter response.	The Non-Technical Summary for Consultation states that "An assessment of emissions resulting from the revised parameters for the twin absorbers (change 3) option has been undertaken, however there are no new or different significant operational air quality impacts at human health receptors as a result of Proposed Development Change 3." The Local Planning Authority (LPA) would expect this assessment to be submitted as part of the application for a material change so that it has the opportunity to review and comment on the assessment as part of the ongoing examination.	Noted. Section 8.8 of this Chapter provides an updated assessment. **Appendix 8B**: Air Quality Operational Phase of ES Addendum Volume II (**Application Document Ref. 6.3.6 – Rev 02**) provides the results of updated dispersion modelling.

8.6 Updated Baseline Conditions

Existing Baseline

8.6.1 The Additional Information changes the baseline conditions for one of the Air Quality receptors described in **Chapter 8** Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.6.2 Monitoring of oxides of NOx, NO_2 and NH_3 was carried out during 2020 - 2021 in the vicinity of the Proposed Development Site to inform the development of the Keadby 2 Power Station (ERM 2021). The monitoring was carried out at several locations, with one location being representative of the Humber Estuary ecological receptor, assessed as receptor OE1-5 in **Chapter 8** ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.6.3 The monitoring indicated slightly higher concentrations for background NOx and NH_3 than were obtained from the Air Pollution Information System (APIS) website and reported in Table 9, **Appendix 8B** ES Volume II (Application Document Ref. 6.3.6) [**APP-070**], as shown in Table 8-2.

Table 8-2: Comparison of Baseline Data at Humber Estuary – Receptor OE1-5

Pollutant	Original Baseline (µg/m^3)	New Baseline with Additional Information (µg/m^3)
Annual average NOx	13.0	13.1
Annual average NH_3	2.3	3.1

8.6.4 The new baseline concentrations for NOx and NH_3 have been applied to the revised assessment detailed in **Appendix 8B**: Air Quality Operational Phase of ES Addendum Volume II (**Application Document Ref. 6.3.6 – Rev 02**).

Future Baseline

8.6.5 As noted in paragraph 8.4.27 of **Chapter 8**: Air Quality of the submitted ES, background concentrations of pollutants are expected to decrease in the future due to changes in technology and the types of emission sources; however, to provide a conservative prediction of pollutant concentrations in the future, the current baseline background concentrations are used for the future operational assessment scenarios, assuming no decrease in background concentrations. Therefore, future baseline conditions were assumed to be the same as the existing baseline, and therefore would be as described for the existing baseline above.

8.7 Changes to Development Design and Impact Avoidance

Construction

8.7.1 No changes as a result of the Proposed Development Changes, above those stated in **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

Operation

8.7.2 No changes as a result of the Proposed Development Changes, above those stated in **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.8 Likely Impacts and Effects

Construction

Proposed Development Change 3

Construction Dust

8.8.1 In relation to construction of Change 3, no changes from the submitted ES. As such, the effect at identified human health and ecological receptors is not significant with the embedded mitigation in place.

Construction Traffic

8.8.2 No changes from the submitted ES. As such, the effect at identified human health and ecological receptors is not significant.

Non-Road Mobile Machinery

8.8.3 No changes from the submitted ES. As such, the effect at identified human health and ecological receptors is not significant.

Abnormal loads (waterborne transport)

8.8.4 No changes from the submitted ES. As such, the effect at identified human health and ecological receptors is not significant.

Transport Emissions

8.8.5 No changes from the submitted ES. As such, the effect at identified human health and ecological receptors is not significant.

Operation

Process Emissions from the operational CCP

8.8.6 An assessment of emissions resulting from the revised parameters for up to two absorbers set out in ES Addendum Volume I (**Table 4**) (**Document Ref 6.2.1 – 6.2.7 – Rev 02**) has been undertaken. Modelled stack location, using the Rochdale Envelope approach, are shown on **Figure 8.4** (**Document Ref. 8.4.12 – Rev 02**) presented in ES Addendum Volume III. The results are presented in **Appendix 8B** of ES Addendum Volume II (**Application Document Ref. 6.3.6 – Rev 02**).

8.8.7 There are no new or different significant operational impacts or effects in relation to air quality at human health receptors as a result of Proposed Development Change 3, in comparison with **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.8.8 At ecological receptors, the results from the modelling of the up to two absorber stacks presented in Section 5.2 of **Appendix 8B** of ES Addendum Volume II (**Application Document Ref. 6.3.6 – Rev 02**) indicate that the concentrations of NOx and NH_3 are very slightly higher at the majority of the ecological receptors assessed, although the overall magnitude of impact and significance of effects remains comparable with those presented with **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.8.9 Overall, the increased height of up to two absorbers (Proposed Development Change 3) does not materially change the air quality effects of the Proposed Development which are classified as not significant, as presented in **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

Decommissioning

8.8.10 Proposed Development Change 3 gives rise to no changes from the submitted ES.

8.9 Additional Mitigation, Monitoring and Enhancement Measures

8.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Additional Information or Proposed Development Changes, above those stated in **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.10 Limitation or Difficulties of Additional Assessment

8.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in **Chapter 8**: Air Quality of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

8.10.2 Until the preferred technology provider is selected, there will be some degree of uncertainty in the operational emissions used in the assessment. Therefore, in order to minimise the likelihood of under-estimating the predicted impacts for the operational emissions, a number of conservative assumptions have been made in the assessment. These are detailed in Section 3.4 of **Appendix 8B**: Air Quality – Operational Phase (ES Addendum Volume II – Application Document Ref 6.3.6).

8.11 Summary of Updated Likely Significant Residual Effects

8.11.1 There are no changes to the likely residual effects identified in **Chapter 8** of the submitted ES [**APP-051**], as a result of the Additional Information or the Proposed Development Changes considered. The residual effects would remain as reported within Section 8.9 of **Chapter 8**: Air Quality (i.e. not significant).

8.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

ERM (2021). Keadby 2 – Ambient NOx, NO2 and NH_3 Monitoring Report – Final. 7th May 2021.

HMSO (2021) *Environment Act 2021*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

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CONTENTS

TABLES

9.0 ES ADDENDUM: NOISE AND VIBRATION

9.1 Introduction

9.1.1 This Chapter provides an addendum to the noise and vibration assessment submitted with the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 9:** Noise and Vibration of the ES Volume I (Application Document Ref. 6.2.9) [**APP-052**];
- **Appendix 9A:** Construction Noise Assessment Methodology (Application Document Ref. 6.3.5) [**APP-069**]; and
- **Appendix 9B:** Operational Noise Information (Application Document Ref. 6.3.9) [**APP-073**].

9.1.2 This assessment considers the noise and vibration effects arising from the relevant Additional Information and Proposed Development Changes, as summarised in sections below.

9.1.3 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

9.1.4 There are no Figures accompanying this chapter of the ES Addendum.

9.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

9.2 Changes in Legislation, Planning Policy and Guidance

9.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets on air quality/ water quality, biodiversity, and resource efficiency and waste reduction.

9.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

9.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback, prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

9.2.4 The emerging NPS EN-1 policy remains largely unchanged in relation to noise and vibration. Paragraph 5.12.8 expands on guidance for mitigating noise, stating that if the Proposed development should address the effect of underwater or subterranean noise in the required Noise Assessment. Furthermore, Paragraph 5.12.9 adds the requirement for development to be undertaken in accordance with statutory requirements for noise. Regard must be given to the relevant sections of the Noise Policy Statement for England, the NPPF, and the government's associated planning guidance on noise.

9.2.5 The submitted ES considers noise and vibration impacts on underwater ecological receptors. This is included in **Chapter 11**: Biodiversity and Nature Conservation (ES Volume I - Application Document Ref. 6.2) [**APP-052**] and accompanying **Appendix 11H**: Underwater Sound Effects on Fish (ES Volume II - Application Document Ref. 6.3) [**APP-083**].

9.2.6 There are no notable changes to NPS EN-2 to EN-5 in relation to noise and vibration.

9.2.7 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG 2021). With regard to noise and vibration, whilst the policy paragraphs have been renumbered, the policy text remains unchanged from that reported in **Chapter 9**: Noise and Vibration of the ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

9.3 Proposed Development Changes

9.3.1 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 - 6.2.27 – Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.

9.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for noise and vibration at the Proposed Development Site:

- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1

Power Station and north of Keadby 1 Power Station). This Proposed Development Change is relevant to the assessment of potential construction impacts and effects; and

- Proposed Development Change 3 - Increase to the maximum parameters (height) for up to two absorbers/ stacks. This Proposed Development Change is relevant to the assessment of potential operational impacts and effects of noise and vibration.

9.3.3 All other Proposed Development Changes described in ES Addendum Volume I, would not alter the assessment of noise and vibration effects and therefore, have not been considered further.

9.4 Relevant Additional Information

9.4.1 Since submission of the Application, Additional Information that has been identified that is relevant to the assessment of noise and vibration includes:

- twin absorber sound power level data (provided by the supplier); and
- 3D model of the site layout with up to two absorbers configuration.

9.5 Consultation

9.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1 - 6.2.7 - Rev 02**).

9.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 9-1.

Table 9-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
Natural England	14 March 2022. Letter Response.	The assessment must also include consideration of the potential for additional disturbance impacts due to movements of the large vessels throughout the designated site.	Proposed Development Change 1 does not change the number or type of vessels proposed to use Railway Wharf from those already assessed in the Application and this aspect has therefore not been considered further in the noise and vibration chapter.
North Lincolnshire Council	24 March 2022. Letter response.	Similar to the point on air quality … the (NTS for consultation) report states "Modelling and assessment of operational noise levels resulting from the revised parameters and additional information for the twin absorbers option has been undertaken. However, there are no new or different significant operational noise effects as a result of Proposed Development Change 3." Again, the LPA would expect to see this modelling and assessment presented as part of the Application for the material change.	Noted. Section 9.8 of this Chapter provides an updated assessment. **Appendix 9B**: Operational Noise Information of ES Addendum Volume II (**Application Document Ref. 6.3.9 – Rev 02**) provides the data and assumptions used in the updated modelling.

9.6 Updated Baseline Conditions

Existing Baseline

9.6.1 No changes to the submitted ES. The Applicant has noted its proposals to obtain further representative background sound levels at noise sensitive receptors to inform the on-going design development of the Proposed Development and to confirm the mitigation required to achieve Requirement 29 of the draft DCO (**Application Document Ref. 2.1**). It is proposed that the surveys will take place once Keadby 2 Power Station is operational (anticipated, following commissioning, in circa October 2022) as confirmed in the Applicant's response to Q1.9.1 of the Examining Authority's first written questions [**REP2-006**].

Future Baseline

9.6.2 No changes to the submitted ES.

9.7 Development Design and Impact Avoidance

Construction

9.7.1 No further design and impact avoidance measures during construction are proposed as a result of the Additional Information/ Proposed Development Changes, above those stated in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**]. However, as with all Proposed Development activities, consideration will be given to the Proposed Development Change 2 construction activities in a final Construction Environmental Management Plan (CEMP). This will include setting out provisions to reduce noise and vibration impacts and effects relating to the proposed construction activities, as far as reasonably practicable, based on the measures outlined in Section 9.5 of **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**]. A Framework CEMP is included as part of the Application (**Application Document Ref. No. 7.1**).

Operation

9.7.2 No further design and impact avoidance measures as a result of the Proposed Development Changes, above those stated in **Chapter 9:** Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**] are considered necessary.

9.8 Likely Impacts and Effects

Construction

Proposed Development Change 2

Construction Noise and Vibration Effects

9.8.1 The Additional Information and Proposed Development Change introduces a new construction activity to be assessed in addition to the construction noise and vibration effects presented in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

9.8.2 An assessment of the construction effects of Proposed Development Change 2 has been undertaken. Details regarding the noise prediction methodology, including a full list of indicative construction plant and associated sound power levels (L_w) for each construction phase, are presented in **Appendix 9A** of ES Addendum Volume II (**Application Document Ref 6.3.8 - Rev 02**).

9.8.3 As described in Section 3 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**) where the Additional AIL Route crosses existing services, including the Keadby 1 cooling water pipework corridor, a temporary piled bridging structure would be used to minimise risk to the integrity of the existing cooling water pipework lines and other services. Noise predictions from construction of this structure for crossing existing services are shown in Table 9-2; how these would act in-combination with other construction noise sources is considered below.

Table 9-2: Indicative construction noise predictions for temporary piled bridging structure construction

Noise Sensitive Receptor (NSR)	Indicative free-field construction noise levels during daytime temporary piled bridging structure construction activity (dB $L_{Aeq,12h}$)
NSR 1 - Vazon Bridge	61
NSR 1A - Roe Farm	61
NSR 2 - Hawthorne House, Chapel Lane	64
NSR 3 - Keadby Village	58
NSR 4 - Mariners Arms Flats	51
NSR 5 - Trent Side	50
NSR 6 - 9 Queens Crescent (South Bank data)	49

Noise Sensitive Receptor (NSR)	Indicative free-field construction noise levels during daytime temporary piled bridging structure construction activity (dB $L_{Aeq,12h}$)
NSR 7 - Keadby Grange	39
NSR 8 - North Pilfrey Farm	37
NSR 9 - Ealand Poultry Farm	33
NSR 10 - North Moor Farm	45
Values above the daytime threshold (and SOAEL) of 65 dB $L_{Aeq,12h}$ are shown in bold	

9.8.4 The predicted effects of the construction noise levels of the temporary piled bridging structure for crossing existing services are shown in Table 9-3. It is anticipated that construction activity for the bridging structure would only take place in the daytime core hours so only effects during the daytime are presented.

Table 9-3: Indicative construction noise effects of the temporary piled bridging structure construction

Receptor	Temporary piled bridge structure construction – significance of effects
NSR 1 - Vazon Bridge	Minor adverse
NSR 1A - Roe Farm	Minor adverse
NSR 2 - Hawthorne House, Chapel Lane	Minor adverse
NSR 3 - Keadby Village	Negligible adverse
NSR 4 - Mariners Arms Flats	Negligible adverse
NSR 5 - Trent Side	Negligible adverse
NSR 6 - 9 Queens Crescent (South Bank data)	Negligible adverse
NSR 7 - Keadby Grange	Negligible adverse
NSR 8 - North Pilfrey Farm	Negligible adverse
NSR 9 - Ealand Poultry Farm	Negligible adverse
NSR 10 - North Moor Farm	Negligible adverse
Potentially significant effects are in bold	

9.8.5 During the core daytime hours and Saturday mornings, predicted noise effects during construction of a piled bridging structure to cross existing services are assessed as minor or negligible adverse (not significant) at all NSR.

9.8.6 Works to construct the piled bridging structure may take place over a number of weeks and could be undertaken concurrently with other site enabling and early construction phase activities. Whilst these simultaneous activities could potentially increase construction noise levels slightly at receptors, the combined enabling works and bridging structure construction noise levels, which would occur for a short period of time, are predicted to give rise to negligible or minor adverse effects that would therefore not result in a change to the overall classification of effects.

9.8.7 There are therefore no new or different significant construction noise and vibration effects predicted as a result of the Additional Information and/ or Proposed Development Change 2, in comparison with **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

9.8.8 All other construction noise predictions presented in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**] are unaffected by this Proposed Development Change.

Proposed Development Change 3

9.8.9 This Proposed Development Change does not affect the construction noise and vibration effects presented in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

Operation

Proposed D*evelopment Change 3*

Operational Noise Effects

9.8.10 Results from the operational noise modelling incorporating Proposed Development Change 3 and the Additional Information described in Section 9.4 of this ES Addendum are presented in this section.

9.8.11 Further details of the expected sound power level (L_w) from up to two absorbers/ stacks, the settings used in the noise model and the list of assumptions used in the assessment are presented in **Appendix 9B** of ES Addendum Volume II (**Application Document Ref. 6.3.9 - Rev 02**).

9.8.12 In the absence of additional mitigation, the predicted free-field operational *specific sound levels* at the NSR around the Proposed Development Site are presented in Table 9-4. The NSR presented represent the worst affected within the Study Area.

9.8.13 The plant is designed to operate flexibly during its lifetime with varying electricity demand. Given the anticipated load regimes (baseload and dispatchable) for the generating station, the predicted noise levels could apply to both the 1-hour daytime or 15-minute night-time BS 4142 assessment periods.

Table 9-4: Predicted worst-case operational *specific sound levels*

Receptor	Predicted operational *specific sound level* $L_{Aeq,T}$ dB	
	Chapter 9: Noise and Vibration of ES Volume I	With Proposed Development Change 3
NSR 1 - Vazon Bridge	47	47
NSR 1A - Roe Farm	48	48
NSR 2 - Hawthorne House, Chapel Lane	44	43
NSR 3 - Keadby Village	41	41
NSR 4 - Mariners Arms Flats	38	38
NSR 5 - Trent Side	36	36
NSR 6 - 9 Queens Crescent	36	36
NSR 7 - Keadby Grange	44	43
NSR 8 - North Pilfrey Farm	40	39
NSR 9 - Ealand Poultry Farm	36	35
NSR 10 - North Moor Farm	45	45

9.8.14 The representative *background sound levels* are presented in Section 9.6 of **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**] and reproduced in Table 9-5.

9.8.15 As described in **Chapter 9**: Noise and Vibration of ES Volume I, adjustments have been made to the *background sound levels* to determine future *background sound levels* accounting for the increase in sound level when Keadby 2 Power Station becomes operational. With the exception of NSR 1 during the daytime, it is assumed that the *background sound level* will increase by the same amount as the *ambient sound level*, as a result of the operation of Keadby 2 Power Station. At NSR 1 during the daytime, the predicted Keadby 2 Power Station *specific sound level* has been summed with the Keadby 2 ES representative *background sound level* to determine the representative future *background sound level*. This is because the sound level from Keadby 2 Power Station, once operational, will be dominant compared with existing sources of *background sound*. The derived future *background sound level* also correlates with the $L_{Aeq,T}$ 50dB free-field limit at Vazon Bridge (NSR 1) as set out in

Condition 28 of the final Section 36 consent (BEIS, 2019) for Keadby 2 Power Station.

Table 9-5: Future *background sound levels* from Chapter 9: Noise and Vibration of ES Volume I

Receptor	Time period	Keadby 2 Power Station ES representative *background sound level* ($L_{A90,T}$), dB	Representative future *background sound level* ($L_{A90,T}$), dB
NSR 1 - Vazon Bridge	Daytime	37	50
	Night-time	36	47
NSR 1A - Roe Farm*	Daytime	37	50
	Night-time	36	47
NSR 2 - Hawthorne House, Chapel Lane	Daytime	37	38
	Night-time	33	39
NSR 3 - Keadby Village	Daytime	35	36
	Night-time	30	34
NSR 4 - Mariners Arms Flats	Daytime	35	35
	Night-time	30	32
NSR 5 - Trent Side	Daytime	35	36
	Night-time	30	33
NSR 6 - 9 Queens Crescent (South Bank data)	Daytime	35	36
	Night-time	30	33
NSR 7 - Keadby Grange**	Daytime	35	35
	Night-time	30	32
NSR 8 - North Pilfrey Farm**	Daytime	35	35
	Night-time	30	31
NSR 9 - Ealand Poultry Farm**	Daytime	35	35
	Night-time	30	30
NSR 10 - North Moor Farm**	Daytime	35	36
	Night-time	30	33
* NSR 1A uses data for NSR 1 **For NSR 7-10 Keadby 2 Power Station *specific sound levels* are not available in the Keadby 2 Power Station ES. Therefore, the predicted values presented are from the remodelling of Keadby 2 Power Station in-situ, as set out in paragraph 9.3.49.			

BS4142 assessment results

9.8.16 The daytime BS 4142 assessments are presented in Table 9-6 and the night-time BS 4142 assessments are presented in Table 9-7. The values presented are the differences between the representative *background sound level* at each NSR and the predicted *rating level* (the *specific sound level* $L_{Aeq,T}$ presented in Table 9-4 plus the character correction). Positive values in the table indicate an excess of the *rating level* over the *background sound level*.

9.8.17 The magnitude of impact and initial effect classification has also been included in the tables, to provide context for the BS 4142 assessment outcomes, with reference to the semantic scales in Table 9.12, 9.13 and 9.14 of **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**]. The penultimate row in each table shows the initial effect classification assigned in Table 9.31 and Table 9.32 of the ES **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**]. Overall impacts and effects are slightly reduced or remain unchanged as a result of Proposed Development Change 3.

9.8.18 Consistent with the submitted ES, the assessment has assumed that potential noise of a tonal, impulsive or intermittent nature will be designed out of the Proposed Development during the detailed design phase by the selection of appropriate plant, building cladding, louvres and silencers/ attenuators as necessary. This is consistent with the Keadby 2 Power Station ES. However, inclusion of a +3 dB correction for other distinctive character has been included at this stage as a conservative approach for NSR with the potential to identify the new sound source in their existing acoustic environment.

Table 9-6: Daytime BS4142 assessment without additional mitigation

Receptor	NSR 1 Vazon Bridge	NSR 1A - Roe Farm	NSR 2 Hawthorne House, Chapel Lane	NSR 3 Keadby Village	NSR 4 Mariners Arms Flats	NSR 5 Trent Side	NSR 6 Queens Crescent	NSR 7 Keadby Grange	NSR 8 North Pilfrey Farm	NSR 9 Ealand Poultry Farm	NSR 10 North Moor Farm
Specific sound level L_s ($L_{Aeq,Tr}$), dB	52*	52*	43	41	38	36	36	43	39	35	45
Acoustic feature correction, dB	0*	0*	+3	+3	+3	+3	+3	+3	+3	+3	+3
Rating level ($L_{Ar,Tr}$), dB	52*	52*	46	44	41	39	39	46	42	38	48
Representative future *background sound level* ($L_{A90,T}$), dB	50*	50*	38	36	35	36	36	35	35	35	36
Excess of *rating level* over *background sound level* ($L_{Ar,Tr}$ - $L_{A90,T}$), dB	+2*	+2*	+8	+8	+6	+3	+3	+11	+7	+3	+12
BS 4142:2014 effect category	Low/ Adverse	Low/ Adverse	Adverse/ Significant Adverse	Adverse/ Significant Adverse	Adverse	Low/ Adverse	Low/ Adverse	Significant Adverse	Adverse/ Significant Adverse	Low/ Adverse	Significant Adverse
Magnitude of impact (assigned from Table 9.12 of submitted ES)	Very Low/ Low	Very Low/ Low	Low/ Medium	Low/ Medium	Low	Very Low/ Low	Very Low/ Low	Medium	Low/ Medium	Very Low/ Low	Medium/ High

Receptor	**NSR 1 Vazon Bridge**	**NSR 1A - Roe Farm**	**NSR 2 Hawthorne House, Chapel Lane**	**NSR 3 Keadby Village**	**NSR 4 Mariners Arms Flats**	**NSR 5 Trent Side**	**NSR 6 Queens Crescent**	**NSR 7 Keadby Grange**	**NSR 8 North Pilfrey Farm**	**NSR 9 Ealand Poultry Farm**	**NSR 10 North Moor Farm**
Initial classification of effect	Negligible/ Minor adverse	Negligible / Minor adverse	Minor/ **Moderate adverse**	Minor/ **Moderate adverse**	Minor adverse	Negligible/ minor adverse	Negligible/ minor adverse	**Moderate**	Minor/ **Moderate adverse**	Negligible / Minor adverse	**Moderate / Major adverse**
Chapter 9: Noise and Vibration of ES Volume I Initial classification of effect	Negligible/ Minor adverse	Negligible / Minor adverse	**Moderate adverse**	Minor/ **Moderate adverse**	Minor adverse	Negligible/ minor adverse	Negligible/ minor adverse	**Moderate/ Major adverse**	Minor/ **Moderate adverse**	Minor adverse	**Moderate / Major adverse**
*See further information in context discussion Uncertainty: Given the use of sound level data from surveys undertaken for Keadby 2 Power Station EIA, significantly different 'representative' *background* and *ambient sound level* values could be obtained using updated baseline data and using different statistical analysis methods. Additionally, *background/ ambient sound level* data measured at a small number of NSR are assumed to be representative of conditions at other NSR.											

Table 9-7: Night-time BS4142 assessment without additional mitigation

Receptor	**NSR 1 Vazon Bridge**	**NSR 1A - Roe Farm**	**NSR 2 Hawthorne House, Chapel Lane**	**NSR 3 Keadby Village**	**NSR 4 Mariners Arms Flats**	**NSR 5 Trent Side**	**NSR 6 Queens Crescent**	**NSR 7 Keadby Grange**	**NSR 8 North Pilfrey Farm**	**NSR 9 Ealand Poultry Farm**	**NSR 10 North Moor Farm**
Specific sound level L_s ($L_{Aeq,Tr}$), dB	47	48	43	41	38	36	36	43	39	35	45
Acoustic feature correction, dB	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3	+3
Rating level ($L_{Ar,Tr}$), dB	50	51	46	44	41	39	39	46	42	38	48

Receptor	**NSR 1 Vazon Bridge**	**NSR 1A - Roe Farm**	**NSR 2 Hawthorne House, Chapel Lane**	**NSR 3 Keadby Village**	**NSR 4 Mariners Arms Flats**	**NSR 5 Trent Side**	**NSR 6 Queens Crescent**	**NSR 7 Keadby Grange**	**NSR 8 North Pilfrey Farm**	**NSR 9 Ealand Poultry Farm**	**NSR 10 North Moor Farm**
Representative future *background sound level* ($L_{A90,T}$), dB	47	47	39	34	32	33	33	32	31	30	33
Excess of *rating level* over *background sound level* ($L_{Ar,Tr}$ - $L_{A90,T}$), dB	+3	+4	+7	+10	+9	+6	+6	+14	+11	+8	+15
BS 4142:2014 assessment outcome	Low/ Adverse	Adverse	Adverse/ Significant adverse	Significant Adverse	Significant Adverse	Adverse	Adverse	Significant adverse	Significant Adverse	Adverse/ Significant adverse	Significant adverse
Magnitude of impact	Very Low/ Low	Low	Low/ Medium	Medium	Medium	Low	Low	Medium/ High	Medium	Low/ Medium	High
Initial classification of effect	Negligible /Minor adverse	Minor adverse	Minor/ **Moderate adverse**	**Moderate adverse**	**Moderate adverse**	Minor adverse	Minor adverse	**Moderate/ Major adverse**	**Moderate adverse**	Minor/ **Moderate adverse**	**Major adverse**
Chapter 9: Noise and V bration of ES Volume I classification of effect	Negligible /Minor adverse	Minor adverse	Minor/ **Moderate adverse**	**Moderate adverse**	**Moderate adverse**	Minor adverse	Minor adverse	**Major adverse**	**Moderate/ Major adverse**	**Moderate adverse**	**Major adverse**
Uncertainty: Given the use of sound level data from surveys undertaken for Keadby 2 Power Station EIA, significantly different 'representative' *background* and *ambient sound level* values could be obtained using updated baseline data and using different statistical analysis methods. Additionally, *background/ ambient sound level* data measured at a small number of NSRs are assumed to be representative of conditions at other NSRs.											

9.8.19 In accordance with Table 9.14 of **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**], the values presented in Table 9-6 and Table 9-7 for the predicted worst-case scenario produce a range of impact magnitudes from very low/ low to high impact at the 10No. of the NSR. This would result in effects between negligible/ minor adverse (not significant) to major adverse (significant), subject to consideration of context.

Consideration of context

9.8.20 The majority of the context is unchanged from what is presented in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**]. However as the Proposed Development Change 3 gives rise to some reductions in the *specific sound level,* this has adjusted the assessment of absolute sound levels at the NSR.

9.8.21 Table 9-8 below presents existing and future predicted *ambient sound levels* (assuming constant operation through the night of both Keadby 2 Power Station and the Proposed Development) and compares them to the BS8233:2014 and WHO 'Guidelines for Community Noise' recommended indoor ambient sound level for sleeping. The recommended internal criterion is 30 dB $L_{Aeq,8h,}$ which would be equivalent to an external criteria of 45 dB $L_{Aeq,8h}$ assuming open bedroom windows for ventilation.

Table 9-8: Comparison of night-time *ambient sound levels* without additional mitigation

Receptor	Proposed Development predicted operational *specific sound level* ($L_{Aeq,T}$ dB)	Keadby 2 Power Station ES - predicted Keadby 2 operational *specific sound level* ($L_{Aeq,T}$ dB)	Night-time *ambient sound level* measured before Keadby 2 and the Proposed Development ($L_{Aeq,8h}$ dB)	Night-time future *ambient sound level* predicted with Keadby 2 Power Station in operation ($L_{Aeq,8h}$ dB)	Night-time future *ambient sound level* predicted with the Proposed Development in operation ($L_{Aeq,8h}$ dB)	Change in Night-time future *ambient sound level* due to the Proposed Development (dB)
NSR 1 - Vazon Bridge	47	50	39	**50**	**52**	+2
NSR 1A - Roe Farm	48	50	39	**50**	**52**	+2
NSR 2 - Hawthorne House, Chapel Lane	43	39	36	41	45	+4
NSR 3 - Keadby Village (slightly different locations)	41	37	36	40	43	+3
NSR 4 - Mariners Arms Flats	38	31	36	37	41	+4
NSR 5 - Trent Side	36	33	36	38	40	+2
NSR 6 - 9 Queens Crescent (slightly different locations)	36	33	36	38	40	+2
NSR 7 - Keadby Grange	43	33*	36**	38	44	+6
NSR 8 - North Pilfrey Farm	39	28*	36**	37	41	+4

Receptor	**Proposed Development predicted operational *specific sound level* ($L_{Aeq,T}$ dB)**	**Keadby 2 Power Station ES - predicted Keadby 2 operational *specific sound level* ($L_{Aeq,T}$ dB)**	**Night-time *ambient sound level* measured before Keadby 2 and the Proposed Development ($L_{Aeq,8h}$ dB)**	**Night-time future *ambient sound level* predicted with Keadby 2 Power Station in operation ($L_{Aeq,8h}$ dB)**	**Night-time future *ambient sound level* predicted with the Proposed Development in operation ($L_{Aeq,8h}$ dB)**	**Change in Night-time future *ambient sound level* due to the Proposed Development (dB)**
NSR 9 - Ealand Poultry Farm	35	24*	36**	36	39	+3
NSR 10 - North Moor Farm	45	35*	36**	39	**46**	+7

Those above BS8233:2014 external criteria of 45 dB $L_{Aeq,8h}$ are in bold.

*For NSR 7-10 no prediction of Keadby 2 Power Station sound levels are available in the Keadby 2 Power Station ES, so predicted values from the re-creation of Keadby 2 Power Station in-situ have been used.

**NSR 7-10 were not used for the Keadby 2 Power Station ES so the lowest ambient data measured have been used.

9.8.22 As shown in Table 9-8 at NSR 2 to NSR 9, whilst ambient sound levels are predicted to increase due to the predicted levels from the Proposed Development, they are all at or below the BS8233:2014/WHO external criterion, this would give ambient sound levels at or below the guideline internal values with windows open at night.

9.8.23 At NSR 1 and NSR 1A, predicted ambient levels with Keadby 2 Power Station in operation are above the guideline external value. Noise from the Proposed Development will result in a minor increase in ambient sound levels (+2 dB for both NSR). This is below the level of change in sound level that would be just perceptible under normal environmental conditions. At NSR 1 the *specific sound level* predicted for the Proposed Development is 3 dB lower than for Keadby 2 Power Station and is 2 dB lower for NSR 1A. The sound from the Proposed Development is therefore likely to be less disturbing than the sound from the consented Keadby 2 Power Station at NSR 1 and NSR 1A. For NSR 10, sound from the Proposed Development will result in ambient sound levels above the BS8233:2014/WHO external criterion by 1 dB. This excess of the criterion would be below the level of change that is just perceptible under normal environmental conditions. With windows closed, internal noise levels would be below the recommended internal criterion at all NSR, with respect to noise from the existing ambient sound levels, Keadby 2 Power Station and the Proposed Development combined.

9.8.24 It is noted from consultation with North Lincolnshire Council (NLC) prior to submission of the Application that they 'usually require that operational noise (*rating levels*) do not exceed the *background sound level* by more than +3 dB'. This typical requirement is not met by the initial (numerical) outcomes of the BS 4142 indicative predictions, although the further assessment presented in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**] and above demonstrates that, with context, the effects are likely to be lower than the initial BS 4142 (numerical) outcomes might suggest.

9.8.25 Overall, effects of noise and vibration effects as presented in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**] have either been reduced or are unchanged as a result of Proposed Development Change 3.

9.8.26 On the basis of the above and the potential desire to reduce noise levels to NLC's criteria (no greater than +3 dB excess of *rating level* over *background sound level*) or below, potential mitigation options to reduce sound levels have been considered and those required to achieve NLC's criteria as discussed in Section 9.7 (Mitigation and Enhancement Measures) **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**] remain unchanged.

9.8.27 Overall, there is no change to the conclusions of the noise and vibration effects of the Proposed Development being not significant, as presented in **Chapter 9:**

Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

Decommissioning

Proposed Development Change 2

9.8.28 No changes to the submitted ES. As such, the effects at NSR are not assessed as likely to be significant.

Proposed Development Change 3

9.8.29 No changes to the submitted ES. As such, the effects at NSR are not significant.

9.9 Additional Mitigation, Monitoring and Enhancement Measures

9.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Additional Information/ Proposed Development Changes, above those stated in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

9.10 Limitation or Difficulties of Additional Assessment

9.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**].

9.11 Summary of Updated Likely Significant Residual Effects

9.11.1 There are no changes to the likely residual effects identified in **Chapter 9**: Noise and Vibration of ES Volume I (Application Document Ref. 6.2.9) [**APP-052**], as a result of the Additional Information/ Proposed Development Changes. The residual effects would remain as reported within Section 9.9 of **Chapter 9**: Noise and Vibration (i.e. not significant) on the basis that mitigation is employed such that the BS 5228 ABC noise limits are met, and the Section 9.5 mitigation guidance is followed.

9.12 References

BEIS (2021*) Planning for new energy infrastructure: review of energy National Policy Statements*.

HMSO (2021) *Environment Act 2021*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

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TABLES

10.0 ES ADDENDUM: TRAFFIC AND TRANSPORTATION

10.1 Introduction

10.1.1 This Chapter provides an addendum to the traffic and transportation assessment included with the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 10:** Traffic and Transportation (Application Document Ref. 6.2.10) [**APP-053**]; and
- **Appendix 10A:** Transport Assessment (Application Document Ref. 6.3.10) [**APP-074**].

10.1.2 This assessment considers the Traffic and Transportation effects arising from the relevant Additional Information and Proposed Development Changes, as summarised in sections below.

10.1.3 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

10.1.4 There are no figures accompanying this chapter of the ES Addendum.

10.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

10.2 Changes in Legislation, Planning Policy and Guidance

10.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets on air quality/ water quality, biodiversity, and resource efficiency and waste reduction.

10.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

10.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application.

Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

10.2.4 The emerging NPS EN-1 and EN-2 do not feature any notable changes to the policy.

10.2.5 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG 2021). With regard to traffic and transportation, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 10**: Traffic and Transportation of the ES Volume I (Application Document Ref. 6.2.10) [**APP-053**].

10.3 Proposed Development Changes

10.3.1 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1-6.2.7 - Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require assessment in this chapter.

10.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for traffic and transportation at the Proposed Development Site:

- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station); and
- Proposed Development Change 5 - Increase in proposed soil import volumes.

10.3.3 Both of these Proposed Development Changes are relevant to the assessment of potential construction impacts and effects on traffic and transport. All other Proposed Development Changes described in ES Addendum Volume I would not alter the assessment of traffic and transportation effects and, therefore, have not been considered further.

10.4 Relevant Additional Information

10.4.1 No Additional Information has been developed or gathered since submission of the Application, that is relevant to the assessment of traffic and transportation.

10.5 Consultation

10.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1- 6.2.7 - Rev 02**).

10.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 10-1.

Table 10-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
North Lincolnshire Council (NLC)	24 March 2022. Reply via letter.	NLC state that with regards to the proposal to increase the volume of imported soils by up to 50,000 cubic tonnes the Local Highway Authority would like to see further clarification around vehicle movements assumed within the Rochdale Envelope assessment provided in the ES. As it stands, it is not clear that this additional increase in vehicle movements has been allowed for. The proposed increase in importation of soils could represent a significant increase in vehicle movements over and above the original assumptions.	Noted. Section 10.8 of this Chapter provides an updated assessment in relation to the heavy goods vehicle (HGV) associated with Proposed Change 5.
National Highways	28 February 2022. Email reply.	National Highways do not have any land ownership close to the redline indicated on your maps, but you might like to consult North Lincolnshire Council about the A18. In relation to the Proposed Changes:	Noted. Consultation has been undertaken with North Lincolnshire Council.

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
		1. Inclusion of riverbed within the Waterborne Transport Offloading Area (Railway Wharf) - National Highways have no interests or assets in the riverbed, and therefore no comments to make. 2. Changes to the Additional Abnormal Indivisible Load Route, largely within SSE land. National Highways have no interests within the SSE land. Routes for AILs will be considered individually at a time nearer to the actual movements, and by application. 3. Increase to the maximum heights of the carbon dioxide absorbers/ stacks, if two are installed. National Highways have no interests in the carbon dioxide absorbers/ stacks, and therefore no comments to make. 4. Increase to the maximum heights of the carbon dioxide stripper column. National Highways have	Noted. Noted. **Document Ref 7.2**: Framework Construction Traffic Management Plan (CTMP) has been updated to take into account revised Additional AIL Route only and is submitted with the material change application. Noted. Noted.

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
		no interests in the carbon dioxide stripper column, and therefore no comments to make. 5. Increase in proposed soil import volumes to create a suitable development platform. National Highways only has an interest in the volume of soil import in regard to the amount of HGV journeys and the route these will take.	Noted. This assessment is provided in Section 10.8 of this chapter.
Network Rail	18 March 2022. Email reply.	Confirmation that Network Rail has no comment to make in respect of these changes and do not anticipate they will impact on the railway. Comments made previously to the overall scheme remain applicable.	Noted.

10.6 Updated Baseline Conditions

Existing Baseline

10.6.1 The Proposed Development Changes do not alter the existing baseline conditions for Traffic and Transport as described in **Chapter 10:** Traffic and Transportation of ES Volume I (Application Document Ref. 6.2.10) [**APP-053**].

Future Baseline

10.6.2 No changes to the submitted ES.

10.7 Development Design and Impact Avoidance

Construction

10.7.1 No further design and impact avoidance measures during construction are proposed as a result of the Proposed Development Changes, above those stated in **Chapter 10**: Traffic and Transportation of ES Volume I (Document Ref. 6.2.10) [**APP-053**].

10.8 Likely Impacts and Effects

Construction

Proposed Development Change 2

10.8.1 The Proposed Development Change does not change the assessment of construction traffic and transportation effects presented in **Chapter 10**: Traffic and Transportation of ES Volume I (Application Document Ref. 6.2.10) [**APP-053**], since the proposed extension to the Additional AIL Route does not affect traffic movements on the public highway or the arrival of delivery vessels at the wharf. There are no new or different significant construction effects in relation to traffic and transportation as a result of the Proposed Development Change, in comparison with **Chapter 10**: Traffic and Transportation of ES Volume I (Application Document Ref. 6.2.10) [**APP-053**].

Proposed Development Change 5

10.8.2 The Proposed Development Change will allow the importation of up to an additional 50,000m^3 of soils during the enabling works phase. These materials would be removed from/ delivered to the Proposed Development Site via HGV using the access from the A18.

10.8.3 It is envisaged that the material movement would take place over a two month period during the initial 6 month Site Enabling and Preparation phase of construction once Mabey Bridge has been replaced. This Proposed

Development Change would increase the number of HGV during this phase to 784 two way (392 in and 392 out) per day; an increase of 160 two way per day. However, this Proposed Development Change would not alter the peak months of construction traffic (Months 26 and 27) on which impacts and effects are assessed within the **Chapter 10**: Traffic and Transport of the submitted ES and when 1,236 two-way vehicle movements are anticipated (1,116 two-way car / van movements and 120 two-way HGV movements per day).

10.8.4 Therefore, based on the Rochdale Envelope assessed, there are no new or different significant effects to traffic and transportation during construction as a result of the Proposed Development Change, in comparison with **Chapter 10**: Traffic and Transportation of ES Volume I (Application Document Ref. 6.2.10) [**APP-053**].

10.8.5 As a result of Proposed Development Changes 2 and 5 there are no changes to the predicted impacts and effects in relation to the following aspects assessed:

- Severance;
- Pedestrian Amenity;
- Fear and Intimidation;
- Highway Safety;
- Driver Delay; and
- Effects on the Strategic Road Network.

Decommissioning

10.8.6 There are no changes to the decommissioning effects as a result of the Proposed Development Changes 2 and 5.

10.9 Additional Mitigation, Monitoring and Enhancement Measures

10.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Proposed Development Changes, above those stated in **Chapter 10**: Traffic and Transportation of ES Volume I (Application Document Ref. 6.2.10) [**APP-053**].

10.10 Limitation or Difficulties of Additional Assessment

10.10.1 The limitations related to this chapter of the ES Addendum are consistent with those reported in **Chapter 10**: Traffic and Transportation of ES Volume I (Application Document Ref. 6.2.10) [**APP-053**].

10.11 Summary of Updated Likely Significant Residual Effects

10.11.1 There are no changes to the likely residual effects identified in **Chapter 10**: Traffic and Transportation of ES Volume I (Document Ref. 6.2.10) [**APP-053**], as a result of the Proposed Development Changes. The residual effects would remain as reported within Section 10.9 of **Chapter 10**: Traffic and Transportation (i.e. not significant).

10.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

HMSO (2021) *Environment Act 2021*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

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TABLES

11.0 ES ADDENDUM: BIODIVERSITY AND NATURE CONSERVATION

11.1 Introduction

11.1.1 This Chapter provides an addendum to the biodiversity and nature conservation assessment included with the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 11:** Biodiversity and Nature Conservation of the ES Volume I (Application Document Ref. 6.2.11) [**APP-054**];
- **Appendix 11A:** Biodiversity and Nature Conservation Legislation and Planning Policy (Application Document Ref. 6.3.12) [**APP-076**];
- **Appendix 11B:** Ecological Impact Assessment Methods (Application Document Ref. 6.3.13) [**APP-077**];
- **Appendix 11C:** Preliminary Ecological Appraisal Report (Application Document Ref. 6.3.14) [**APP-078**];
- **Appendix 11D:** Badger Survey Report (Application Document Ref. 6.3.15) [**APP-079**];
- **Appendix 11E**: Bat Survey Report (Application Document Ref. 6.3.16) [**APP-080**];
- **Appendix 11F:** Riparian Mammal Survey Report (Application Document Ref. 6.3.17) [**APP-081**];
- **Appendix 11G:** Aquatic Ecology Survey Report (Application Document Ref. 6.3.18) [**APP-082**]; and
- **Appendix 11H:** Underwater Sound Effects on Fish (Application Document Ref. 6.3.19) [**APP-083**].

11.1.2 In addition, the following baseline survey report addenda have been submitted to accompany this ES Addendum:

- **Appendix 11C**: Preliminary Ecological Appraisal Report (**Application Document Ref. 6.3.14 - Rev 02**); and
- **Appendix 11D**: Confidential Badger Survey Report (**Application Document Ref. 6.3.15 - Rev 02**).

11.1.3 This assessment considers the biodiversity and nature conservation effects arising from the relevant Additional Information and Proposed Development Changes, as summarised in sections below.

11.1.4 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

11.1.5 No new figures have been prepared to accompany this chapter of the ES Addendum, other than those incorporated into the above baseline survey report addenda.

11.1.6 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

11.2 Changes in Legislation, Planning Policy and Guidance

11.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets to improve air and water quality, biodiversity, and resource efficiency and waste reduction.

11.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

11.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback. prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

11.2.4 EN-1 retains the focus on mitigation measures for biodiversity but expands the scope for which protective measures must be considered and demonstrated.

11.2.5 Paragraph 5.5.4 adds that the design process should include nature inclusive design. Development Proposals should consider the ambitions of the 25 Year Environment Plan and contribute to Biodiversity Net Gain. Energy Infrastructure Projects have opportunities to additional environmental benefits beyond Biodiversity Net Gain.

11.2.6 Paragraph 5.4.8 has been updated to provide more specific guidance to protect and enhance biodiversity and geological conservation interests: "*The Habitats Regulations set out sites for which an HRA will assess the implications of a plan or project, including Special Areas of Conservation and Special Protection Areas. As a matter of policy, the following should be given the same protection as sites covered by the Habitat's Regulations: potential Special Protection Areas and possible Special Areas of Conservation; listed or proposed Ramsar sites; and sites identified, or required, as compensatory measures for adverse effects on other HRA sites*."

11.2.7 Paragraph 5.4.13 retains protective measures for Ancient and Veteran Trees but removes the advice for the Secretary of State to refuse consent based on the loss of Ancient Woodland. The policy has been altered to state that Applicants must provide a suitable compensation strategy where development would result in the loss or deterioration of an ancient woodland or veteran trees.

11.2.8 Paragraph 5.4.18 specifies changes in mitigation requirements for birds. The Applicant should now demonstrate that the timing of construction has been planned to avoid/minimise disturbance to birds during breeding season. Furthermore, mitigation measures should look to enhance existing habitats rather than replace them.

11.2.9 Paragraph 5.4.20 goes on to state: "*There should also be specific measures to minimise impact to fish and aquatic biota by entrainment and impingement or by excessive heat or biocidal chemicals from discharges to receiving waters*."

11.2.10 Paragraph 5.4.22 adds: "General guidance suggests that any habitat creation or enhancement delivered for biodiversity net gain should be maintained for at least 30 years".

11.2.11 Taking into account the changes to EN-1, the assessment of the Proposed Development in respect to biodiversity and nature conservation is unchanged.

11.2.12 EN-4 considers the long-term potential impact of gas pipelines on biodiversity to be limited. The focus of EN-4 has remained the same with the addition of the below policy.

11.2.13 The changes to EN-4 with respect to biodiversity are not relevant to the operations of the Proposed Development. Accordingly, the assessment of the Proposed Development remains unchanged.

11.2.14 EN-5 maintains its focus on the impact of electricity networks on wildlife and biodiversity, particularly the potential negative impacts on birds. However, the changes to EN-5 with respect to biodiversity are not relevant to the operations of the Proposed Development The assessed impacts of the Proposed Development on biodiversity and nature conservation remain unchanged.

11.2.15 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021). With regard to biodiversity and nature conservation, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 11**: Biodiversity and Nature Conservation of the ES Volume I (Application Document Ref. 6.2.11) [**APP-054**].

11.2.16 The above changes to legislation and planning policy do not alter the scope, approach or conclusions of the biodiversity and nature conservation assessment as described in **Chapter 11** of the ES Volume I (Application Document Ref. 6.2.11) [**APP-054**].

11.3 Proposed Development Changes

11.3.1 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.

11.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for biodiversity and nature conservation at the Proposed Development Site:

- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station) - all affected land is under the control of the Applicant but requires a change to the Order Limits. This Proposed Development Change is relevant to the assessment of potential construction impacts and effects on biodiversity and nature conservation; and
- Proposed Development Change 3 - Increase to the maximum parameters (height) for up to two absorbers/ stacks. This change is relevant to the assessment of potential operational air quality impacts and effects on biodiversity and nature conservation.

11.3.3 None of the other Proposed Development Changes described in ES Addendum Volume I have potential to alter the assessment of biodiversity and nature conservation effects and, therefore, have not been considered further.

11.4 Relevant Additional Information

11.4.1 Additional Information has since been gathered by the Applicant to inform this chapter of the ES Addendum as follows:

- updated Phase 1 habitat survey and protected species constraint appraisal data to reflect the use of additional land, as detailed in **Appendix 11C**: Preliminary Ecological Appraisal Report (**Application Document Ref. 6.3.14 – Rev 02**);
- updated information on relevant badger setts, as detailed in **Appendix 11D**: Confidential Badger Survey Report (**Application Document Ref. 6.3.15 Rev 02**); and
- Results of the monitoring of bat boxes installed as biodiversity enhancement for Keadby 2 Power Station (ERM, 2021). This data has been utilised in **Appendix 11C**: Preliminary Ecological Appraisal Report (**Application Document Ref. 6.3.14 – Rev 02**).

11.5 Consultation

11.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**).

11.5.2 A summary of comments raised via consultation and other technical engagement is summarised in Table 11-1.

Table 11-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
Environment Agency	14 March 2022. Letter response.	Regarding Change 1, inclusion of riverbed within the Waterborne Transport Offloading Area, the Environment Agency has no specific comments as the change does not appear to include any construction works within the River Trent. However, if any permanent features are proposed with this change, the Environment Agency would request additional details and would need to assess if any potential construction impacts on migratory fish species can be mitigated.	As described in ES Addendum Volume I – Proposed Development Change 1 involves no construction works or permanent works of development and is only required for the construction phase of the Proposed Development.
Natural England	14 March 2022. Letter response.	The Habitats Regulations Assessment (HRA) which was previously produced for this development should be updated to reflect the change to the proposed plans, as there may be potential for additional impacts to designated sites. As the new plans detail that larger transport vessels will be utilised for the development, and these will rest on the riverbed, potential	Noted. **Document Ref. 5.12**: **HRA Appropriate Assessment – Rev 03** is submitted with the material change application. The type and maximum size of vessels proposed is consistent with the vessels that were used for the AIL deliveries during

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
		damage to designated habitat should be considered. Also, if there is construction planned within the boundary of the designated site to accommodate these vessels, the assessment must consider the potential for impacts due to loss of habitat. Also, it should be clarified whether the offloading area will only be required during the construction phase, or if it will be used during the operation phase of the development. The assessment must also include consideration of the potential for additional disturbance impacts due to movements of the large vessels throughout the designated site.	construction of Keadby 2 Power Station i.e. the largest vessels are predicted to be 82m length, 11.5m beam as reported in the submitted ES. Given the above, it is considered that Change 1 does not trigger any specific requirement for updates to this chapter or the HRA Appropriate Assessment. Use of Railway Wharf is only required for the construction phase of the Proposed Development. Change 1 does not change the number or type of vessels proposed to use the Wharf from those already assessed in the Application. Use of the Wharf will only take place during the construction period and use will be consistent with typical and recent (Keadby 2 Power Station) operational port related activity by vessels. As an active port, a small number of vessels do rest on the riverbed when moored and the proposed use (and any related disturbance effects) is

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
			considered routine and entirely consistent with current practices at the Wharf as a commercial port facility.
		There should be assessment of changes to air quality impacts which may arise to the designated sites due to the proposed modifications. This should be considered for both the vessel movements, and for the increase in heights of the carbon dioxide absorbers and carbon dioxide stripper column.	Section 11.8 of this Chapter provides an updated assessment. As reported in the Application, 35 – 40 vessels is significantly lower than the threshold for screening of air quality effects and therefore the assessment of emissions from vessels was screened out of the Application. Change 1 does not change the number or type of vessels proposed to use the Wharf from those already assessed in the Application and this aspect has therefore not been considered further.
North Lincolnshire Council	24 March 2022. Letter response.	The inclusion of riverbed within the Waterborne Transport Offloading Area will need to be addressed in the Habitats Regulations Assessment.	Noted. **Document Ref. 5.12**: **HRA Appropriate Assessment – Rev 03** is submitted with the material change application although as noted above, use will be consistent with typical and recent (Keadby 2 Power Station) operational port related activity by vessels. As an active port, a small number of vessels do rest on the riverbed

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
			when moored and the proposed use (and any related disturbance effects) is considered routine and entirely consistent with current practices at the Wharf as a commercial port facility.

11.6 Updated Baseline Conditions

Existing Baseline

11.6.1 The Additional Information and/ or Proposed Development Changes do not alter the existing baseline conditions for biodiversity and nature conservation as described in Section 11.4 of **Chapter 11** of ES **Volume I** (Application Document Ref. 6.2.11) [**APP-054**]. Specifically:

- the previously defined study areas remain worst-case and are not affected by the amendment to the Order Limits;
- the habitat baseline remains unchanged, therefore only supplementary contextual information is included within **Appendix 11C**: Preliminary Ecological Appraisal Report (**Application Document Ref. 6.3.14 – Rev 02**). No new protected species or habitats were present in the survey of the additional areas of the Order Limits;
- recent surveys of the two bat boxes installed on a tree by Trent Road, and which would require removal and re-location for Proposed Development Change 2, have confirmed the current absence of bat roosts (**Appendix 11C**: Preliminary Ecological Appraisal Report (**Application Document Ref. 6.3.14 – Rev 02**). Therefore the baseline information on bat roosts has not changed; and
- surveys for badger have identified no new constraints in relation to this species, therefore only supplementary contextual information is included within **Appendix 11D**: Confidential Badger Survey Report (**Application Document Ref. 6.3.15 – Rev 02**).

Future Baseline

11.6.2 The future baseline conditions have not changed as a result of the Additional Information and/ or Proposed Development Changes.

11.7 Changes to Development Design and Impact Avoidance

Construction

11.7.1 Further design and impact avoidance measures during construction are proposed as a result of the Additional Information/ Proposed Development Changes, above those stated in **Chapter 11**: Biodiversity and Nature Conservation of ES Volume I (Application Document Ref. 6.2.11) [**APP-054**]. These further measures are:

- the two (currently unused) bat boxes located on a tree that would be affected by Proposed Development Change 2 will be relocated to another suitable mature tree on nearby land within the control of the Applicant. The

location will be specified in the final Landscaping and Biodiversity Management and Enhancement Plan agreed as a Requirement of the DCO; and

- The additional land take for Proposed Development Change 2 requires update of **Document Ref. 4.15: Indicative Landscape and Biodiversity Management Plan – Rev 02** submitted with the material change application and **Document Ref. 5.10: Landscaping and Biodiversity Management and Enhancement Plan– Rev 02** (LBMEP) submitted with the material change application at Deadline 5, April 2022.

11.7.2 For purposes of clarity in relation to the above, it should be noted that:

- The potential future constraint posed by the two bat boxes affected by Proposed Development Change 2 is otherwise adequately addressed through the existing protected species mitigation approach specified in Section 11.5 of **Chapter 11:** Biodiversity and Nature Conservation of the ES Volume I (Document Ref. 6.2.11) [**APP-054**]; and
- Whilst Proposed Development Change 2 alters previous assumptions on which badger setts could be affected by construction activities, this does not alter the committed protected species mitigation approach in Section 11.5 of **Chapter 11:** Biodiversity and Nature Conservation of the ES Volume I (Document Ref. 6.2.11) [**APP-054**], and the related badger mitigation within **Appendix 11D:** Confidential Badger Survey Report (**Application Document Ref. 6.3.15 – Rev 02**). The established approach is sufficient to address all potential impacts on badger.

Operation

11.7.3 No changes as a result of the Proposed Development Changes, above those stated in **Chapter 11:** Biodiversity and Nature Conservation of the ES Volume I (Document Ref. 6.2.11) [**APP-054**].

11.8 Likely Impacts and Effects

Construction Effects

Proposed Development Change 2

Habitats

11.8.1 The extension to the Additional AIL Route (**Work No. 10A**) will require the following additional losses of habitat of local or higher nature conservation value:

- 0.2ha of heavily scrub invaded semi-improved neutral grassland of local nature conservation value; and

- 0.07ha of semi-mature (20-30 years of age) broad-leaved plantation woodland of local nature conservation value. The stated habitat loss is worst-case, as trees located within the swept path (oversail) for AIL deliveries may only require coppicing and therefore could be able to regrow later.

11.8.2 The loss of these small areas of habitat will not compromise the conservation status of these habitats in the wider local landscape. The losses will also be compensated through **Document Ref. 5.10: LBMEP – Rev 02** submitted with the material change application, which has been specified to achieve no net loss of biodiversity, and to demonstrate biodiversity net gain (BNG). As part of this, grassland will be reinstated at the affected location post-construction, and replacement tree planting will be provided.

11.8.3 Where tree felling within the above plantation woodland would be required for oversail reasons only, then the relevant trees would be coppiced rather than removed. These trees would then be able to regrow later, and this could achieve a small-scale beneficial diversification in woodland structure e.g. for nesting birds.

11.8.4 Given the above, the effect on each of these habitats remains meaningful at the local level only (until such time that the habitats are reinstated) and is assessed as minor adverse (**not significant**).

Badger

11.8.5 The updated assessment of badger is provided within **Appendix 11D:** Confidential Badger Survey Report (**Application Document Ref. 6.3.15 – Rev 02**). Based on the findings of this report, the potential construction effect on badger remains negligible (**not significant**).

Operational effects

Proposed Development Change 3

Statutory and Non-Statutory Nature Conservation Designations

11.8.6 An assessment of emissions resulting from the revised maximum parameters for up to two absorbers/ stacks has been undertaken. The results are presented in **Appendix 8B**: Air Quality Operational Phase of ES Addendum Volume II (**Application Document Ref. 6.3.6 – Rev 02**).

11.8.7 At nature conservation designations (including consideration of the open mosaic habitats of the former Keadby Ash Tip), the results from the modelling of up to two absorber units/ stacks presented in Section 5.2 of **Appendix 8B** of ES Addendum Volume II (**Application Document Ref. 6.3.6 – Rev 02**) indicate that the concentrations of NOx and ammonia, and the related deposition of nutrient nitrogen, are very slightly higher. However, the overall

level of impact from these pollutants remains comparable to that presented within **Chapter 8**: Air Quality of ES Volume I (Document Ref. 6.2.8) [**APP-051**].

11.8.8 As a result of the re-modelling for Proposed Development Change 3, the annual contribution of the Proposed Development to NOx (in terms of the process contribution (PC)) is predicted to exceed 1% of the critical level at the Humber Estuary Site of Special Scientific Interest (SSSI), Special Area of Conservation (SAC) and Ramsar site, and at four local wildlife sites (LWS) (Stainforth and Keadby Canal Corridor LWS, Keadby Wetland LWS, Keadby Wet Grassland LWS and Three Rivers LWS). However, the predicted environmental concentration (PEC) (i.e. the existing baseline plus the Proposed Development emissions) would not exceed, and otherwise remains well below (<50% in all cases), the critical level set for a potential adverse impact on vegetation. Given this, the potential impact from NOx is negligible (**not significant**) at all of the aforementioned nature conservation sites.

11.8.9 In relation to ammonia, the re-modelling for Proposed Development Change 3 indicates that ammonia would exceed 1% of the critical level at the Humber Estuary SSSI, SAC and Ramsar site. However, the qualifying habitats receiving ammonia levels above the 1% critical level are the mudflats and estuary habitats, and these do not support vegetation sensitive to ammonia. Given this, the potential impact from ammonia is negligible (**not significant**) at the Humber Estuary SSSI, SAC and Ramsar site.

11.8.10 In relation to nitrogen deposition, the re-modelling for Proposed Development Change 3 indicates that the nitrogen dose would exceed 1% of the critical level at the Humber Estuary SSSI, SAC and Ramsar site, and at the Keadby Wetland LWS. At the Humber Estuary, the PEC of nitrogen is predicted to be 102% of the critical load. However, the qualifying mudflat and estuary habitats present in the affected area are not sensitive to nitrogen deposition as they do not support vegetation. Accordingly, the potential impact from nitrogen deposition is negligible and **not significant** at the Humber Estuary SSSI, SAC and Ramsar site.

11.8.11 In the case of Keadby Wetland LWS, while the dose is higher than previously reported in Section 11.6 of **Chapter 11** of the ES Volume I (Application Document Ref. 6.2.11) [**APP-054**] the impact assessment rationale remains applicable. Therefore, the predicted effect is negligible (**not significant**).

11.8.12 Overall, there is no change to the conclusions of the biodiversity and nature conservation effects of the Proposed Development being not significant, as presented in **Chapter 11**: Biodiversity and Nature Conservation of ES Volume I (Application Document Ref. 6.2.8) [**APP-051**].

Decommissioning

11.8.13 No changes to the submitted ES.

11.9 Additional Mitigation, Monitoring and Enhancement Measures

11.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Additional Information/ Proposed Development Changes, above those stated in Section 11.7 of **Chapter 11**: Biodiversity and Nature Conservation of ES Volume I (Document Ref. 6.2.11) [**APP-054**].

11.10 Limitation or Difficulties of Additional Assessment

11.10.1 No changes to the submitted ES.

11.11 Summary of Updated Likely Significant Residual Effects

11.11.1 There are no changes to the likely residual effects identified in Section 11.9 of **Chapter 11**: Biodiversity and Nature Conservation of ES Volume I (Document Ref. 6.2.11) [**APP-054**], as a result of the Additional Information/ Proposed Development Changes. Therefore the residual effects remain as previously reported i.e. not significant.

11.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

ERM (2021) *Keadby BMP Artificial Habitats 2021 Monitoring Summary*. Report to SSE.

HMSO (2021) *Environment Act 2021*

Ministry of Housing, Communities and Local Government (2021). National Planning Policy Framework.

CONTENTS

TABLES

12.0 ES ADDENDUM: WATER ENVIRONMENT AND FLOOD RISK

12.1 Introduction

12.1.1 This Chapter provides an addendum to the water environment and flood risk assessment included with the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application or accepted by the Examining Authority since the Application:

- **Chapter 12:** Water Environment and Flood Risk of the ES Volume I (Application Document Ref. 6.2.12) [**APP-055**];
- Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**];
- **Appendix 12B:** Water Framework Directive Assessment Report (Application Document Ref. 6.3.21) [**APP-085**]; and
- **Appendix 12C:** Navigational Risk Assessment (Application Document Ref. 6.3.22) [**APP-086**].

12.1.2 This assessment considers the water environment and flood risk effects arising from the relevant Additional Information and Proposed Development Changes, as summarised in sections below.

12.1.3 This Addendum considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared only; if no change is listed then conditions are the same as those presented in the submitted ES.

12.1.4 No figures accompany this chapter of the ES Addendum.

12.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

12.2 Changes in Legislation, Planning Policy and Guidance

12.2.1 The Environment Act 2021 ('the Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, the Act includes new legislation such as: binding targets on water quality and biodiversity, and resource efficiency and waste reduction. For the water environment, the Act also places new duties on the Environment Agency and water companies with regards to the monitoring of storm overflows and sets out a framework for their reduction and elimination in the future. The Act also modernises the process for water and sewerage companies to have their licence conditions amended and modernises the water abstraction regime by giving powers to the Environment

Agency to revoke or vary (old) licences necessary for environmental protection or where the licence is considered under-used. the Department for Environment, Food and Rural Affairs (Defra) recently closed (December 2021) a consultation on changes to the regulatory framework for abstraction and impounding licensing in England with the intention that this is moved into the Environmental Permitting (England and Wales) Regulations 2016 regime.

12.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of the Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

12.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback, prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

12.2.4 The emerging NPS EN-1 is similar to the previous but provides additional commentary on managing surface water run-off and pollution to groundwater beyond those outlined in Water Resource Management Plans.

12.2.5 Paragraph 5.1.16 states that applicants are encouraged to manage surface water during construction by treating surface water runoff from exposed topsoil prior to discharging and to limit the discharge of suspended solids such as carparks, during operation.

12.2.6 The minimum requirements for Flood Risk Assessment (FRA) have been adjusted. Paragraph 5.8.7 states that the FRA should consider how the ability of water to soak into the ground may change with development, along with how the proposed layout of the project may affect drainage systems and include a range of specified information.

12.2.7 EN-5 adds commentary emphasising the duty for infrastructure to reduce Flood impacts on important services and the wider community.

12.2.8 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021). With regard to the water environment and flood risk, whilst the policy paragraphs have been renumbered, the policy text remains largely

unchanged from that reported in **Chapter 12**: Water Environment and Flood Risk of the ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

12.3 Proposed Development Changes

12.3.1 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require assessment in this chapter. The following Proposed Development Changes have therefore been considered within the revised assessment for water environment and flood risk at the Proposed Development Site:

- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station). This Proposed Development Change is relevant to the assessment of potential construction impacts and effects; and
- Proposed Development Change 3 (increase to the maximum parameters (height) for up to two absorbers / stacks) has the potential to impact atmospheric deposition of nitrogen oxides (NO_x) and ammonia emitted from the Proposed Power and Carbon Capture (PCC) Site, which could subsequently impact waterbodies or ecologically designated sites. As per **Chapter 12**: Water Environment and Flood Risk of the ES Volume I (Application Document Ref. 6.2.12) [**APP-055**], assessment of this potential effect is considered in **Chapter 8:** Air Quality (**Application Document Ref. 6.2.8 – Rev 02**).

12.3.2 All other Proposed Development Changes described in ES Addendum Volume I would not alter the assessment of water environment and flood risk effects and, therefore, have not been considered further.

12.4 Relevant Additional Information

12.4.1 Since submission of the Application, Aadditional Information has been gathered by the Applicant, and where relevant, this is presented in this chapter including:

- Updated modelling of flood risk based on consultation with the Environment Agency. This additional information was accepted into examination as Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**], which was accepted at the discretion of the Examining Authority at Deadline 1.

12.5 Consultation

12.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**). A summary of comments raised via consultation and other technical engagement is summarised in Table 12-1.

Table 12-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
Environment Agency	14 March 2022 Letter response	Regarding Change 1, inclusion of riverbed within the Waterborne Transport Offloading Area, the Environment Agency have no specific comments as the change does not appear to include any construction works within the River Trent. However if any permanent features are proposed with this change, additional details are requested and it would need to be assessed whether a Flood Risk Activity Permit would be needed or whether such permanent works could be adequately dealt with through the DCO/ deemed Marine Licence.	The Environment Agency's comments are noted. As described in ES Addendum Volume I – Proposed Development Change 1 involves no construction works or permanent works of development and is only required for the construction phase of the Proposed Development. The requirement to consider Flood Risk Activity Permits (FRAP) is noted in Application Document Ref 5.4: Schedule of Consents and Other Licences.

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
		Discussions regarding the mitigation of temporary steel bridges and further information on timings proposed for Change 2 would be welcomed so that it can be demonstrated that this change will not lead to any bank material entering the watercourse.	Effects in relation to temporary steel bridges spanning two ditches of the Additional AIL Route are outlined in Section 12.8. Works would be undertaken as part of the enabling works phase prior to the Main Civils/ Works phase and are shown in **Application Document Ref. 4.19 – Rev 02**.
		The Environment Agency has no comments on Change 3 and 4 and are pleased that the increase in proposed soil import volumes associated with Change 5 will facilitate the raising of ground levels in order to provide the flood risk protection.	Noted.

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
Historic England	19 March 2022 Email reply	No comments made on the Proposed Development Changes; however Historic England seek to confirm that there will be no increased erosive processes from wash and no additional dredging/channel modification works required for Change 1.	As described in ES Addendum Volume I, use of the Wharf will only take place during the construction period and use will be consistent with typical and recent (Keadby 2 Power Station) operational port related activity by vessels. As an active port, a small number of vessels do rest on the river bed when moored and the proposed use (and any related disturbance effects) is considered routine and entirely consistent with current practices at the Wharf as a commercial port facility. Change 1 requires no dredging/ channel modification.

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
Maritime and Coastguard Agency (MCA)	20 March 2022 Email reply	On the understanding that ABP Humber and the Canal and River Trust are consulted, and that the Navigation Risk Assessment is updated to reflect the proposed changes, the MCA would have no concerns on this occasion. We would also like to remind the applicant of the Port Marine Safety Code (PMSC) and its Guide to Good Practice, and we would expect this project to be carried out in accordance with the Code.	Noted. Please refer to consultation with ABP noted in this table. No response to the consultation was provided
ABP Humber	7 March 2022	Requested a meeting with the Applicant to discuss the changes in the proposed order limits, the inclusion of the riverbed within the waterborne transport offloading area.	Meeting held as requested during the consultation period to provide clarifications. No outstanding queries.

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
Trinity House	18 March 2022	No comments to make concerning the proposed changes.	Noted.
Savills on behalf of Anglian Water	28 February 2022	The land is not within Anglian Water's boundaries; therefore we have no comments or observations to make.	Noted.

12.6 Updated Baseline Conditions

Existing Baseline

Proposed Development Change 2

12.6.1 The Proposed Development Changes do not alter the existing baseline conditions as described in **Chapter 12:** Water Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

12.6.2 The Order Limits for the Proposed Development are amended slightly to incorporate a new corridor of land for the Additional AIL Route immediately east of the existing Keadby 1 Power Station, south of Trent Road. This would incorporate temporary use of a section of Keadby 1 Power Station outage/ contractor compound. There is also a very minor increase to the Order Limits north of North Soak Drain to allow oversail of the largest AIL components (refer to Section 2.2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**).

12.6.3 These new Order Limits areas do not include any watercourses/ waterbodies that are not already described in the existing baseline conditions, nor do they change the baseline flood risk, as they are already within the study area that has been considered in **Chapter 12:** Water Environment and Flood Risk (Application Document Ref. 6.2.12) [**APP-055**].

12.6.4 The Order Limits are presented in **Figure 3.3**: Work Areas referred to in the ES Addendum (**Application Document Ref. 6.4.4 – Rev 02**) in ES Addendum Volume III.

Future Baseline

12.6.5 The future baseline conditions have not changed as a result of the Additional Information/ Proposed Development Changes.

12.7 Changes to Development Design and Impact Avoidance

Construction

12.7.1 With regard to Proposed Development Change 2, where the Additional AIL Route crosses existing drainage ditches (Drain 6 shown on **Figure 12.1**: Surface Waterbodies and their attributes [**APP-123**]) temporary steel open span ditches will be reinstated and following construction removed.

12.7.2 An additional area of the Applicant's land is to be used for the extension to the Additional AIL Route (**Work No. 10A**). Where the extension of the Additional AIL Route crosses existing services, including the Keadby 1 cooling water pipework, a temporary bridge structure will be used to minimise risk to the watercourses and the integrity of the existing cooling water

pipework lines and other services. This is illustrated on **Application Document Ref 4.19 – Rev 02** submitted with the material change application.

12.7.3 Other impact avoidance measures required during construction are unchanged from those presented in the submitted ES and the associated Framework CEMP that accompanied the DCO Application (**Application Document Ref. No. 7.1**), as amended at Deadline 3 [**REP3-010**].

Operation

12.7.4 No changes as a result of the Proposed Development Changes, above those stated in **Chapter 12**: Water Environment and Flood Risk of the ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

12.8 Likely Impacts and Effects

Construction Effects

Proposed Development Change 2

Surface Water Quality – Suspended Fine Sediments

12.8.1 Construction works undertaken in close proximity to Drain6, including for the installation of a temporary open span crossing, will require works in the riparian margins and over these two watercourses. Potential use of plant in close proximity to these watercourses could, if not appropriately controlled, lead to mobilisation of sediment that could be conveyed into the watercourses. Given implementation of the best practice mitigation measures outlined in the **Application Document Ref. No. 7.1:** Framework CEMP, this impact would be minor and temporary. For the medium importance Drain 2 this would give **a slight adverse effect (not significant).** The effect on all other receptors remain as described in **Chapter 12**: Water Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

Surface Water Quality – Chemical Spillages

12.8.2 Where there are construction works in close proximity to Drain 6, leaks and spillages of polluting substances could, if not appropriately controlled, potentially cause pollution of the watercourses. Plant will be required adjacent to the watercourse for installation of the temporary bridge structure. However, to ensure legislative compliance, storage, handling and disposal of such substances will need to be in place prior to and during construction, and such measures will be enforced via the Final CEMP. Given the implementation of mitigation measures, any impact from chemical spillages to these watercourses are anticipated to be minor and temporary, giving a **slight adverse effect (not significant)** for the medium importance Drain 6. The effect on all other receptors remain as described in **Chapter 12**: Water

Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) [**APP 055**].

Morphological Effects to Waterbodies relating to the use of a Cofferdam

12.8.3 No changes to the submitted ES.

Morphological Effects to Waterbodies: New Bridges and Crossings for the Connection Corridors and Access

12.8.4 The temporary open span crossings over Drain 6 are anticipated to have negligible impact on the morphology of the bed itself as they are of a clear span design with set-back foundations and so would not impact the channel itself. However, there would be localised temporary minor impact to the watercourse habitat through an increase in channel shading. Both drainage ditches are of low importance for morphology, and so the minor and temporary impact related to the Additional AIL Route would give a **neutral effect** (**not significant**).

Potential Flood Risk – Tidal and Fluvial Sources During Construction

12.8.5 No change to the submitted ES **Chapter 12**: Water Environment and Flood Risk (Application Document Ref. 6.2.12) [**APP-055**] or Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on tidal or fluvial flood risk is **not significant** with the embedded mitigation in place.

Potential Flood Risk – Surface Water Sources During Construction

12.8.6 No change to the Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on surface water flood risk is **not significant** with the embedded mitigation in place.

Potential Flood Risk – Groundwater Sources During Construction

12.8.7 No change to the Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on groundwater flood risk is **not significant** with the embedded mitigation in place.

Potential Flood Risk – Drainage Infrastructure and Artificial Sources During Construction

12.8.8 The Proposed Development Change does not alter the assessment of flood risk from drainage infrastructure and artificial sources presented in **Chapter 12**: Water Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) **[APP-055]** or Additional Submission 6.3.20 Environmental

Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on flood risk is **not significant** with the embedded mitigation in place.

Operation effects

Proposed Development Change 2

Potential Pollution of Surface Watercourses: Surface Water Routine Runoff and Accidental Spillages

12.8.9 No change to the submitted ES. As such, the effect on affected waterbodies remains **not significant** with the embedded mitigation in place.

Potential Impacts on water quality of the River Trent from Operational discharges

12.8.10 No change to the submitted ES. As such, the effect on the River Trent remains **not significant** with the embedded mitigation in place.

Surface Water Ponds: Water Quality

12.8.11 No change to the submitted ES. As such, the effect on the ponds remains **not significant** with the embedded mitigation in place.

Physical Effects to Waterbodies: Loss of Drain D4

12.8.12 No change to the submitted ES. As such, the effect remains **not significant** with the embedded mitigation in place.

Demand for Water

12.8.13 No change to the submitted ES. As such, the effect on the River Trent and/ or Stainforth and Keadby Canal remains **not significant** with the embedded mitigation in place.

Foul Water Discharge

12.8.14 No change to the submitted ES. As such, the effect on the River Trent remains **not significant** with the embedded mitigation in place.

Flooding from Tidal Sources during Operation

12.8.15 No change to the Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on tidal or fluvial flood risk is not significant with the embedded mitigation in place.

Flooding from Surface Water Sources during Operation

12.8.16 No change to the Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on surface water flood risk is not significant with the embedded mitigation in place.

Flooding from Ground Water Sources during Operation

12.8.17 No change to the Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on groundwater flood risk is not significant with the embedded mitigation in place.

Flooding from Artificial Sources during Operation

12.8.18 No change to the Additional Submission 6.3.20 Environmental Statement **Appendix 12A**: Flood Risk Assessment [**AS-010**]. As such, the effect on flood risk is not significant with the embedded mitigation in place.

12.8.19 Overall, there is no change to the conclusions of the water environment and flood risk effects of the Proposed Development being **not significant**, as presented in **Chapter 12:** Water Environment and Flood Risk of the ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

Decommissioning

Proposed Development Change 2

12.8.20 No change to the submitted ES. As such, the effect on all receptors is **not significant** with the embedded mitigation in place.

12.9 Additional Mitigation, Monitoring and Enhancement Measures

12.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the additional information/ Proposed Development Changes, above those stated in **Chapter 12**: Water Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

12.10 Limitations or Difficulties of Additional Assessment

12.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in **Chapter 12**: Water Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) [**APP-055**].

12.11 Summary of Updated Likely Significant Residual Effects

12.11.1 There are no changes to the likely residual effects identified in **Chapter 12**: Water Environment and Flood Risk of ES Volume I (Application Document Ref. 6.2.12) [**APP-055**], as a result of the additional information/ Proposed

Development Changes introduced. The residual effects would remain as reported within Section 12.9 of **Chapter 12**: Water Environment and Flood Risk (i.e. not significant).

12.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

DEFRA (2021) *Changes to the regulatory framework for abstraction and impounding licensing in England - Moving into the Environmental Permitting Regulations regime – Consultation Document.*

HMSO (2021) *Environment Act 2021.*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

CONTENTS

TABLES

13.0 ES ADDENDUM: GEOLOGY, HYDROGEOLOGY AND LAND CONTAMINATION

13.1 Introduction

13.1.1 This Chapter provides an addendum to the geology, hydrogeology and land contamination assessment submitted with the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 13:** Geology, Hydrogeology and Land Contamination of the ES Volume I (Application Document Ref. 6.2.13) [**APP-056**];
- **Appendix 13A:** Phase 1 Desk Based Assessment (Application Document Ref. 6.3.23) [**APP-087**];
- **Appendix 13B:** Land Contamination Methodology Table (Application Document Ref. 6.3.24) [**APP-088**]; and
- **Appendix 13C:** Potential Areas of Contamination Further Risk and Impact Assessment (Application Document Ref. 6.3.25) [**APP-089**].

13.1.2 This assessment considers the effects in relation to geology, hydrogeology and land contamination arising from the relevant Proposed Development Changes, as summarised in the sections below.

13.1.3 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

13.1.4 There are no figures accompanying this chapter of the ES Addendum.

13.1.5 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

13.2 Changes in Legislation, Planning Policy and Guidance

13.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets on water quality, biodiversity, resource efficiency and waste reduction, and regulation of chemicals.

13.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed

Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

13.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised.

13.2.4 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021). With regard to geology, hydrogeology and land contamination, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 13**: Geology, Hydrogeology and Land Contamination of the ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

13.3 Proposed Development Changes

13.3.1 Section 2.2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 - 6.2.7 – Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require assessment in this chapter.

13.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for geology, hydrogeology and land contamination at the Proposed Development Site:

- Proposed Development Change 1 - Extension of Waterborne Transport Offloading Area to incorporate Keadby Wharf. This Proposed Development Change is relevant to the assessment of potential construction impacts and effects; and
- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station). This Proposed Development Change is relevant to the assessment of potential construction impacts and effects.

13.3.3 The Proposed Development Changes 1 and 2 have been considered within the revised assessment as they are extensions to the Order Limits. Where the Order Limits have been extended, it is necessary to determine whether any additional potential sources of contamination or receptors within the 250m study area need to be scoped into the assessment.

13.3.4 All other Proposed Development Changes described in ES Addendum Volume I would not alter the assessment of geology, hydrogeology and land contamination effects and, therefore, have not been considered further.

13.4 Relevant Additional Information

13.4.1 No additional information has been sourced since submission of the Application, that is relevant to the assessment of geology, hydrogeology and land contamination.

13.5 Consultation

13.5.1 Consultation on the Proposed Development changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1 - 6.2.7 – Rev 02**).

13.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 13-1.

Table 13-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
North Lincolnshire Council	24 March 2022. Letter reply	Originally it was anticipated that 65,000m^3 of soils may need to be removed and up to 130,000m^3 of soils imported to provide a suitable platform for foundations and buildings/ equipment across the site. This has now increased to 180,000m^3 of soil to be imported. The re-use of excavated materials during construction will be governed by either a Materials Management Plan developed in accordance with relevant guidance including 'The Definition of Waste: Development Industry Code of Practice' (CL:AIRE, 2011), an environmental permit or a relevant exemption. Any imported soil will also need to be suitable for use at the proposed development site.	Noted. Sourcing and importing soil will take into consideration the Construction Code of Practice for the Sustainable Use of Soils on Construction Sites (Department for Environment, Food & Rural Affairs, 2018) as set out within **Application Document Ref. 7.1**: Framework Construction Environmental Management Plan; the most recent version of this (Revision 02) is submitted at Deadline 3 [**REP3-010**].

13.6 Updated Baseline Conditions

Existing Baseline

13.6.1 The existing baseline conditions have been reviewed, particularly whether any potential sources of contamination or receptors are scoped in as a result of the new extensions to the study area around Proposed Development Changes 1 and 2.

13.6.2 Change 1 comprises land within the River Trent, including the river bed on which the largest vessels will temporarily rest, during mooring over a full tide-cycle. Given that this activity is associated with normal use as a port, there are no changes to the baseline conditions as a result of inclusion of this area in the Order Limits. Furthermore, there are no additional potential sources of contamination or receptors identified within the 250m study area.

13.6.3 Change 2 comprises a minor extension to the Order Limits where the extension to the Additional AIL Route crosses the existing Keadby 1 contractor/ outage area carpark. Prior to this recent development for related power station uses, there has been minimal development (with the exception of a possible track around 1967 which is not shown on 1999 aerial imagery). There are no additional potential sources of contamination or receptors identified within the 250m study area.

13.6.4 The Proposed Development Changes 1 and 2 do not alter the existing baseline conditions for Geology, Hydrogeology and Land Contamination as described in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

Future Baseline

13.6.5 The future baseline conditions have not changed as a result of the Proposed Development Changes.

13.7 Changes to Development Design and Impact Avoidance

Construction

13.7.1 No changes as a result of the Proposed Development Changes, above those stated in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

Operation

13.7.2 No changes as a result of the Proposed Development Changes, above those stated in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

13.8 Likely Impacts and Effects

Construction Effects

Proposed Development Changes 1 and 2

13.8.1 The Proposed Development Changes do not change the assessment of geology, hydrogeology and land contamination effects arising during construction as presented in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**]. As such, the effects on human health, controlled waters, property and ecological receptors identified within **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**] are **not significant** with the embedded mitigation in place.

Operation effects

Proposed Development Changes 1 and 2

13.8.2 No changes from the submitted ES. As such, the effect on human health, controlled waters, property and ecological receptors identified within **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**] is not significant with the embedded mitigation in place.

13.8.3 Overall, there is no change to the conclusions of the effects in relation to geology, hydrogeology and land contamination related to the Proposed Development being **not significant**, as presented in **Chapter 13:** Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

Decommissioning

Proposed Development Changes 1 and 2

13.8.4 No changes from the submitted ES. As such, the effect on human health, controlled waters, property and ecological receptors identified within **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**] is **not significant** with the embedded mitigation in place.

Summary

13.8.5 Overall, there is no change to the conclusion to the assessment of geology, hydrogeology and land contamination effects being not significant, as presented in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

13.9 Additional Mitigation, Monitoring and Enhancement Measures

13.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Proposed Development Changes, above those stated in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

13.10 Limitation or Difficulties of Additional Assessment

13.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in **Chapter 13**: Geology, Hydrogeology and Land Contamination of ES Volume I (Application Document Ref. 6.2.13) [**APP-056**].

13.11 Summary of Updated Likely Significant Residual Effects

13.11.1 There are no changes to the likely residual effects identified in **Chapter 13**: Geology, Hydrogeology and Land Contamination (Application Document Ref. 6.2.13) [**APP-056**], as a result of the Proposed Development Changes. The residual effects would remain as reported within Section 13.9 of **Chapter 13**: Geology, Hydrogeology and Land Contamination (i.e. **not significant**).

13.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

HMSO (2021) *Environment Act 2021.*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework*.

CONTENTS

TABLES

14.0 ES ADDENDUM: LANDSCAPE AND VISUAL AMENITY

14.1 Introduction

14.1.1 This Chapter provides an addendum to the landscape and visual amenity assessment submitted with the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 14:** Landscape and Visual Amenity of the ES Volume I (Application Document Ref. 6.2.14) [**APP-057**];
- **Appendix 14A:** Landscape and Visual Impact Assessment Methodology (Application Document Ref. 6.3.26) [**APP-090**];
- **Appendix 14B:** - Potential Viewpoints (Application Document Ref. 6.3.27) [**APP-091**]; and
- **Appendix 14C:** - Landscape Character (Application Document Ref. 6.3.28) [**APP-092**].

14.1.2 This assessment considers the effects on landscape and visual amenity arising from the relevant Additional Information and Proposed Development Changes, as summarised in sections below.

14.1.3 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

14.1.4 Figures accompanying this chapter of the ES Addendum that are referenced within are presented in ES Addendum Volume III and include:

- **Figures 14.1 - 14.5** (**Application Document Ref. 14.4.32 – 14.4.36 – Rev 02**) which provide the landscape context in the light of the Order Limits; and
- to facilitate the reader's interpretation of the Proposed Development Change 3 (increased height of up to two absorbers columns/ stacks) and Change 4 (increased height of CO_2 stripper) new wireline imagery illustrating the Proposed Development is provided as **Figures 14.19 – 14.24** (**Application Document Ref 14.50 – 14.50 – Rev 02**).

14.1.5 An indicative site layout for both the single large absorber (**Figure 4.1a**) and up to two absorbers (**Figure 4.1b**) is provided in **Application Document Ref 6.4.7 – Rev 02** and has been used to inform this ES Addendum Chapter.

14.1.6 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

14.2 Changes in Legislation, Planning Policy and Guidance

14.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as: binding targets on tree felling, air quality/ water quality, biodiversity, and resource efficiency and waste reduction.

14.2.2 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

14.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021 after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback, prior to finalising the revised NPS. Until the reviewed NPS is finalised, the extant NPS remains in place. Based on the NPS changes consulted upon by BEIS, it is considered likely that the Proposed Development will remain in accordance with the approach to be set out in the revised NPS.

14.2.4 There are no notable changes or additions to NPS EN-1, EN-4 or EN-5 with regard to landscape and visual amenity impacts of relevance to the Proposed Development.

14.2.5 Paragraph 2.11.14 adds more guidance to undergrounding of power lines. In the case of undergrounding, to mitigate the potential detrimental effects of undergrounding works on any relevant agricultural land and soils, particularly regarding Best and Most Versatile land. Such a commitment must guarantee appropriate handling of soil, backfilling, and return of the land to the baseline Agricultural Land Classification (ALC), thus ensuring no loss or degradation of agricultural land.

14.2.6 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG, 2021). With regard to landscape and visual amenity, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 14**: Landscape and Visual Amenity of the ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

14.3 Proposed Development Changes

14.3.1 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.

14.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for landscape and visual amenity at the Proposed Development Site:

- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station);
- Proposed Development Change 3 - Increase to the maximum parameters (height) for up to two absorbers/ stacks; and
- Proposed Development Change 4 - Increase to the maximum parameters (height) for carbon dioxide stripper column.

14.3.3 All other Proposed Development Changes described in ES Addendum Volume I would not alter the assessment of landscape and visual amenity effects and, therefore, have not been considered further.

14.4 Relevant Additional Information

14.4.1 Additional information has been gathered by the Applicant, and where relevant, this is presented in this chapter including:

- Updated narrative on the viewpoint photography to describe the amendments to the judgements presented regarding the scale of visual impacts and effects arising from the Proposed Development Changes;
- the production of updated operation phase wirelines and photomontages referenced within; and
- an Arboricultural Impact Assessment, including Tree Survey and Tree Constraints Plan has been produced and this is included in **Application Document Ref. 5.10**: Landscape and Biodiversity Management and Enhancement Plan (LBMEP) – Rev 02 (also updated to address related effects on habitats).

14.5 Consultation

14.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7**).

14.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 14-1.

Table 14-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
North Lincolnshire Council (NLC)	24 March 2022. Response to consultation via letter.	NLC stated that the increase to the maximum heights of the carbon dioxide absorbers/ stacks, if two are installed, and the increase to the maximum heights of the carbon dioxide stripper column will need to be addressed in the Landscape and Visual Impact Assessment.	These represent Proposed Development Changes 3 and 4 which have been addressed within this ES Addendum chapter.

14.6 Updated Baseline Conditions

Existing Baseline

14.6.1 The Proposed Development Changes do not alter the existing baseline conditions for landscape and visual amenity as described in **Chapter 14** of ES Volume I [**APP-057**]. The additional land required for the Additional AIL Route includes an extension to the Order Limits, however this was assessed within the defined study area considered in the submitted ES.

Future Baseline

14.6.2 The future baseline conditions have not changed as a result of the Additional Information.

14.7 Changes to Development Design and Impact Avoidance

Construction

14.7.1 No further design and impact avoidance measures during construction are proposed as a result of the Proposed Development Changes, above those stated in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Operation

14.7.2 No further design and impact avoidance measures during operational are proposed as a result of the Proposed Development Changes, above those stated in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

14.8 Likely Impacts and Effects

Landscape and visual amenity effects

Proposed Development Change 2

Construction

14.8.1 Construction operations associated with the Proposed Development Change would result in limited impacts on vegetation located within the Proposed Development Site. The worst-case removal of 11No. trees and minor losses of scattered scrub are judged to not result in any increase in the magnitude of impacts on site landscape features and landscape characteristics as reported in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP–057**]. It is proposed that any tree

or vegetation loss would be re-provisioned through the updated LBMEP (**Application Document Ref 5.10 - Rev 02**).

14.8.2 There would be no new significant construction effects on landscape and visual amenity receptors as a result of the Proposed Development Change, in comparison with **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Operation

14.8.3 The Proposed Development Change would result in limited impacts on vegetation located within the Proposed Development Site. The replacement of the 11No. trees and minor losses of scattered scrub, as set out in the updated LBMEP (**Application Document Ref 5.10 - Rev 02**), are judged to not result in any increase in the magnitude of impacts on site landscape features and landscape characteristics as reported in **Chapter 14**: Landscape and Visual Amenity of ES Volume 1 (Application Document Ref. 6.2.14) [**APP–057**].

14.8.4 There would be no new significant operational effects on landscape and visual amenity receptors as a result of the Proposed Development Change, in comparison with **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Proposed Development Change 3

Construction

14.8.5 Construction activities including use of cranes and mobile plant associated with the Proposed Development Change would be of a similar scale and nature to the works assessed within the submitted ES and would not change the assessment of construction effects on identified landscape receptors, visual receptors and dynamic views reported in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP–057**].

14.8.6 There would be no new significant construction effects on landscape and visual amenity receptors as a result of the Proposed Development Change, in comparison with **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Operation

14.8.7 The Proposed Development Change would result in an increase of up to 22m in height if the twin absorbers columns/ stacks option was selected and maximum parameters were applied, resulting in a maximum height of up to 98.3m Above Ordnance Datum (AOD).

14.8.8 With reference to **Figure 14.19 - Figure 14.24** which present updated wirelines and photomontages for the twin absorbers, it is judged that the Proposed Development Change would result in a marginal increase in massing of tall structures with no change in the overall nature of views for identified representative viewpoints. It is judged that there would be no increase in the level of impact on receptors in comparison to the single absorber column/ stack (assessed as worst-case scenario) within **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

14.8.9 There would be no change to the level of significance during the operation phase on landscape receptors, visual receptors and dynamic views as a result of the Proposed Development Change in comparison with **Chapter 14:** Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Visible Plumes

14.8.10 It is anticipated that the visibility of the plumes for the twin absorbers columns/ stacks would be similar to the single plume assessed within **Chapter 14:** Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**] with reference to **Appendix 8B:** Air Quality Operational Phase of ES Volume II (Application Document Ref. 6.3.6) [**APP-070**]. An average plume length of less than 4m would be predicted to be visible for up to 3% of the time. Occasional longer plumes are predicted (up to 632m) predicted to occur for less than 1% of the time.

Proposed Development Change 4

Construction

14.8.11 Construction operations including plant and activity associated with the Proposed Development Change would be of a similar scale and nature and would not change the assessment of construction effects on identified landscape receptors, visual receptors and dynamic views reported in **Chapter 14:** Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP–057**].

14.8.12 There would be no new significant construction effects on landscape and visual amenity receptors as a result of the Proposed Development Change, in comparison with **Chapter 14:** Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Operation

14.8.13 The Proposed Development Change would result in an increase of up to 10m in height to the carbon dioxide stripper column resulting in a maximum height for the stripper of up to 65.8m AOD.

14.8.14 Whilst the Proposed Development Change would result in the marginal increase in visibility of this structure, it is judged that the Proposed Development Change would not increase the level of impact on receptors in comparison to the that assessed within **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**], since the stripper is not the largest structure within the Proposed Development.

14.8.15 There would be no change to the level of significance during the operation phase on landscape receptors, visual receptors and dynamic views as a result of the Proposed Development Change in comparison with **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

Decommissioning

Proposed Development Change 3

14.8.16 There are no changes from the submitted ES. As such there are no significant effects as a result of Proposed Development Change 3 during decommissioning.

Proposed Development Change 4

14.8.17 There are no changes from the submitted ES. As such there are no significant effects as a result of Proposed Development Change 4 during decommissioning.

14.9 Additional Mitigation, Monitoring and Enhancement Measures

14.9.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Proposed Development Changes, above those stated in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

14.10 Limitation or Difficulties of Additional Assessment

14.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**].

14.11 Summary of Updated Likely Significant Residual Effects

14.11.1 There are no changes to the likely residual effects identified in **Chapter 14**: Landscape and Visual Amenity of ES Volume I (Application Document Ref. 6.2.14) [**APP-057**], as a result of the Additional Information/ Proposed Development Changes. The residual effects would remain as reported within Section 14.9 of **Chapter 14**: Landscape and Visual Amenity (i.e. significant

effects at the assessed viewpoints - Viewpoint 1 (Chapel Lane West, Keadby), Viewpoint 2 (Gate Keepers Residence, Vazon Bridge, Keadby) and Viewpoint 4 (PRoW (KEAD9, KEAD10) north of Keadby). In addition, in the future baseline operation assessment (Scenario 2) with Keadby 1 Power Station structures removed significant effects at Viewpoint 6 (Trunk Road, Keadby) would occur as a result of the close distance to the Proposed Development Site and lack of intervening vegetation).

14.12 References

BEIS (2021) *Planning for new energy infrastructure: review of energy National Policy Statements*.

HMSO (2021) *Environment Act 2021.*

Ministry of Housing, Communities and Local Government (2021). *National Planning Policy Framework.*

CONTENTS

TABLES

15.0 ES ADDENDUM: CULTURAL HERITAGE

15.1 Introduction

15.1.1 This Chapter provides an addendum to the cultural heritage assessment included within the submitted Environmental Statement (ES) and should be read in conjunction with the following documents submitted with the Development Consent Order (DCO) Application:

- **Chapter 15:** Cultural Heritage of the ES Volume I (Application Document Ref. 6.2.15) [**APP-058**];
- **Appendix 15A:** Cultural Heritage Desk Based Assessment (Application Document Ref. 6.3.29) [**APP-093**];
- **Appendix 15B:** Geoarchaeological Hand Auger Survey Fieldwork Report (Application Document Ref. 6.3.30) [**APP-094**]; and
- **Appendix 15C:** Geophysical Survey Fieldwork Report (Application Document Ref. 6.3.31) [**APP-095**].

15.1.2 This assessment considers the cultural heritage effects arising from the relevant Additional Information and Proposed Development Changes, as summarised in sections below.

15.1.3 This Addendum only considers changes in legislation, baseline conditions or potential effects since the submitted ES was prepared; if no change is listed then conditions are the same as those presented in the submitted ES.

15.1.4 No updated figures accompany this chapter of the ES Addendum. Other figures are referenced within including new wireline imagery illustrating the Proposed Development Change 3 (increased height of up to two absorbers columns/ stacks) and Change 4 (increased height of CO_2 stripper) – these are provided as **Figures 14.19 – 14.24** (**Application Document Ref 14.50 – 14.50 – Rev 02**).

15.1.5 An indicative site layout for both the single large absorber (**Figure 4.1a**) and up to two absorbers (**Figure 4.1b**) is provided in **Application Document Ref 6.4.7 – Rev 02** and has been used to inform this ES Addendum Chapter.

15.1.6 A glossary of terms and list of abbreviations used in this ES Addendum is provided within **Application Document Ref. 10.8**.

15.2 Changes in Legislation, Planning Policy and Guidance

15.2.1 The Environment Act 2021 ('The Act') (Her Majesty's Stationary Office (HMSO) 2021) was given Royal Assent after the submission of the Application and sets out legislation to provide a post-Brexit environmental framework for the United Kingdom. In summary, The Act includes new legislation such as:

binding targets on water quality, biodiversity, resource efficiency and waste reduction, and regulation of chemicals.

15.2.1 The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

15.2.2 Part 7 of the Act provides for the creation of conservation covenants through a conservation covenant agreement between a landowner and a responsible body. No such covenants exist in respect of the Proposed Development. The majority of The Act is not yet in force. The Office for Environmental Protection (OEP) has been brought into effect but is yet to receive its enforcement powers in England that would apply to the Proposed Development. The Applicant will continue to monitor implementation of The Act throughout the course of Examination and will consider the need for changes where they apply to policy or plans and their implementation, during the course of Examination. Until any changes are made, extant legislation and policies remain in force.

15.2.3 Draft revised National Policy Statements (NPS) for energy infrastructure were published by the Department for Business, Energy and Industrial Strategy (BEIS) on 6 September 2021, after submission of the Application. Consultation closed on 29 November 2021 and BEIS is now considering consultation feedback prior to finalising the revised NPS. These do not constitute the relevant NPS (i.e., they do not have effect under Section 104(1) of the 2008 Act) but may potentially be important or relevant matters for consideration, pursuant to Section 104(2)(d). Until the reviewed NPS is finalised, the extant NPS remains in place.

15.2.4 NPS EN-1 maintains the majority of its guidance on the Historic Environment. Paragraph 5.9.13 adds that when assessing cultural heritage, studies will be required to assess the impact of noise, vibration, light as well as indirect impacts, the extent and detail of these studies will be proportionate to the significance of the heritage asset affected.

15.2.5 The National Planning Policy Framework (NPPF) was updated in July 2021 (MHCLG 2021). With regard to cultural heritage, whilst the policy paragraphs have been renumbered, the policy text remains largely unchanged from that reported in **Chapter 15:** Cultural Heritage of the ES Volume I (Application Document Ref. 6.2.15) [**APP-058**]. One additional paragraph was added, paragraph 198; this considers applications to remove or alter historic statues, plaques and memorials. It is not of relevance to this assessment.

15.2.6 The guidance document 'Principles of Cultural Heritage Impact Assessment in the UK' was published in 2021. It is a guide to good practice in cultural heritage impact assessment published jointly by the Institute of Environmental Management and Assessment (IEMA), the Institute of Historic Building Conservation (IHBC) and the Chartered Institute for Archaeologists (CIfA). The document provides guidance on understanding cultural heritage assets and evaluating the consequences of change. It provides a structured methodology for assessing impacts to cultural heritage. Understanding cultural heritage assets is split into three stages: Description, Significance and Importance, and the process of evaluating the consequences of change is also split into three stages: Understanding change, Assessing impact and Weighting the effect. The methodology described aligns with the methodology used in **Chapter 15:** Cultural Heritage of the ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] and no changes are required as a result of this new guidance.

15.3 Proposed Development Changes

15.3.1 Section 2.2 of ES Addendum Volume I (Application Document Ref. 6.2.4) provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development Changes including the rationale for those Proposed Development Changes that are considered to require re-assessment in this chapter.

15.3.2 The following Proposed Development Changes have therefore been considered within the revised assessment for cultural heritage at the Proposed Development Site:

- Proposed Development Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station); and
- Proposed Development Change 3 - Increase to the maximum parameters (height) for up to two absorbers/ stacks.

15.3.3 All other Proposed Development Changes described in ES Addendum Volume I would not alter the assessment of cultural heritage effects and, therefore, have not been considered further.

15.4 Relevant Additional Information

15.4.1 Additional information has been gathered by the Applicant, and where relevant, this is presented in this chapter including:

- the production of updated operation phase wirelines and photomontages referenced within.

15.4.2 The Applicant is in the process of undertaking further on-site archaeological evaluation agreed through a Written Scheme of Investigation with North Lincolnshire Council (NLC). The findings of this ongoing work are not considered Additional Information for the purposes of this ES Addendum; rather results will be submitted into examination, once works are completed.

15.5 Consultation

15.5.1 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of ES Addendum Volume I (**Application Document Ref. 6.2.1-6.2.7**).

15.5.2 A summary of comments raised via the consultation and other technical engagement, is summarised in Table 15-1.

Table 15-1: Consultation responses on Proposed Development Changes

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
North Lincolnshire Council (NLC) (Archaeology)	March 2022 (Technical Engagement for ES Addendum)	Change 2, change to the AIL route, has the potential to impact previously unrecorded archaeological remains of prehistoric to Roman date. NLC advise further archaeological field evaluation is required to assess the heritage significance of the proposed change area; this could be done through adding Change 2 to the scope of the upcoming archaeological trial trenching under the Rule 17 Response for Heritage.	NLC's comments have been noted by the Applicant. NLC responded (to additional information provided by AECOM which comprised information on previous ground disturbance and the proposed construction methodology related to Proposed Development Change 2 to the Additional AIL Route. NLC confirmed (04 April 2022 - Additional Technical Engagement for ES Addendum) that they are satisfied that no archaeological work is required in relation to Proposed Development Change 2.
Historic England		Seek to confirm that regarding Change 1, there will be no increased erosive processes from	Proposed Development Change 1 does not involve any works of development including any

Consultee or Organisation	Date and Nature of Consultation	Summary of Response	How Comments have been addressed in this Chapter of the ES Addendum
		wash and hence no likely increased or new archaeological impacts in channel or bankside. No impacts upon designated heritage assets are anticipated as a result of Change 2, unless the AIL route increases in length, or Change 3 or 4. Change 5 could potentially increase impacts on designated heritage assets if new borrow pits are required or if storage areas/footprints of platforms increase, however neither of these are indicated in the documents.	construction work in the river that would result in any change to the bankside which is an existing structure with piled foundations to bedrock. As an active port, small numbers of vessels do rest on the river bed when moored and the proposed use is considered routine and entirely consistent with current practices at the Wharf as a commercial port facility.

15.6 Updated Baseline Conditions

Existing Baseline

15.6.1 The Proposed Development Changes do not alter the existing baseline conditions for Cultural Heritage as described in **Chapter 15** of ES Volume I [**APP-058**]. The additional land required for the Additional AIL Route is an extension to the Order Limits, however this was assessed within the defined study area considered in the submitted ES.

Future Baseline

15.6.2 The future baseline conditions have not changed as a result of the Proposed Development Changes or Additional Information.

15.7 Changes to Development Design and Impact Avoidance

Construction

15.7.1 No further design and impact avoidance measures during construction are proposed above those stated in **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**.

Operation

15.7.2 No further design and impact avoidance measures during operation as a result of the Proposed Development Changes 2 and 3, above those stated in **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] are considered necessary.

15.8 Likely Impacts and Effects

Construction

Proposed Development Change 2

Below Ground Archaeological Remains

15.8.1 **Chapter 15**: Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] assessed the potential for below ground archaeological remains to be present within the Proposed Development Site boundary, and the potential for those assets to be impacted by the Proposed Development. It also assessed impacts arising through change to the setting of designated and non-designated heritage assets.

15.8.2 The Desk-based Assessment presented in **Appendix 15A** of ES Volume II (Application Document Ref. 6.3.29) [**APP-093**] identified a high potential for encountering previously unrecorded below ground paleoenvironmental

remains and archaeological remains dating to the Roman period. It also identified a medium potential for encountering previously unrecorded below ground archaeological remains dating to the prehistoric and post-medieval periods.

15.8.3 The Proposed Development Change 2 includes incorporating a new section of Additional AIL Route through the Keadby 1 Power Station outage / contractor compound which is outside of the footprint of the Order Limits as assessed in **Chapter 15**: Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**].

15.8.4 The new section of Additional AIL Route passes through land already disturbed by the construction of the Keadby 1 Power Station outage/ contractor compound, as well as an area of previously undisturbed green field.

15.8.5 The indicative construction methodology for the new section of Additional AIL Route comprises installation of an impermeable geotextile separation membrane on top of the existing ground surface, on which the road sub-base would be installed in layers, which the road surface would then be installed above. There would be no below ground impact and as such, there would be **no impact** to below ground archaeological remains.

Built Heritage

15.8.6 There will be no change to the assessment of built heritage assets as a result of Proposed Development Change 2.

Proposed Development Change 3

Below Ground Archaeological Remains

15.8.7 There will be no change to the assessment of below ground archaeological remains as a result of Proposed Development Change 3.

Built Heritage

15.8.8 The Proposed Development Change 3 increases the maximum parameters (height) assessed in **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] for the option of up to two absorbers/ stacks.

15.8.9 The Proposed Development Changes therefore have the potential to affect cultural heritage assets in the following ways:

- Change to the setting of designated and non-designated heritage assets.

15.8.10 The Proposed Development Change has the potential to change the assessed magnitude of impact to built heritage assets. Section 15.3 of **Chapter 15**: Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] defined the Rochdale Envelope used as the basis for assessment. This identified the single absorber and stack option as the worst-case for Cultural Heritage due to its maximum height parameter, which was the greatest of all options considered. Considering the Proposed Development Change, although the single absorber option maximum height parameter is still greater than the maximum height parameter of the option of up to two absorbers/ stacks, the difference between the two parameters is now much reduced. Considering this, alongside the greater width and massing of the option of two absorbers and stacks, the twin absorber option is now considered to represent the assessment worst-case for Cultural Heritage in relation to the potential for impact to designated and non-designated heritage assets through change to their settings.

15.8.11 A review of the impact assessment for all assets within **Chapter 15**: Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] has been undertaken. Updated photomontages have also been produced to demonstrate the Proposed Development Change and these are available as **Figures 14.19 – 14.24** – **Rev 02** in ES Addendum Volume III. No new significant effects to designated and non-designated built heritage assets have been identified as a result of the Proposed Development Change, as no change has been identified to any of the assessed magnitudes of impact as a result of the Proposed Development Change.

15.8.12 The only significant effect identified in **Chapter 15**: Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] as a result of setting, was to the Isle of Axholme Area of Special Historic Landscape Interest (locally designated), asset of high value where a **moderate adverse** effect was identified. This was due to the presence of the Proposed Development in views from within the landscape and through the erection of a permanent security gatehouse and associated parking area off the A18. **Figure 14.25 – Rev 02** in ES Addendum Volume III presents a photomontage demonstrating the Proposed Development Change. The change is considered to be no worse than the worst-case single absorber option that was assessed in the submitted ES. As **Figure 14.25 – Rev 02** demonstrates, the increased massing of up to two absorbers is not as apparent at distance, and in the context of other similar developments in the same view. Therefore the assessed **moderate adverse** effect in the submitted ES remains, in the absence of mitigation.

Operation

Proposed Development Change 2

15.8.13 There are no new or different significant operational effects to cultural heritage as a result of the Proposed Development Change 2, in comparison with **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**].

Proposed Development Change 3

15.8.14 There are no new or different significant operational effects to cultural heritage as a result of the Proposed Development Change 3, in comparison with **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**]. This includes the two future baseline scenarios of; 1) the operation of the Proposed Development in the context of the presence of Keadby 1 and Power Station and Keadby 2 Power Station, and 2) the operation of the Proposed Development in the context of the presence of Keadby 2 Power Station only.

15.8.15 Overall, there is no change to the conclusions of the assessment of effects on cultural heritage of the Proposed Development being not significant, as presented in **Chapter 15**: Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**].

Decommissioning

Proposed Development Change 2.

15.8.16 No changes from the submitted ES. As such there are no significant effects as a result of Proposed Development Change 2 during decommissioning.

Proposed Development Change 3

15.8.17 No changes from the submitted ES. As such there are no significant effects as a result of Proposed Development Change 3 during decommissioning.

15.9 Additional Mitigation, Monitoring and Enhancement Measures

Proposed Development Change 2

Below Ground Archaeological Remains

15.9.1 The proposed construction methodology for the new section of Additional AIL Route would result in no impact to below ground archaeological remains. As such, no additional mitigation measures are required as a result of the Proposed Development Changes.

Proposed Development Change 3

15.9.2 No additional mitigation measures are required as a result of the Proposed Development Changes, above those stated in **Chapter 15:** Cultural Heritage

of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**]. This set out that matters including 'siting, layout, scale and external appearance, including the colour, materials and surface finishes of all new permanent buildings and structures' are proposed to be secured by a requirement of the draft DCO (Application Document Ref. 2.1). It is further noted that the maximum parameters for the gatehouse have been reduced to 4m (Table 3 – ES Addendum Volume I) reflected in the updated elevations plans (Application Document Ref. 4.14) submitted at Deadline 5 – taken together. it is therefore considered that appropriate mitigation measures will be devised to minimise harm to heritage assets through development within their settings through detailed design.

15.10 Limitation or Difficulties of Additional Assessment

15.10.1 The limitations and/ or difficulties related to this chapter of the ES Addendum are consistent with those reported in **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**].

15.11 Summary of Updated Likely Significant Residual Effects

Proposed Development Change 3

Built Heritage

15.11.1 A significant effect on the Isle of Axholme Area of Special Historic Landscape Area has been assessed. **Chapter 15:** Cultural Heritage of ES Volume I (Application Document Ref. 6.2.15) [**APP-058**] included mitigation of the impact to setting caused by the presence of the proposed permanent gatehouse north of the A18. Due to its small size, it is possible to effectively screen the structure in views from the Isle of Axholme Area of Special Historic Landscape Interest, or to provide bespoke design solutions for the cabin to minimise harm. This would reduce the potential impact of the Proposed Development to very low, on this asset of high value, resulting in a residual minor adverse effect, which is **not significant**.

15.12 References

Department for Business, Energy and Industrial Strategy (BEIS) (2021). *Draft revised National Policy Statements*.

Her Majesty's Government. (2021) *The Environment Act 2021*.

Institute of Environmental Management and Assessment (IEMA) (2021) *Principles of Cultural Heritage Impact Assessment. Institute of Environmental Management and Assessment.*

Ministry of Housing, Communities and Local Government (MHCLG) (2021) *Revised National Planning Policy Framework (NPPF). Ministry of Communities, Housing and Local Government*.

CONTENTS

TABLES

19.0 CUMULATIVE AND COMBINED EFFECTS

19.1 Introduction

19.1.1 This chapter provides an addendum to the Cumulative and Combined Effects assessment submitted with the DCO Environmental Statement (ES) and should be read in conjunction with the **Chapter 19:** Cumulative and Combined Effects of the Environmental Statement (ES) Volume I (Application Document Ref. 6.2.19) [**APP-062**] submitted with the Development Consent Order (DCO) application. The scope and methodology applied within this assessment is consistent with that presented within **Chapter 19** ES Volume I (Application Document Ref. 6.2.19) [**APP-062**].

19.1.2 The chapter firstly presents an updated cumulative effects assessment as a result of a review of any new planning or other development consent applications for relevant proposed projects since submission of the submitted **Chapter 19** ES Volume I (Document Ref 6.2) [**APP-062**]. It then presents an update to the cumulative and combined effects assessment as a result of the Proposed Development Changes to Keadby 3 Carbon Capture Power Station; such changes are detailed in **Chapter 4**: The Proposed Development (ES Addendum – **Application Document Ref. 6.2.4 – Rev 02)**.

19.1.3 A review of the Proposed Development Changes has been undertaken by Environmental Impact Assessment (EIA) specialists across all technical assessments presented in Volume I of the ES Addendum. The subsequent sections of this chapter provide an update to the cumulative and combined effects, from these updated assessments and any new planning or other development consent applications, as relevant.

19.1.4 Cumulative and combined effects are defined as follows:

- **Cumulative effects**: these occur when the environmental impacts and effects of the Proposed Development interact with those associated with other planned projects and developments located within a realistic geographical scope where environmental impacts could act together to result in a greater significance of effect on environmental resources and/or receptors; and
- **Combined effects**: these are effects resulting from a single development i.e., of the Proposed Development on any one receptor that may collectively cause and effect /effects of greater significance, on environmental resources and/or receptors.

19.1.5 A summary of the Proposed Development Changes is presented within **Chapter 1** of this ES Addendum **(Document Ref 6.2.1 – Rev 02)**.

19.1.6 The following sections detail how new planning and other development consent applications submitted and the Proposed Design Changes have been considered within each part of the cumulative and combined effects assessment and where they have introduced the potential for new or different likely significant effects from those described within **Chapter 19:** Cumulative and Combined Effects (Document Ref 6.2.19) [**APP-062**].

19.2 Changes in Legislation, Planning Policy and Guidance

19.2.1 There have been no changes to legislation, planning policy or other guidance that are considered relevant to this chapter since the submitted ES.

19.3 Assessment methodology

Assessment of Combined Effects

19.3.1 No changes have been made to the methodology used in the submitted ES.

Assessment of Cumulative effects

19.3.2 No changes have been made to the methodology used in the submitted ES.

Study Area

19.3.3 Minor changes to the study areas for some topics have been made to those used within the submitted ES to take into account the extent of the updated Order Limits. However, the zones of influence (ZOI) used within the submitted ES for relevant technical disciplines have been unchanged. It was analysed whether the ZOI for air quality and visual effects would need to be altered due to the proposed changes to the twin absorbers however it was assessed that this was not required.

Consultation

19.3.4 Consultation on the Proposed Development Changes has been undertaken as described in Section 5 of Volume I (Application Document Ref. 6.2.1-6.2.7). No additional comments from stakeholder regarding cumulative and combined effects have been received.

19.4 Additional 'Other Developments' Cumulative Effects Assessment

19.4.1 In this section, the staged methodology advocated in the PINS Advice Note Seventeen (PINS, 2019a) has been applied as the basis of the approach for considering updates to the list of developments presented in the submitted ES **Chapter 19** (Application Document Ref 6.2.19) [**APP-062**].

19.4.2 Since submission of ES **Chapter 19** (Document Ref 6.2) [**APP-062**], a screening exercise (Stage 1 of the cumulative effects assessment (CEA)) was

revisited to identify any further potential major and other developments and plans within a 15km radius of the Proposed Development Site to create an updated 'initial long list' for consideration within the CEA.

19.4.3 Searches included applications within both the terrestrial and marine environment (applying a 15km study area downstream and upstream). Available information on the new additional schemes identified in the terrestrial environment was obtained; details on these are provided in Table 19-1. The 'Explore marine plans' marine services government website was consulted on 30/03/2022 to search for new marine licensable activities, however no relevant activities were noted that required consideration.

Table 19-1: Identification of additional 'Other Development' for the CEA (Stage 1 updated final long list)

Additional 'Other development' details						Stage 1 (long list)	
ID	**Application reference**	**Applicant for 'other development' and a brief description**	**Distance from the Proposed PCC Site (measured from red line boundary to red line boundary)**	**Status (updated 29.03.22)**	**Tier**	**Within ZOI**	**Progress to Stage 2?**
24	Solar Farm PA/SCR/2021/7	Sirius Planning. Planning permission for a proposed 49.9MW Solar Photovoltaic (PV) Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure (ancillary equipment includes mounting frames, inverters and transformers, embedded substations, deer fencing, set down area, internal service roads and site access).	0.7km west	North Lincolnshire Council planning application. EIA Screening Opinion decision undetermined.	Tier 3	Falls within ZOI for majority of topics scoped into ES.	Yes

Additional 'Other development' details						Stage 1 (long list)	
ID	**Application reference**	**Applicant for 'other development' and a brief description**	**Distance from the Proposed PCC Site (measured from red line boundary to red line boundary)**	**Status (updated 29.03.22)**	**Tier**	**Within ZOI**	**Progress to Stage 2?**
25	Solar Farm PA/SCR/2021/8	Kingdom Energy and Sirius Planning. **Planning permission for a proposed 49.9MW Solar PV Farm on c.76 hectares of agricultural land** north of Chapel Lane with associated infrastructure (ancillary equipment includes mounting frames, inverters and transformers, embedded substations, deer fencing, set down area, internal service roads and site access).	0.15km north	North Lincolnshire Council planning application. EIA Screening Opinion decision undetermined.	Tier 3	**Falls within ZOI for majority of topics scoped into ES.**	Yes

Additional 'Other development' details						Stage 1 (long list)	
ID	**Application reference**	**Applicant for 'other development' and a brief description**	**Distance from the Proposed PCC Site (measured from red line boundary to red line boundary)**	**Status (updated 29.03.22)**	**Tier**	**Within ZOI**	**Progress to Stage 2?**
26	Modular Visitor Centre Road PA/2022/276	Siemens Energy Limited. Planning permission for a temporary (up to ten years) modular visitor centre building.	0.9 km south-east	Application undetermined.	Tier 3	Falls within ZoI for all topics scoped into ES.	No. Scale (0.1ha) and temporary nature of development within existing overflow carpark.

Additional 'Other development' details						Stage 1 (long list)	
ID	**Application reference**	**Applicant for 'other development' and a brief description**	**Distance from the Proposed PCC Site (measured from red line boundary to red line boundary)**	**Status (updated 29.03.22)**	**Tier**	**Within ZOI**	**Progress to Stage 2?**
27	Road services PA/2022/116	Sumner SSAS. Planning permission for roadside services including PFS and Electric Forecourt and ancillary retail, food and drink with access from highway to the west.	3.6km south-west	Application undetermined.	Tier 3	Falls within ZoI for some of topics scoped into ES.	No. The scale of development and distance from Proposed Development Site, no cumulative impacts anticipated.

Additional 'Other development' details						Stage 1 (long list)	
ID	**Application reference**	**Applicant for 'other development' and a brief description**	**Distance from the Proposed PCC Site (measured from red line boundary to red line boundary)**	**Status (updated 29.03.22)**	**Tier**	**Within ZOI**	**Progress to Stage 2?**
28	28 residential dwellings	Mr. Webster (WFW Developments Ltd.) Planning permission to erect 28 residential dwellings with associated access.	1.8km south-east	North Lincolnshire Council planning application. Undetermined.	Tier 3	Falls within ZOI for some of topics scoped into ES.	No. The scale of development and distance from Proposed Development Site, no cumulative impacts anticipated.

Additional 'Other development' details						Stage 1 (long list)	
ID	**Application reference**	**Applicant for 'other development' and a brief description**	**Distance from the Proposed PCC Site (measured from red line boundary to red line boundary)**	**Status (updated 29.03.22)**	**Tier**	**Within ZOI**	**Progress to Stage 2?**
	Industrial warehouse building PA/2020/1510. New internal access road and drainage basin PA/2022/83 (addendum to PA/2020/1510)	Groveport Logistics Ltd. Planning permission to erect an industrial warehouse building for Class B8 Use and addendum to this application for planning permission to create a new internal access road and drainage basin.	2.8km north-east	North Lincolnshire Council planning application. Industrial warehouse building approved 11/03/2021. Addendum to application is undetermined.	Tier 3	Falls within ZOI for some of topics scoped into ES.	No. No significant effects anticipated.

Stage 2: Identify Short List of 'Other Development' for the CEA

19.4.4 Following Stage 1, PINS Advice Note Seventeen (PINS, 2019a) advises that the Applicant should identify, from the long list, a short list of other developments for assessment.

19.4.5 The Stage 1 long list in Table 19-2 showing the additional developments identified since ES **Chapter 19** [**APP-062**] submission has therefore been re-screened based on the ZoI for each of the technical disciplines considered within this ES.

19.4.6 In addition to the ZoI threshold criteria, the geographical and temporal scope of the 'other development' has been considered in relation to the geographical and temporal scope of the Proposed Development (incorporating its Proposed Development Changes), and professional judgement applied to identify the short list of development to be considered further for the CEA (Stage 3 and 4). Information on the 'other developments' within the short list is detailed in Table 19-2.

Table 19-2: Identification of Additional 'Other Development' for the CEA (Stage 2 short list)

ID	Name	Screening for detailed CEA			
		Overlap in temporal scope?	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3/4?**
24	Solar farm PA/SCR/2021/7	Possible – application for planning permission not yet submitted as pending EIA screening opinion request. Potential for overlap in construction periods.	Likely as solar farm located approximately 0.7km from the Proposed Development Site. The development is located beyond the ZOI of most environmental topics, with the exception of Landscape and Visual Amenity and Biodiversity and Nature Conservation in relation to potential air quality effects on statutory designated ecological sites (i.e. within 15km). Although anticipated to be a large-scale development, planning permission has not yet been sought, or granted.	n/a	Yes

ID	Name	Screening for detailed CEA			
		Overlap in temporal scope?	**Scale and nature of development likely to have a significant effect?**	**Other factors**	**Progress to Stage 3/4?**
25	Solar farm PA/SCR/2021/8	Possible – application for planning permission not yet submitted or determined. Potential for overlap in construction periods.	Likely due to distance from the Proposed Development Site (0.2km). The development is located within the ZOI of most environmental topics. Although anticipated to be a large-scale development, planning permission has not yet been sought or granted.	n/a	Yes

19.4.7 On the basis of the above short list, both of the developments identified in Table 19-2 are considered to have the potential to generate significant cumulative effects when considered alongside the Proposed Development (with Proposed Development Changes), by virtue of their nature, proximity to the Proposed Development Site and/ or temporal scope (i.e. the planned timescales for construction and operation):

- ID24 – Solar Farm PA/SCR/2021/7
- ID25 - Solar Farm PA/SCR/2021/8

19.4.8 The locations of the shortlisted developments in relation to the Proposed Development are shown on **Figure 19.2** (ES Addendum Volume III – **Application Document Ref. 6.4.60 – Rev 02**).

19.4.9 These developments have therefore been progressed to Stage 3 and 4 of the CEA and have been assessed in relation to each environmental topic included in the submitted ES (ES Volume I – Application Document Ref. 6.2.19) [**APP-062**], providing that the developments lie within the topic's ZoI, with the exception of Climate Change and Sustainability and Major Accidents and Disasters. The decision to exclude these environmental topics is explained in the submitted ES (ES Volume I – Application Document Ref. 6.2.19) [**APP-062**], noting that the Proposed Development Changes do not affect this decision.

Stage 3: Information Gathering

19.4.10 Following an initial information search on the additional shortlisted developments at Stage 2, a search for more detailed information on such developments was conducted. In line with PINS Advice Note Seventeen (PINS, 2019a), this included searching for and noting the following information, where available:

- development design and location information;
- construction, operation and decommissioning information; and
- any accompanying environmental assessment information detailing baseline data and effects arising from other development.

19.4.11 As discussed in Section 19.4, the information gathered at this stage was wholly using information from the public domain (North Lincolnshire Council website).

19.4.12 Information available for each of the schemes carried forward for CEA is described below:

- ID24 Solar farm (PA/SCR/2021/7) and ID25 Solar farm (PA/SCR/2021/8):
  - As both of these proposals are at very early stages in their development, limited information is available. Their assessments have

been based on the information available on North Lincolnshire Council planning applications portal website (screening opinion requests and site location drawings have been uploaded for both developments) and from knowledge of similar schemes.

Cumulative Effects Assessment (Stage 4)

19.4.13 This section presents the results from the detailed CEA conducted for the two additional developments scoped into the CEA (both Tier 3 developments). Section 19.6 considers in turn each 'scoped in' environmental discipline and assesses whether effects associated with each shortlisted development would be able to interact with the effects associated with the Proposed Development (incorporating its Proposed Development Changes) in a manner that has the ability to generate potentially significant cumulative effects.

Table 19-3: Cumulative Effects Assessment

Air Quality

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Air Quality						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	This scheme is located approximately 0.7km from the Proposed Development Site. It is at an early stage (EIA screening request received). The screening request notes that the 'anticipated construction programme is expected to take 8 months to complete'. The request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap	Other than the mitigation measures already proposed (refer to **Chapter 8**: Air Quality (ES Volume I – Application Document Ref. 6.2.8) and **Chapter 8**: Air Quality (ES Addendum – **Application Document Ref. 6.2.8 – Rev 02**), no further mitigation measures to reduce potential cumulative air quality effects are required within this Application. It will be for the solar farm	No significant residual effects are anticipated, as reported in **Chapter 8**: Air Quality (ES Volume I – Application Document Ref. 6.2.8) and **Chapter 8**: Air Quality (ES Addendum– **Application Document Ref. 6.2.8 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				with the construction of the Proposed Development. The EIA screening request notes that 'construction and operational phases do not include any complex or hazardous works or operations' which 'will not lead to any potential adverse environmental effects', therefore reducing this risk of cumulative air quality effects. Operationally, the screening request suggests the solar farm will 'produce zero emissions when in operation' therefore there is no reasonable likelihood of cumulative air quality effects with the Proposed	development to consider the need for additional construction phase mitigation should that be required, but given the likely works involved in the construction of the solar farm, no significant air quality effects are envisaged.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Development during its operational stage. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. Consequently, the cumulative air quality effects of the projects will be considered in the cumulative assessment for the solar farm.		
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76	This scheme is located 0.2km north of the Proposed Development Site. It is at an early stage	Other than the mitigation measures already proposed (refer to **Chapter 8**: Air Quality (ES	No significant residual effects are anticipated, as reported in **Chapter 8**: Air

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
			hectares of agricultural land north of Chapel Lane with associated infrastructure.	(EIA screening request received). The screening request notes that the 'anticipated construction programme is expected to take 8 months to complete'. The request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development. The EIA screening request notes that 'construction and operational phases do not include any complex or hazardous works or operations' which 'will not lead to any potential	Volume I – Application Document Ref. 6.2.8) and **Chapter 8**: Air Quality (ES Addendum – **Application Document Ref. 6.2.8 – Rev 02**), no further mitigation measures to reduce potential cumulative air quality effects are required within this Application. It will be for the solar farm development to consider the need for additional construction phase mitigation should that be required but given the likely works involved in the construction of the solar farm, no significant air quality effects are envisaged.	Quality (ES Volume I – **Application Document Ref. 6.2.8**) and **Chapter 8**: Air Quality (ES Addendum – **Application Document Ref. 6.2.8 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				adverse environmental effects', therefore reducing this risk of cumulative air quality effects. Operationally, the screening request suggests the solar farm will 'produce zero emissions when in operation' therefore there is no reasonable likelihood of cumulative air quality effects with the Proposed Development during its operational stage. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				application considers the Proposed Development. Consequently, the cumulative air quality effects of the projects will be considered in the cumulative assessment for the solar farm.		

Noise and Vibration

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Noise and Vibration						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development; however, applying a precautionary approach, if an overlap of construction phases were to occur, it would have the potential for significant noise and vibration cumulative effects at local noise sensitive receptors (NSR) which are common to both the	Considering the information available on the potential construction of the solar farm and the residual noise and vibration effects at NSR8 presented in **Chapter 9**: Noise and Vibration (ES Volume I – Application Document Ref. 6.2.9), including **Chapter 9** of this ES Addendum (**Application Document Ref. 6.2.9 – Rev 02**), (up to minor adverse (not significant) on the basis that mitigation is employed such that the	No significant residual effects are anticipated, as reported in **Chapter 9**: Noise and Vibration (ES Volume I – Application Document Ref. 6.2.9) and **Chapter 9**: Noise and Vibration (ES Addendum – **Application Document Ref. 6.2.9 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				scheme and the Proposed Development, in particular, NSR8 – North Pilfrey Farm. It is noted that a noise assessment is proposed to accompany the planning application for the solar farm and it is further noted that NLC Environmental Protection has recommended that A) A Construction Environmental Management Plan be produced to control environmental effects including noise; and B) construction and site clearance operations shall be limited to the	BS 5228 ABC noise limits are met, and the Section 9.5 mitigation guidance is followed), Other than the mitigation measures already proposed that are applicable to NSR8 – North Pilfrey Farm (refer to **Chapter 9**: Noise and Vibration (ES Volume I – Application Document Ref. 6.2.9) and **Chapter 9**: Noise and Vibration (ES Addendum – **Application Document Ref. 6.2.9 – Rev 02**), no further mitigation measures to reduce potential cumulative noise and vibration	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				following days and hours: • 08:00 to 18:00hrs Monday to Friday. • 08:00 to 13:00hrs Saturday. • No construction, demolition or site clearance operations on Sundays or public holidays. The EIA screening request suggests that 'construction and operational phases do not include any complex or hazardous works or operations' which 'will not lead to any potential adverse environmental effects'. This reduces the risk of cumulative noise and	effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required, in particular for NSR8 – North Pilfrey Farm.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				vibration effects with the Proposed Development. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. Consequently, the cumulative noise and vibration effects of the projects will be considered in the cumulative assessment for the solar farm.		
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76	The screening request does not provide a start date for construction,	Considering the information available on the potential construction	No significant residual effects are anticipated, as

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
			hectares of agricultural land north of Chapel Lane with associated infrastructure.	meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development, however, applying a precautionary approach, if an overlap of construction phases were to occur, it would have the potential for significant noise and vibration cumulative effects at local NSR which are common to both the scheme and the Proposed Development; in particular, NSR10 – North Moor Farm. It is noted that a noise assessment is proposed to accompany the planning application for the solar farm and it is further noted	of the solar farm and the residual noise and vibration effects at NSR10 presented in **Chapter 9**: Noise and Vibration (ES Volume I – Application Document Ref. 6.2.9), including **Chapter 9** of this ES Addendum (**Application Document Ref. 6.2.9 – Rev 02**), (up to minor adverse (not significant) on the basis that mitigation is employed such that the BS 5228 ABC noise limits are met, and the Section 9.5 mitigation guidance is followed), Other than the mitigation measures already	reported in **Chapter 9**: Noise and Vibration (ES Volume I – Application Document Ref. 6.2.9) and **Chapter 9**: Noise and Vibration (ES Addendum – **Application Document Ref. 6.2.9 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				that NLC Environmental Protection has recommended that C) A Construction Environmental Management Plan be produced to control environmental effects including noise; and D) construction and site clearance operations shall be limited to the following days and hours: • 08:00 to 18:00hrs Monday to Friday. • 08:00 to 13:00hrs Saturday. • No construction, demolition or site clearance operations	proposed that are applicable to NSR10 – North Moor Farm (refer to **Chapter 9**: Noise and Vibration (ES Volume I – Application Document Ref. 6.2.9) and **Chapter 9**: Noise and Vibration (ES Addendum – **Application Document Ref. 6.2.9 – Rev 02**), no further mitigation measures to reduce potential cumulative noise and vibration effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required in	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				on Sundays or public holidays. The EIA screening request suggests that 'construction and operational phases do not include any complex or hazardous works or operations' which 'will not lead to any potential adverse environmental effects'. This reduces the risk of cumulative noise and vibration effects with the Proposed Development. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this	particular for NSR10 – North Moor Farm.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				application considers the Proposed Development. Consequently, the cumulative noise and vibration effects of the projects will be considered in the cumulative assessment for the solar farm.		

Traffic and Transportation

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Traffic and Transportation						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	Although the EIA screening request notes that 'construction and operational phases do not include any complex or hazardous works or Operations' which 'will not lead to any potential adverse environmental effects', the request anticipates that 'operational and construction access would be to the east of the site', which is in closer proximity to the Proposed Development	Other than the mitigation measures already proposed (refer to **Chapter 10**: Traffic and Transportation (ES Volume I – Application Document Ref. 6.2.10) and **Chapter 10:** Traffic and Transportation (ES Addendum – **Application Document Ref. 6.2.10 – Rev 02**), no further mitigation measures to reduce potential cumulative traffic and transport effects are required within this	No significant residual effects are anticipated, as reported in **Chapter 10**: Traffic and Transport (ES Volume I – Application Document Ref. 6.2.10) and **Chapter 10**: Traffic and Transport (ES Addendum – **Application Document Ref. 6.2.10 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				than the west of the site. There is therefore potential for traffic and transport cumulative effects with the Proposed Development as a result of vehicles moving to and from the solar farm site during construction and operation. This cannot however be confirmed as the screening request does not clarify anticipated dates for construction and operation of this scheme. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO	Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				application. It is therefore a requirement that this application considers the Proposed Development and, in this respect, it is noted that NLC has requested that if a planning application is to be submitted, they would expect it to be accompanied by a Transport Statement, which includes a draft Construction Phase Traffic Management Plan and to be engaged with regarding routing, prior to submission of the application. Consequently, the cumulative traffic and		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				transport effects of the projects will be considered in the cumulative transport assessment for the solar farm.		
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76 hectares of agricultural land north of Chapel Lane with associated infrastructure.	The request anticipates that 'operational and construction access would be shared with North Moor Farm, which connects with the B1392'. The construction and operation of the Proposed Development does not intend to use this road as an access route, therefore reducing the risk of cumulative traffic and transport	Other than the mitigation measures already proposed (refer to **Chapter 10**: Traffic and Transportation (ES Volume I – Application Document Ref. 6.2.10) and **Chapter 10**: Traffic and Transportation (ES Addendum – **Application Document Ref. 6.2.10 – Rev 02**), no further mitigation measures to reduce potential	No significant residual effects are anticipated, as reported in **Chapter 10**: Traffic and Transport (ES Volume I – Application Document Ref. 6.2.10) and **Chapter 10**: Traffic and Transport (ES Addendum – **Application Document Ref. 6.2.10 – Rev 02**). No

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				effects here. The screening request also suggests 'construction and operational phases do not include any complex or hazardous works or operations' which 'will not lead to any potential adverse environmental effects', therefore further reducing the risk of cumulative transport and traffic effects. This cannot however be confirmed as construction details for the solar farm development are not confirmed given that it is at EIA screening request stage.	cumulative traffic and transport effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development and, in this respect, it is noted that NLC has requested that if a planning application is to be submitted, they would expect it to be accompanied by a Transport Statement, which includes a draft Construction Phase Traffic Management Plan. Consequently, the		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				cumulative traffic and transport effects of the projects will be considered in the cumulative assessment for the solar farm.		

Biodiversity and Nature Conservation

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Biodiversity and Nature Conservation						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development; such overlap would have potentially significant cumulative effects on biodiversity and nature conservation. The Proposed Development Site has been chosen to minimise the potential for impacts and effects on notable habitats and species, therefore it is unlikely there will be any	Other than the mitigation measures already proposed (refer to **Chapter 11**: Biodiversity and Nature Conservation (ES Volume I – Application Document Ref. 6.2.11) and **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum – **Application Document Ref. 6.2.11 – Rev 02**), no further mitigation measures to reduce potential cumulative biodiversity	No significant residual effects are anticipated, as reported in **Chapter 11**: Biodiversity and Nature Conservation (ES Volume I – Application Document Ref. 6.2.11) and **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum – **Application Document Ref. 6.2.11 – Rev 02**). No cumulative effects are

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				significant cumulative effects on habitats and species due to the Proposed Development alongside this proposed solar farm. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. Consequently, the cumulative effects on biodiversity and nature conservation of the projects will be considered in the cumulative assessment for the solar farm. In this respect, it is noted that NLC Ecology Officer considers that an EIA is likely to be required from (a	and nature conservation effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required. The EIA screening opinion request notes that a 'comprehensive scheme of mitigation' including 'landscaping and biodiversity enhancements' will be applied.	anticipated, though more information on the design of the solar farm development is required to confirm this. However, the absence of likely pathways for a cumulative environmental effect (e.g., noise or air quality, see above) makes it unlikely that there would pathways for a cumulative biodiversity effect.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				landscape and) an ecological perspective in view of the potential for significant effects related to the Humber Estuary SPA and Ramsar site and the potential displacement of passage and wintering waterbirds from "functionally linked land". It is also noted by the Ecology Officer that the proposal and EIA screening should be considered cumulatively with PA/SCR/2021/8. Natural England similarly considers, on the basis of the material supplied, that there are potential likely significant effects on statutorily designated nature conservation sites and further assessment is required.		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76 hectares of agricultural land north of Chapel Lane with associated infrastructure.	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development; such overlap would have potentially significant cumulative effects on biodiversity and nature conservation. Keadby Warping Drain lies roughly 0.26km north of the Proposed Development Site (south of the proposed solar farm). This means there is potential for cumulative effects on these LWSs as a result of the two developments.	**Chapter 11**: Biodiversity and Nature Conservation (ES Volume I – Application Document Ref. 6.2.11) and **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum – **Application Document Ref. 6.2.11 – Rev 02**), no further mitigation measures to reduce potential cumulative biodiversity and nature conservation effects are required within this Application. It will be for the solar farm development to consider the need for	No significant residual effects are anticipated, as reported in **Chapter 11**: Biodiversity and Nature Conservation (ES Volume I – Application Document Ref. 6.2.11) and **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum – **Application Document Ref. 6.2.11 – Rev 02**). No cumulative effects are anticipated, though more information on the design of the

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				The Proposed Development has considered LWSs and the site has been chosen to minimise the potential for impacts and effects on notable habitats and species. It is therefore unlikely there will be significant cumulative effects on particular habitats and species due to the Proposed Development alongside this proposed solar farm. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. Consequently, the cumulative effects on biodiversity and	additional mitigation should that be required. The EIA screening opinion request notes that a 'comprehensive scheme of mitigation' including 'landscaping and biodiversity enhancements' will be applied.	solar farm development is required to confirm this. However, the absence of likely pathways for a cumulative environmental effect (e.g., noise or air quality, see above) makes it unlikely that there would pathways for a cumulative biodiversity effect.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				nature conservation of the projects will be considered in the cumulative assessment for the solar farm. In this respect, it is noted that NLC Ecology Officer considers that an EIA is likely to be required from (a landscape and) an ecological perspective in view of the potential for significant effects related to the Humber Estuary SPA and Ramsar site and the potential displacement of passage and wintering waterbirds from "functionally linked land". It is also noted by the Ecology Officer that the proposal and EIA screening should be considered cumulatively with PA/SCR/2021/7. Natural England similarly considers, on		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				the basis of the material supplied, that there are potential likely significant effects on statutorily designated nature conservation sites and further assessment is required.		

Water Environment and Flood Risk

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Water Environment and Flood Risk						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development; such overlap would have potentially significant cumulative effects on water environment and flood risk. The Proposed Development Site has been chosen to minimise	Other than the mitigation measures already proposed (refer to **Chapter 12**: Water Environment and Flood Risk (ES Volume I – Application Document Ref. 6.2.12) and **Chapter 12:** Water Environment and Flood Risk (ES Addendum – **Application Document Ref. 6.2.12 – Rev 02**), no further mitigation measures to reduce potential cumulative water and flood risk effects are	No significant residual effects are anticipated, as reported in **Chapter 12**: Water Environment and Flood Risk (ES Volume I – Application Document Ref. 6.2.12) and **Chapter 12**: Water Environment and Flood Risk (ES Addendum – **Application Document ref. 6.2.12 – Rev 02**). No cumulative effects are anticipated, though more information on the design of the solar

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				the potential for impacts and effects on the water environment and flood risk of the area, therefore it is unlikely there will be any significant cumulative effects on water environment and flood risk due to the Proposed Development alongside this proposed solar farm. It is also suggested by NLC that an EIA for this solar farm, on the grounds on Pluvial flood risk and/or SuDS, is not warranted, suggesting the likelihood of the solar farm having significant effects on	required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	farm development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				water environment and flood risk is likely low. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. In this respect, NLC have requested that if a planning application is to be submitted, it should be accompanied by a Flood Risk Assessment and a Drainage Strategy, which should focus on the higher flood risk areas and avoid locating		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				infrastructure at these locations unless mitigation is in place. Consequently, the cumulative water environment and flood risk effects of the solar farm in conjunction with the Proposed Development will be considered in these assessments.		
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76 hectares of agricultural land north of Chapel Lane with	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the	Other than the mitigation measures already proposed (refer to **Chapter 12**: Water Environment and Flood Risk (ES Volume I – Application Document Ref. 6.2.12) and **Chapter**	No significant residual effects are anticipated, as reported in **Chapter 12**: Water Environment and Flood Risk (ES Volume I – Application Document Ref. 6.2.12) and **Chapter 12**: Water

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
			associated infrastructure.	Proposed Development; such overlap would have potentially significant cumulative effects on water environment and flood risk. The Proposed Development Site has been chosen to minimise the potential for impacts and effects on the water environment and flood risk of the area, therefore it is unlikely there will be any significant cumulative effects on water environment and flood risk due to the Proposed Development alongside this proposed solar farm. It is also	**12**: Water Environment and Flood Risk (ES Addendum – **Application Document Ref. 6.2.12 – Rev 02**), no further mitigation measures to reduce potential cumulative water and flood risk effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	Environment and Flood Risk (ES Addendum – **Application Document Ref. 6.2.12 – Rev 02**). No cumulative effects are anticipated, though more information on the design of the solar farm development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				suggested by NLC that an EIA for this solar farm, on the grounds on Pluvial flood risk and/or SuDS, is not warranted, suggesting the likelihood of the solar farm having significant effects on water environment and flood risk is likely low. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. In this respect, NLC have requested that if a		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				planning application is to be submitted, it should be accompanied by a Flood Risk Assessment and a Drainage Strategy, which should focus on the higher flood risk areas and avoid locating infrastructure at these locations unless mitigation is in place. Consequently, the cumulative water environment and flood risk effects of the projects will be considered in the cumulative assessment for the solar farm.		

Geology, Hydrogeology and Land Contamination

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Geology, Hydrogeology and Land Contamination						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development; such overlap would have potentially significant cumulative effects on geology, hydrogeology and land contamination. The Proposed Development Site has been chosen to minimise	Other than the mitigation measures already proposed (refer to **Chapter 13**: Geology, Hydrogeology and Land Contamination (ES Volume I – Application Document Ref. 6.2.13) and **Chapter 13:** Geology, Hydrogeology and Land Contamination (ES Addendum – **Application Document Ref. 6.2.13 – Rev 02**), no further mitigation measures to reduce potential cumulative	No significant residual effects are anticipated, as reported in **Chapter 13**: Geology, Hydrogeology and Land Contamination (ES Volume I – Application Document Ref. 6.2.13) and **Chapter 13**: Geology, Hydrogeology and Land Contamination (ES Addendum – **Application Document Ref. 6.2.13 – Rev 02**). No cumulative effects are anticipated, though

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				the potential for impacts and effects on the geology, hydrogeology and land contamination in the area, therefore it is unlikely there will be any significant cumulative effects on geology, hydrogeology and land contamination due to the Proposed Development alongside this proposed solar farm. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application	effects on geology, hydrogeology and land contamination are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	more information on the design of the solar farm development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				considers the Proposed Development. In this respect, NLC have requested that a Phase 1 land contamination assessment should be submitted as a minimum when considering potentially significant effects of the solar farm Consequently, the cumulative effects of the solar farm in conjunction with the Proposed Development upon geology, hydrogeology and land contamination will be considered in these assessments.		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76 hectares of agricultural land north of Chapel Lane with associated infrastructure.	The screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development; such overlap would have potentially significant cumulative effects on geology, hydrogeology and land contamination in the area. The EIA screening request suggests that 'construction and operational phases do	Other than the mitigation measures already proposed (refer to **Chapter 13**: Geology, Hydrogeology and Land Contamination (ES Volume I – Application Document Ref. 6.2.13) and **Chapter 13:** Geology, Hydrogeology and Land Contamination (ES Addendum – **Application Document Ref. 6.2.13 – Rev 02**), no further mitigation measures to reduce potential cumulative effects on geology, hydrogeology and land contamination are required within this	No significant residual effects are anticipated, as reported in **Chapter 13**: Geology, Hydrogeology and Land Contamination (ES Volume I – Application Document Ref. 6.2.13) and **Chapter 13**: Geology, Hydrogeology and Land Contamination (ES Addendum – **Application Document Ref. 6.2.13 – Rev 02**). No cumulative effects are anticipated, though more information on the design of the solar farm

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				not include any complex or hazardous works or Operations' which 'will not lead to any potential adverse environmental effects'. This reduces the risk of cumulative effects on geology, hydrogeology and land contamination with the Proposed Development. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed	Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Development. In this respect, NLC have requested that a Phase 1 land contamination assessment should be submitted as a minimum when considering potentially significant effects of the solar farm Consequently, the cumulative effects on geology, hydrogeology and land contamination of the projects will be considered in the cumulative assessment for the solar farm.		

Landscape and Visual Amenity

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Landscape and Visual Amenity						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar Photovoltaic (PV) Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	Given the proximity of this solar farm to the Proposed Development Site cumulative landscape and visual effects are likely The potential for cumulative effects is most likely to be felt at landscape and visual receptors towards the west of the Proposed Development Site, such as viewpoints 7 and 12 as described in Figure 14.5 of ES **Chapter 14:** Landscape and Visual	Other than the mitigation measures already proposed (refer to **Chapter 14:** Landscape and Visual Amenity (ES Volume I – Application Document Ref. 6.2.14) and **Chapter 14:** Landscape and Visual Amenity (ES Addendum **– Application Document Ref. 6.2.14 – Rev 02**), no further mitigation measures to reduce potential cumulative landscape and visual effects are	It is likely that significant cumulative effects on landscape and visual receptors including PRoWs and residential receptors to the north of the Proposed Development Site will be felt as a result of the two solar farm developments themselves, though more information on the design of the solar farm development is required to confirm this. However, no significant

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Amenity. NLC Place Planning & Housing officer notes that the solar farm would be 'highly visible' from PRoWs, including the Stainforth-Keadby Canal walking and cycle track. The Public Rights of Way Officer also notes that Public Bridleway 11 passes through the solar farm meaning views from there will likely be altered. Given that the site is surrounded by relatively flat land, it is also anticipated that the Proposed Development (stated in the ES) alongside the solar farm	required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required, in particular, to mitigate the potential cumulative landscape and visual impact at viewpoints 7 and 12 and PRoWs Stainforth-Keadby Canal walking and cycle track and Public Bridleway 11.	cumulative effects with the Proposed Development are expected.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				will impact the general character of the surrounding landscape. Natural England also note that an EIA is likely to be required for the solar farm from a landscape perspective given that it may have 'environmental impacts' on the 'local landscape character'. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Development. In this respect, NLC suggest that if a planning application is to be submitted, landscape and visual impacts and strategy need to be considered in terms of the Landscape Assessment and Guidelines and the Countryside Design Summary, Core Strategy Spatial Objective 10, policies CS5 and CS16, Saved Local Plan Policies LC7 and RD2 and Adopted Landscape Assessment and Guidelines document (SPG5). Consequently,		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				cumulative landscape and visual amenity effects will be considered in these assessments for the proposed solar farm.		
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar Photovoltaic (PV) Farm on c.76 hectares of agricultural land north of Chapel Lane with associated infrastructure.	Given the proximity of this solar farm to the Proposed Development Site cumulative landscape and visual effects are likely during both construction and operation. The potential for cumulative effects is most likely to be felt at landscape and visual receptors towards the north of the Proposed Development Site, such	Other than the mitigation measures already proposed (refer to **Chapter 14:** Landscape and Visual Amenity (ES Volume I – Application Document Ref. 6.2.14) and **Chapter 14:** Landscape and Visual Amenity (ES Addendum – **Application Document Ref. 6.2.14 – Rev 02**), no further mitigation measures to reduce potential cumulative landscape	There is potential for significant cumulative landscape and visual effects on residential and PRoW receptors as a result of the solar farm and Proposed Development (incorporating design changes), though more information on the design of the solar farm development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				as viewpoints 1, 4, 5, 7 and 10 as described in Figure 14,5 of ES **Chapter 14**: Landscape and Visual Amenity. NLC Place Planning & Housing officer notes that the solar farm would be 'highly visible' from some PRoWs. The Public Rights of Way Officer also notes that Public Footpath 9 and Public Bridleway 10, which are both 'strategically important' to the path network in North Lincolnshire, pass through the middle of the site meaning views from them will likely be	and visual effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required, in particular, to mitigate the potential cumulative landscape and visual impact at viewpoints 1, 4, 5, 7 and 10 and PRoWs.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				altered. Given that the site is surrounded by relatively flat land, it is also anticipated that the Proposed Development alongside the solar farm will impact the general character of the surrounding landscape. Natural England note that an EIA is likely to be required for the solar farm from a landscape perspective given that it may have 'environmental impacts' on the 'local landscape character'. The planning application for this proposed scheme has not progressed as far as the		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Proposed Development's DCO application. It is therefore a requirement that this application considers the cumulative effects with the Proposed Development. In this respect, NLC suggest that if a planning application is to be submitted, landscape and visual impacts and strategy need to be considered in terms of the Landscape Assessment and Guidelines and the Countryside Design Summary, Core Strategy Spatial Objective 10, policies CS5 and CS16,		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Saved Local Plan Policies LC7 and RD2 and Adopted Landscape Assessment and Guidelines document (SPG5). Consequently, cumulative landscape and visual amenity effects will be considered in these assessments for the proposed solar farm.		

Cultural Heritage

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Cultural Heritage						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	NLC note that the solar farm has the 'potential for physical and indirect impacts on heritage assets', they do not think an EIA is warranted on these grounds. There are no buildings (including designated and non-designated assets) on the solar farm site. Although the site falls within the ZOI for the Proposed Development, the Scheduled Monument of interest within this ZOI is Keadby Lock which is	Other than the mitigation measures already proposed (refer to **Chapter 15:** Cultural Heritage (ES Volume I – Application Document Ref. 6.2.15) and **Chapter 15**: Cultural Heritage (ES Addendum – **Application Document Ref. 6.2.15 – Rev 02**), no further mitigation measures to reduce potential cumulative effects on cultural heritage are required within this	No significant residual effects are anticipated on below ground assets, as reported in **Chapter 15**: Cultural Heritage (ES Volume I – Application Document Ref. 6.2.15) and **Chapter 15**: Cultural Heritage (ES Addendum – **Application Document Ref. 6.2.15 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				2.5km away from the solar farm site meaning there is unlikely to be any cumulative cultural heritage effects on this designated asset. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. In this respect, it is noted that NLC Historic Environment Record Officer has requested that if a planning application is to be submitted, they	Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				would expect it to be accompanied by a Statement of Heritage Significance, in accordance with NPPF policy 194 and local planning policies, irrespective of whether an EIA is carried out. Consequently, the cumulative effects on cultural heritage of the projects will be considered in the cumulative assessment for the solar farm.		
25	3	Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76	NLC note that the solar farm, has the 'potential for physical and indirect impacts on heritage	Other than the mitigation measures already proposed (refer to **Chapter 15:** Cultural Heritage (ES Volume I –	No significant residual effects are anticipated on below ground assets, as reported in

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
			hectares of agricultural land north of Chapel Lane with associated infrastructure.	assets', they do not think an EIA is warranted on these grounds. There are no buildings (including designated and non-designated assets) on the solar farm site. Although the site falls within the ZOI for the Proposed Development, the Scheduled Monument of interest within this ZOI is Keadby Lock which is 1km away from the solar farm site meaning there is unlikely to be any cumulative cultural heritage effects on this designated asset as a result of the two developments.	Application Document Ref. 6.2.15) and **Chapter 15**: Cultural Heritage (ES Addendum – **Application Document Ref. 6.2.15 – Rev 02**), no further mitigation measures to reduce potential cumulative effects on cultural heritage are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	**Chapter 15**: Cultural Heritage (ES Volume I – Application Document Ref. 6.2.15) and **Chapter 15**: Cultural Heritage (ES Addendum – **Application Document Ref. 6.2.15 – Rev 02**). No cumulative effects are anticipated.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. In this respect, it is noted that NLC Historic Environment Record Officer has requested that if a planning application is to be submitted, they would expect it to be accompanied by a Statement of Heritage Significance, in accordance with NPPF policy 194 and local		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				planning policies, irrespective of whether an EIA is carried out. Consequently, the cumulative effects on cultural heritage of the projects will be considered in the cumulative assessment for the solar farm.		

Socio-economics

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
Socio-economics						
24	3	Solar farm PA/SCR/2021/7	Application is for a 49.9MW Solar PV Farm on c.89 hectares of agricultural land north-west of Scunthorpe with associated infrastructure.	Though the screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development, t the solar farm is unlikely to have cumulative socio-economic effects with the Proposed Development. The solar farm's EIA screening request notes 'whilst the	Other than the mitigation measures already proposed (refer to **Chapter 16:** Socio-Economics (ES Volume I – Application Document Ref. 6.2.16), no further mitigation measures to reduce potential cumulative socio-economic effects are required within this Application. It will be for the solar farm development to consider the need for additional	No significant adverse residual effects are anticipated on, as reported in **Chapter 16**: Socio-economics (ES Volume I – Application Document Ref. 6.2.16) and no cumulative effects are anticipated, though more information on the scope of the solar farm development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				site will measure c.89ha, the construction of and the operational nature of a solar farm is unlikely to significantly affect an area of population due to its remote location' and the scheme is 'for a temporary use' meaning 'such agricultural farming practices will be able to continue following the 40-year operational period'. The request also suggests that 'once operational the solar farm will require only limited maintenance, therefore limited or negligible impacts are anticipated'. This reduces the risk of	mitigation should that be required.	

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				detracting from any maintenance the Proposed Development may require. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. Consequently, the cumulative effects on cultural heritage of the projects will be considered in the cumulative assessment for the solar farm.		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
25		Solar farm PA/SCR/2021/8	Application is for a 49.9MW Solar PV Farm on c.76 hectares of agricultural land north of Chapel Lane with associated infrastructure.	Though the screening request does not provide a start date for construction, meaning it is not possible to determine the likelihood of temporal scope overlap with the construction of the Proposed Development, the solar farm is unlikely to have cumulative socio-economic effects with the Proposed Development the solar farm's EIA screening request notes 'whilst the site will measure c.76ha, the construction of and the operational nature of a solar farm is unlikely to	Other than the mitigation measures already proposed (refer to **Chapter 16:** Socio-Economics (ES Volume I – Application Document Ref. 6.2.16), no further mitigation measures to reduce potential cumulative socio-economic effects are required within this Application. It will be for the solar farm development to consider the need for additional mitigation should that be required.	No significant adverse residual effects are anticipated on, as reported in **Chapter 16**: Socio-economics (ES Volume I – Application Document Ref. 6.2.16) and no cumulative effects are anticipated, though more information on the temporal and spatial scope of the solar farm development is required to confirm this.

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				significantly affect an area of population due to its remote location' and the scheme is 'for a temporary use' meaning 'such agricultural farming practices will be able to continue following the 40 year operational period'. The request also suggests that 'once operational the solar farm will require only limited maintenance, therefore limited or negligible impacts are anticipated'. This reduces the risk of detracting from any maintenance the		

ID	Tier	Application Reference	Applicant for 'other development' and brief description	Assessment of cumulative effect with the Proposed Development (incorporating the design changes)	Proposed mitigation applicable to NSIP including any apportionment	Residual cumulative effect
				Proposed Development may require. The planning application for this proposed scheme has not progressed as far as the Proposed Development's DCO application. It is therefore a requirement that this application considers the Proposed Development. Consequently, the cumulative effects on cultural heritage of the projects will be considered in the cumulative assessment for the solar farm.		

19.5 Updated Cumulative Effects Assessment

19.5.1 The Proposed Changes do not change the cumulative schemes to be considered nor whether they are taken further into the appraisal. Therefore, an updated CEA including only the shortlisted developments from the submitted **Chapter 19:** Cumulative and Combined Effects (ES Volume 1 – Application Document Ref. 6.2.19) [**APP-062**] is not required.

19.6 Impact of all Proposed Development Changes

19.6.1 None of the Proposed Development Changes have produced a significant change to the assessment of cumulative effects included within the submitted ES **Chapter 19**: Cumulative and Combined Effects (ES Volume I – Application Document Ref. 6.2.19) [**APP-062**].

19.7 Updated Combined Effects Assessment

19.7.1 This combined effects assessment looks at those effects that may arise when several different impacts resulting from the Proposed Development Changes have the potential to affect a single receptor.

19.7.2 The ES Addendum Volume I chapters; **Chapter 9**: Noise and Vibration **(Application Document Ref. 6.2.9 – Rev 02)**, **Chapter 11**: Biodiversity and Natural Conservation **(Application Document Ref. 6.2.11 – Rev 02)**, **Chapter 12**: Water Environment and Flood Risk **(Application Document Ref. 6.2.12 – Rev 02)** and **Chapter 15**: Cultural Heritage **(Application Document Ref. 6.2.15 – Rev 02)** in the ES Addendum have identified effects which may occur as result of the Proposed Development Changes, ranging from negligible or minor (**not significant**) to moderate and major (**significant**). Multiple effects upon one or more common receptors could theoretically interact or combine, to result in a combined effect which is more or less significant than the effects individually.

19.7.3 As described in Section 19.3, relevant technical assessments have already considered effects that result from the combination or interaction of different types of impacts on individual receptors. For example, the potential for multiple effects to affect the Humber Estuary SSSI, SAC and Ramsar sites is considered within **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum – **Application Document Ref. 6.2.11 – Rev 02**) and **Chapter 12**: Water Environment and Flood Risk (ES Addendum – **Application Document Ref. 6.2.12 – Rev 02**). Any effects arising from the interaction of impacts on individual receptors which have already been assessed within the technical assessments are not repeated here. This section considers only those combined effects which have not been identified elsewhere within the technical assessments. As such, this chapter considers only the potential combined effects on human receptors. Socio-economics was included within the combined effects study within the submitted ES and has since been scoped out

of the ES addendum. The effects from the submitted **Chapter 16**: Socio-economics (Application Document Ref. 6.2.16) [**APP-059**] have therefore been considered within the combined effects study in this ES addendum chapter.

19.7.4 When considering combined effects, the mitigation measures as set out in **Chapters 8 to 16** (ES Addendum Volume I – **Application Document Ref.6.2.8 – 6.2.16 – Rev 02**) (including embedded mitigation measures built into the Proposed Development's design and measures embedded in the Framework CEMP (Application Document Ref. 7.1) must be taken into account. Therefore, only residual effects (post-mitigation) are considered.

19.7.5 In assessing potential combined effects, human receptors experiencing effects of minor or greater magnitude have been considered. The types of impacts that could be experienced by these receptors and which may interact are noise, air quality, traffic and transport, visual and socio-economic effects, during construction noise, air quality, visual and socio-economic effects during operation.

19.7.6 Mitigation of any combined effects identified is best achieved through management and control measures employed to prevent or reduce the individual effects in the first instance, thereby reducing the likelihood of the effects interacting and combining.

19.7.7 The following sections provide a qualitative assessment of the potential for combined effects of the Proposed Development Changes to arise during construction and operation, following a review of **Chapters 6** (ES Addendum Volume I – **Application Document Ref 6.2.6 – Rev 02**).

19.8 Receptors considered for combined effects

Table 19-4 Receptors assessed for potential for Significant Combined Effects for all Proposed Development Changes (Construction and Operation)

Receptor	Receptor	Value/ sensitivity
NSR1 **Viewpoint 2** **CDR1**	Vazon Bridge	High
NSR1A	Roe Farm	High
NSR2 **Viewpoint 1** **CDR2**	Hawthorne House	High
NSR3	Keadby Village	High
NSR4 **CDR10 (Trentside Keadby)**	Mariners Arms Flats Blacksmiths Cottage	High

Receptor	Receptor	Value/ sensitivity
NSR5	Trent Side	High
NSR6	Queens Crescent	High
NSR7	Keadby Grange	High
NSR8 **CDR15**	North Pilfrey Farm	High
NSR9 **Viewpoint 7**	Ealand Poultry Farm	High
NSR10	North Moor Farm	High
NSR11 **CDR11**	South Pilfrey Farm	High

19.9 Impact of all Proposed Development Changes

19.9.1 No changes have been identified that alter the combined effects of the Proposed Development assessed within the submitted ES as a result of the addition of any of the Proposed Design Changes.

19.10 Limitations or Difficulties

19.10.1 The addendum to the cumulative assessment is based on information available at the time of the assessment regarding the environmental effects of the other potential or committed schemes in the vicinity of the Proposed Development Site, and the Proposed Development Changes, that have been scoped into the assessment.

19.10.2 Any new limitations that were encountered during the individual technical assessments are detailed within **Chapters 8-18** of this ES (ES Volume I – **Application Document Ref. 6.2**).

19.11 Summary of Likely Significant Residual Effects

19.11.1 The assessment of combined effects has considered the potential for the effects of minor significance and identified within each of the technical assessments reported within **Chapters 8 to 18** (ES Volume I – **Application Document Ref. 6.2**), to interact and combine to affect common receptors, and has concluded that there would be no new significant combined effects during either construction or operation as a result of the Proposed Development Changes. If all of the Proposed Development Changes (or either option for single or twin absorbers) were to be implemented the effects would remain the same.

19.11.2 The assessment of cumulative effects has considered other developments within 15 km of the Proposed PCC Site where planning applications have been put in since submission of ES **Chapter 19** (Application Document Ref 6.2)

[**APP-062**] (identifying 2 developments for consideration at Stage 1 in the long list with both of these progressing to the shortlist of developments). Both developments were shortlisted given their large scale and their close proximity to the Proposed Development Site.

19.11.3 Both schemes were then taken forward into assessment at Stages 3 and 4; and the potential for cumulative effects to arise, from one or both of these developments in combination with the Proposed Development (incorporating its design changes) has been assessed qualitatively using information available in the public domain.

19.11.4 The assessment has concluded that based on the currently available information, there is likely potential for significant cumulative landscape and visual effects, but not likely potential for significant cumulative effects with the remaining ES topics. However, available information is limited at this early stage of the development of these other projects. As such, the onus will be on the other respective schemes to consider any potentially significant combined effects with this Proposed Development (and associated design changes), taking into account information in this ES which will be in the public domain.

19.11.5 The assessment of cumulative effects then went on to consider whether there would be any significant changes to the cumulative effects discussed in the submitted ES **Chapter 19** between the Proposed Development and the shortlisted developments, given the Proposed Development Changes. The assessment has concluded that based on the currently available information significant cumulative effects are still considered unlikely notwithstanding the Proposed Development Changes. However, available information is limited at this early stage of the development of these other projects. As such, the onus will be on the other respective NSIP projects to consider any potentially significant combined effects with this Proposed Development, taking into account information in this ES which will be in the public domain.

CONTENTS

20.0 ES ADDENDUM: SUMMARY OF LIKELY SIGNIFICANT RESIDUAL EFFECTS

20.1 Introduction

20.1.1 This Chapter provides an addendum to the Summary of Likely Significant Residual Effects assessment included with the submitted Environmental Statement (ES) (**Chapter 20:** Summary of Likely Significant Residual Effects (Application Document Ref. 6.2.20) [**APP-063**]). The chapter draws upon Chapters 8 to 15 and Chapter 19 of this ES Addendum which have considered the potential environmental impacts and effects of the Proposed Development Changes set out in ES Addendum Volume I (**Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**).

20.1.2 The likely significant residual environmental effects of the Proposed Development, including Proposed Development Changes, have been identified following implementation of the embedded mitigation or impact avoidance measures included in the design of the Proposed Development (as detailed in Chapters 8 to 19 (ES Volume I - Application Document Ref. 6.2), where relevant) and referenced within Chapters 8 – 19 of this ES Addendum.

20.1.3 This chapter provides a summary of any new adverse and beneficial environmental effects that are considered to be significant (i.e. moderate and major effects) that change the findings in the submitted ES. As outlined in **Chapter 2**: Assessment Methodology (ES Volume I - **Application Document Ref. 6.2.2** – Rev 02), for the purposes of this EIA Addendum and the submitted ES, an effect is considered to be 'significant' if it is assessed to be moderate (adverse or beneficial) or major (adverse or beneficial).

20.1.4 This Chapter accompanies, and should be read in conjunction with the following Appendix of the submitted ES, which is unchanged by the findings of the ES Addendum:

- **Appendix 20A:** Schedule of Commitments (Application Document Ref. 6.3.34) [**APP-098**].

20.2 Likely Significant Residual Effects

Construction, Operation and Decommissioning Effects

20.2.1 The Proposed Development Changes do not change the likely significant residual effects identified in the following chapters/ or where otherwise identified in Application documents. In each case, the likely significant residual effects reported within Table 20.1 of **Chapter 20:** Summary of Likely

Significant Residual Effects (Application Document Ref. 6.2.20) remain unchanged (i.e. **not significant**):

- **Chapter 8**: Air Quality (Application Document Ref. 6.2.8) [**APP-051**];
- **Chapter 9**: Noise and Vibration (Application Document Ref. 6.2.9) [**APP-052**];
- **Chapter 10**: Traffic and Transportation (Application Document Ref. 6.2.10) [**APP-053**];
- **Chapter 11**: Biodiversity and Nature Conservation (Application Document Ref. 6.2.11) [**APP-054**];
- **Chapter 12**: Water Environment and Flood Risk (Application Document Ref. 6.2.12) [**APP-055**];
- **Chapter 13**: Geology, Hydrogeology and Land Contamination (Application Document Ref. 6.2.13) [**APP-056**];
- **Chapter 15**: Cultural Heritage (Application Document Ref. 6.2.15 [**APP-058**];
- **Chapter 17**: Climate Change and Sustainability (Application Document Ref. 6.2.17) [**APP-060**];
- **Chapter 18**: Major Accidents and Disasters (Application Document Ref. 6.2.18) [**APP-061**];
- **Chapter 19**: Cumulative and Combined Effects (Application Document Ref. 6.2.19) [**APP-062**]; and
- **OD-003**: Waste Technical Note - Pending formal acceptance by the Examining Authority once appointed.

20.2.2 The Proposed Development Changes do not change the likely significant residual effects identified in the following chapters and in each case, the likely significant residual effects would remain as reported within Table 20.1 of **Chapter 20:** Summary of Likely Significant Residual Effects (Application Document Ref. 6.2.20) (i.e., **significant** where reported):

- **Chapter 14**: Landscape and Visual Amenity of the submitted ES (Application Document Ref. 6.2.14) [**APP-057**] – adverse visual amenity effects for residents at Viewpoint 1 (Chapel Lane West, Keadby), Viewpoint 2 (Gate Keepers Residence, Vazon Bridge, Keadby) and users of the canal and towpath at viewpoint 2 and users at viewpoint 4 (PRoW KEAD9, KEAD10 north of Keadby) during construction/ decommissioning, opening and operation activities (Scenario 1 and 2) and at viewpoint 6 (Trunk Road, Keadby) Operation (scenario 2 - with Keadby 1 Power Structures removed); and

- **Chapter 16**: Socio-economics (Application Document Ref. 6.2.16) [**APP-059**] – major beneficial effect of direct, indirect and induced employment created by the construction phase of the Proposed Development on the Scunthorpe Travel to Work Area (TTWA) and associated economy.

20.3 Additional Mitigation, Monitoring and Enhancement Measures

20.3.1 No additional mitigation/ monitoring or enhancement measures are required as a result of the Additional Information/ Proposed Development Changes, above those stated in submitted ES **Chapter 20**: Summary of Likely Significant Residual Effects (Application Document Ref. 6.2.20) [**APP-063**] and set out in **Appendix 20A:** Schedule of Commitments (Application Document Ref. 6.3.34) [**APP-098**].

KEADBY 3
CARBON CAPTURE
POWER STATION

A collaboration between **SSE Thermal** and **Equinor**

Document Ref: 6.3.6

Planning Inspectorate Ref: EN010114

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Environmental Statement Addendum Volume II – Appendix 8B: Air Quality Operational Phase

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

Date: April 2022

DOCUMENT HISTORY

Document Ref	6.3.6 - ES Addendum Volume II - Appendix 8B
Revision	2.0
Document Owner	AECOM

GLOSSARY

Abbreviation	Description
ADMS	Atmospheric Dispersion Modelling System
AOD	Above Ordnance Datum
AQAL	Air Quality Assessment Levels
BAT	Best Available Techniques
BAT-AEL	Best Available Techniques
CCGT	Combined Cycle Gas Turbine
HRA	Habitats Regulations Assessment
IED	Industrial Emissions Directive
LCP	Large Combustion Plant
LWS	Local Wildlife Site
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest

CONTENTS

TABLES

1.0 INTRODUCTION

1.1 Overview

1.1.1 This Technical Appendix supports **Chapter 8**: Air Quality (ES Addendum Volume II – **Application Document Ref. 6.2.8 – Rev 02**) and describes the additional details for the dispersion modelling carried out as a result of Proposed Development Change 3 and considers the relevant Additional Information, detailed in **Chapter 8**.

1.1.2 The dispersion modelling assessment of the emissions from the up to two absorbers/ stacks option has been revised to ensure that the worst-case impacts have been assessed and considered in this ES Addendum.

1.1.3 The general dispersion modelling methodology, the receptors and the baseline conditions (except the baseline at receptor OE1-5) remain as described in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**], and therefore have not been detailed in this appendix.

2.0 SCOPE

2.1 Combustion plant and carbon capture emissions

2.1.1 The assessment has considered the impact of the process emissions from Proposed Development Change 3 (increased maximum parameters for up to two absorbers/ stacks) on local air quality, under normal operating conditions, as described in the **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**]. The up to two absorbers/ stacks have been remodelled based on revised design data provided by the relevant licensor.

2.1.2 In terms of the air quality impacts, the worst-case model inputs are associated with the minimum absorber and stack heights, as the lowest stack heights result in the poorest dispersion of the emission, and therefore higher predicted process contributions (PC).

2.2 Combined and Cumulative Impacts and Effects

2.2.1 The assessment presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (**Document Ref. 6.3.6**) considered the cumulative impacts of the operation of North Lincolnshire Green Energy Park (PINS Ref. EN010116), however at the time of writing there was no information available on the emissions from the Energy Park, and it was concluded that the cumulative effects of the Proposed Development would need to be considered in the cumulative assessment for North Lincolnshire Green Energy Park. The DCO application for the Energy Park was submitted to the Planning Inspectorate on 21 March 2022 and is at acceptance stage, although no application documents are published at the time of writing. As such, it remains the case that the Energy Park should consider emissions from the Proposed Development in its cumulative assessment, and as such no cumulative impact assessment has been carried out for this ES Addendum in relation to the Energy Park.

2.3 Sources of information

2.3.1 The information that has been used within this assessment includes:

- **Chapter 4**: Proposed Development (ES Addendum Volume I – **Application Document Ref. 6.2.1 – 6.2.7 – Rev 02**);
- data on emissions to atmosphere from the process, taken from Industrial Emissions Directive (IED) 2010/75/EU limits, BAT-associated emission **levels (**BAT-AEL) values and data provided by the relevant carbon capture plant (CCP) licensor;
- details on the Proposed Development Site layout;
- Ordnance Survey mapping;
- baseline air quality data from the Additional Information; and

- meteorological data supplied by ADM Ltd.

3.0 METHODOLOGY

3.1 Dispersion model selection

3.1.1 The assessment of emissions resulting from Proposed Development Change 3 has been undertaken using the advanced dispersion model ADMS (version V5.2.2), supplied by Cambridge Environmental Research Consultants Limited (CERC).

3.2 Modelled scenarios

3.2.1 The dispersion modelling undertaken for the assessment of emissions from the operational Proposed Development incorporating Proposed Development Change 3 includes modelling of maximum ground-level impacts at the lowest release heights for an alternative licensor's twin stack option for the Proposed Development's main CCP absorber units (with two absorbers of 65.3m above ordnance datum (mAOD) and two stacks of 77mAOD).

3.2.2 It is understood that these are the minimum heights that could be built for up to two absorber towers/ stacks, and it is considered that should the height of the absorber towers be greater than assessed, the stack heights would be increased proportionately, so as to ensure that the downwash effects of the absorber buildings would not be increased. A similar, or lower level of predicted impact would therefore be achieved for higher absorbers/ stacks to those presented in this assessment.

3.3 Model inputs

3.3.1 The general model conditions used in the assessment are as reported in the **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**]. Any changes to the inputs for the ES Addendum are summarised in Table 1.

Table 1: General ADMS 5 model inputs

Variable	Input
Sources	2 x CCP Absorber Stacks for the Proposed Development.
Buildings that may cause building downwash effects	Proposed Development two CCP absorber towers.

3.4 Emissions data

3.4.1 The main reported emissions for the Proposed Development Change 3 have been modelled based on two CCP absorber stacks. The stacks have been modelled at a height of 77mAOD. It is considered that 77mAOD is the appropriate stack height that would result in not significant effects at human

health receptors and would limit the potential for significant effects reported at ecological receptors, based on an absorber height of 65.3mAOD. The physical properties of the assessed emission sources are shown in Table 2.

Table 2: Emissions inventory

Parameter	Unit	Proposed Development CCP absorber stacks (each stack)
Stack position	(NGR) m	482104, 412084[1] 481820, 412158 481799, 411884 482213, 411884
Stack release height (AGL)	m	75
Effective internal stack diameter	m	5.4
Flue temperature	°C	64
Flue H_2O content	%	7.7
Flue O_2 content (dry)	%	11.1
Stack gas exit velocity	m/s	20.6
Stack flow (actual)	Am^3/s	526.9
Stack flow at reference conditions (STP, dry, 15% O_2)	Nm^3/s	471.6

[1] In line with the Rochdale Envelope approach, the layout is subject to change and therefore the modelling carried out has considered a range of stack locations within the Main Site (Proposed PCC Site), with the worst-case results being reported.

3.4.2 The modelled pollutant emission rates (in grams per second (g/s)) have been calculated by multiplying the emission concentration by the volumetric flow rate at normalised reference conditions. The emission limits assumed to apply to the Proposed Development are shown in Table 3.

Table 3: Emission concentrations and the assessed emission rates

Pollutant	Proposed Development CCP absorber stacks (per stack)	
	Emission concentration (mg/Nm^3)	Emission rate (g/s)
Oxides of Nitrogen (NO_x (as NO_2)) (annual average)	30	15.8
Oxides of Nitrogen (NO_x (as NO_2)) (daily average)	40	21.1
Carbon Monoxide (CO)	100	52.7

Pollutant	Proposed Development CCP absorber stacks (per stack)	
	Emission concentration (mg/Nm^3)	Emission rate (g/s)
Ammonia (NH_3)	1.0	0.53
Amines	0.4	0.21
Acetaldehyde	4.0	2.1
Formaldehyde	2.0	1.1
Ketones	5.0	2.6

3.5 Building downwash effects

3.5.1 The absorber buildings associated with Proposed Development Change 3 are circular, rather than the rectangular single large absorber that was assessed in **Chapter 8**: Air Quality (ES Volume I – **Application Document Ref. 6.2.8**).

3.5.2 The modelled locations are shown in Table 4 and a plan showing the building layout used in the ADMS simulation is illustrated in **Figure 8.1** (ES Addendum Volume III – **Application Document Ref. 6.4.9**).

Table 4: Changes to the Buildings incorporated into the ADMS model

Building	Building centre grid reference (x, y)	Height (m)	Diameter (m)
Proposed Development Absorber 1	481967, 411900	63.3	19.0
Proposed Development Absorber 2	481967, 411950	63.3	19.0

4.0 BASELINE AIR QUALITY

4.1 Additional Information

4.1.1 The additional information detailed in the Keadby 2 – Ambient NOx, NO_2 and NH_3 Monitoring Report (ERM 2021) changes the baseline conditions for Air Quality described in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

4.1.2 The monitoring carried out on behalf of the Applicant during 2020 – 2021 has been reviewed. Monitoring was carried out at several locations within the vicinity of the Proposed Development, with location DT1 being representative of the Humber Estuary ecological receptor (OE1-5). The monitoring indicated slightly higher concentrations for background NOx and NH_3 at this location, than were described in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

4.1.3 The background concentrations used in **Appendix 8B** ES Volume II (Document Ref. 6.3.6) [**APP-070**] and the baseline concentrations provided by the additional information are compared in Table 5. The modelled PC from the Keadby 2 Power Station (shown in parenthesis) have been added to the new baseline concentrations from the Additional Information, to provide modified background concentrations in line with the methodology described in **Appendix 8B** ES Volume II (Document Ref. 6.3.6) [**APP-070**].

Table 5: Comparison of Baseline Data at Humber Estuary – Receptor OE1-5

Pollutant	Original Baseline, (includes contribution from Keadby 2 Power Station) (µg/m³)	Additional Information Baseline at DT1 (µg/m³)	Additional Information Baseline with contribution from Keadby 2 Power Station
Annual average NOx	13.7	13.1	(0.7) 13.8
Annual average NH_3	2.4	3.1	(0.08) 3.2

4.1.4 The background concentrations at all other ecological receptors remain unchanged as a result of the Additional Information.

5.0 OPERATIONAL EMISSIONS MODELLING RESULTS

5.1 Human Health Receptor Results

5.1.1 The human health results were presented in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**] as the maximum impacts that occurred anywhere, regardless of whether this was at a discrete receptor location. The assessment results were based on the large single absorber layout, as this led to the highest maximum predicted PC.

5.1.2 The larger size of the single absorber building leads to greater downwash of the plume, resulting in higher ground level concentrations of pollutants closer to the stack, and hence the maximum predicted PC. The Proposed Development Change 3 (up to two absorbers/ stacks) assessed have reduced downwash, due to their smaller dimensions and circular shape, and therefore the maximum impacts from the twin absorber scenario are lower than those that were reported in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**].

5.1.3 The outcome of the assessment presented in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**] concluded that impacts of all pollutant species released from the operational Proposed Development were **not significant** at the maximum location, and therefore subsequently, at all receptors within the study area.

5.1.4 As such, the maximum worst-case results at human health receptors do not change from those reported in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**] as a result of the up to two absorbers/ stacks option.

5.2 Ecological Receptor Results

5.2.1 Due to the reduced downwash of the Proposed Development Change 3 absorbers, the entrained pollutants within the plumes travel further from the stacks than for the single large absorber scenario. Impacts at the ecological receptors (which are further from the stacks), therefore show a slight increase over those presented in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**] and **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

5.2.2 The results of the dispersion modelling of predicted impacts on sensitive ecological receptors are presented in Table 6 to Table 9. The tables set out the predicted PC compared to the atmospheric concentrations of NO_x and NH_3 and also nutrient nitrogen and acid deposition.

5.2.3 The background data for OE1-5 uses the new baseline data from the Additional Information for NOx and NH_3, as discussed in Table 5 above.

Oxides of nitrogen emissions – Critical Levels

5.2.4 The Proposed Development Change 3 results show that the predicted annual average and daily average NO_x impacts slightly increase at the majority of receptors, although results at some receptors remain unchanged.

5.2.5 At most sites where an increase occurs, the annual average PC increase is limited to only 0.01 – 0.03µg/m^3, however the largest increase is seen at receptor OE1-5, with an increase in the annual average PC of 0.49µg/m^3. This equates to a 1.6% increase in the PC compared to the annual average critical level at this site. That said, the predicted environmental concentration (PEC) remains well below the 70% critical level threshold (at 49%) and therefore the impacts remain insignificant.

5.2.6 The PEC at all other sites are also less than 70% of the critical level threshold for insignificance, for annual average NOx, in line with the results presented in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**] and **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

5.2.7 No exceedances of the annual critical level are predicted.

5.2.8 Again, the daily critical level shows slight increases at the majority of sites, however the PC remain below the 10% screening threshold for insignificance at all the statutory designated sites, except for the Humber Estuary (OE1-5), as the results presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

5.2.9 In combination with the background concentration at the Humber Estuary, the impacts are 43%, an increase of 2.4% of the daily critical level from the results presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**]. The PEC of 43% indicates that no exceedance of the daily critical level is predicted.

5.2.10 Similar to the results presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**], four of the local wildlife sites (LWS) have impacts over the 10% daily critical level, however again with the background concentrations taken into account, the impacts are well below the daily critical level at all these sites, and therefore no exceedance of the daily critical level is predicted at any non-statutory nature conservation site.

5.2.11 The conclusions of the assessment presented in in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**] with regards to NOx Critical Levels remain unchanged.

Table 6: NOx Dispersion modelling results for ecological receptors

Receptor		Annual average (µg/m^3)						Daily average (µg/m^3)					
		CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL	CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL
OE1-5	Humber Estuary Ramsar/ SAC/ SSSI	30	0.95	3.2%	13.8	14.75	49%	75	11.7	16%	20.7	32.38	43%
OE6	Crowle Borrow Pits SSSI		0.14	0.5%	13.3	13.40	45%		7.2	10%	19.9	27.08	36%
OE7	Hatfield Chase Ditches SSSI		0.11	0.4%	13.3	13.37	45%		5.8	8%	19.9	25.72	34%
OE8	Eastoft Meadow SSSI		0.11	0.4%	11.0	11.15	37%		3.1	4%	16.6	19.68	26%
OE9	Belshaw SSSI		0.06	0.2%	10.9	10.93	36%		1.6	2%	16.3	17.9	24%
OE10	Thorne Moor SAC		0.06	0.2%	11.2	11.27	38%		2.2	3%	16.8	19.0	25%
OE11	Epworth Turbary SSSI		0.05	0.2%	10.7	10.73	36%		1.2	2%	16.0	17.2	23%
OE12	Risby Warren SSSI		0.13	0.4%	14.8	14.95	50%		1.3	2%	22.2	23.6	31%

Receptor		Annual average (µg/m^3)						Daily average (µg/m^3)					
		CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL	CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL
OE13	Hatfield Moor SAC		0.04	0.1%	11.7	11.79	39%		1.9	3%	17.6	19.6	26%
OE14	Messingham Heath SSSI		0.08	0.3%	11.1	11.13	37%		1.9	3%	16.6	18.5	25%
OE15	Tuetoes Hills SSSI		0.09	0.3%	10.4	10.48	35%		2.4	3%	15.6	18.0	24%
OE16	Haxey Turbary SSSI		0.04	0.1%	10.6	10.63	35%		1.0	1%	15.9	16.9	23%
OE17	Rush Furlong SSSI		0.05	0.2%	10.4	10.42	35%		1.4	2%	15.6	17.0	23%
OE18	Hewsons Field SSSI		0.05	0.2%	10.5	10.58	35%		1.1	1%	15.8	16.9	22%
OE19	Messingham Sand Quarry SSSI		0.06	0.2%	12.3	12.39	41%		1.2	2%	18.5	19.7	26%
OE20	Manton and Twigmoor SSSI		0.08	0.3%	12.1	12.13	40%		2.4	3%	18.1	20.5	27%
OE21	Scotton and Laughton		0.09	0.3%	10.6	10.66	36%		3.2	4%	15.9	19.0	25%

Receptor		Annual average (µg/m^3)						Daily average (µg/m^3)					
		CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL	CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL
	Forest Ponds SSSI												
OE22	Broughton Far Wood SSSI		0.12	0.4%	13.5	13.63	45%		1.2	2%	20.3	21.4	29%
OE23	Broughton Alder Wood SSSI		0.12	0.4%	13.6	13.70	46%		1.1	1%	20.4	21.4	29%
OE24	Scotton Beck Fields SSSI		0.07	0.2%	11.0	11.12	37%		1.2	2%	16.6	17.7	24%
OE25	Scotton Common SSSI		0.08	0.3%	11.0	11.10	37%		2.4	3%	16.5	19.0	25%
OE26	Laughton Common SSSI		0.06	0.2%	10.3	10.35	35%		1.4	2%	15.4	16.9	22%
OE27	Stainforth and Keadby Canal Corridor LWS		0.42	1.4%	13.5	13.91	46%		15.7	21%	20.2	35.9	48%
OE28	Keadby Wetland LWS		0.58	1.9%	13.5	14.11	47%		16.8	22%	20.3	37.1	49%

Receptor		Annual average (µg/m^3)						Daily average (µg/m^3)					
		CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL	CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL
OE29	Keadby Wet Grassland LWS		0.50	1.7%	13.5	14.00	47%		17.7	24%	20.2	38.0	51%
OE30	Three Rivers LWS		0.40	1.3%	13.3	13.67	46%		10.1	13%	19.9	30.0	40%
OE31	Ash tip		0.03	0.1%	13.2	13.20	44%		3.7	5%	19.8	23.5	31%
OE32	Humber Estuary (at Blacktoft Sands) Ramsar, SAC, SPA and SSSI		0.15	0.5%	13.1	13.21	44%		1.6	2%	19.6	21.1	28%
CL = Critical Level, PC = Process Contribution, BC = Background Concentration, PEC = Predicted Environmental Concentration													

Ammonia emissions – Critical Levels

5.2.12 Similar to the results presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**], the PC of ammonia are extremely small. Again, at the majority of receptors, the Proposed Development Change 3 results in slight increased PC, although for ammonia these are largely increases of only 0.001µg/m^3, which do not result in increases in the predicted PEC overall.

5.2.13 At all but receptor OE1-5, the predicted annual average NH_3 impacts remain below the criteria for insignificance (<1% of the critical level) and therefore can be considered insignificant.

5.2.14 The new background concentration for OE1-5 from the Additional Information in itself represents an exceedance of the NH_3 critical level (at 107%). The PC is 1.1% of the critical level, and therefore only slightly over the 1% threshold for insignificance at the worst impacts point of the receptor (OE1), and at the other receptor points OE2 -5, it remains below the 1% threshold. Further interpretation of the significance of these results is provided in **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum Volume II – **Application Document Ref. 6.2.11 – Rev 02**).

Table 7: Dispersion modelling results for ecological receptors – NH_3

Receptor		Annual Average (µg/m^3)					
		CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL
OE1-5	Humber Estuary SSSI, SAC, Ramsar	3	0.03	1.1%	3.2	3.23	108%
OE6	Crowle Borrow Pits SSSI	3	0.005	0.2%	2.60	2.60	87%
OE7	Hatfield Chase Ditches SSSI	No features listed					
OE8	Eastoft Meadow SSSI	3	0.004	0.1%	2.60	2.60	87%
OE9	Belshaw SSSI	3	0.002	0.1%	2.64	2.64	88%
OE10	Thorne Moor SAC	1	0.002	0.2%	2.60	2.60	260%
OE11	Epworth Turbary SSSI	1	0.002	0.2%	2.19	2.20	220%
OE12	Risby Warren SSSI	1	0.004	0.4%	3.23	3.24	324%
OE13	Hatfield Moor SAC	1	0.001	0.1%	2.39	2.40	240%
OE14	Messingham Heath SSSI	1	0.003	0.3%	3.27	3.27	327%
OE15	Tuetoes Hills SSSI	1	0.003	0.3%	2.41	2.41	241%

Receptor		Annual Average (µg/m^3)					
		CL	PC	PC % of CL	Modified BC	PEC	PEC % of CL
OE16	Haxey Turbary SSSI	1	0.001	0.1%	2.19	2.20	220%
OE17	Rush Furlong SSSI	3	0.002	0.1%	2.20	2.20	73%
OE18	Hewsons Field SSSI	3	0.002	0.1%	2.24	2.24	75%
OE19	Messingham Sand Quarry SSSI	1	0.002	0.2%	2.78	2.78	278%
OE20	Manton and Twigmoor SSSI	1	0.003	0.3%	2.69	2.69	269%
OE21	Scotton and Laughton Forest Ponds SSSI	1	0.003	0.3%	2.58	2.58	258%
OE22	Broughton Far Wood SSSI	3	0.004	0.1%	3.02	3.03	101%
OE23	Broughton Alder Wood SSSI	3	0.004	0.1%	4.17	4.18	139%
OE24	Scotton Beck Fields SSSI	1	0.003	0.2%	2.58	2.58	258%
OE25	Scotton Common SSSI	1	0.003	0.3%	2.58	2.58	258%
OE26	Laughton Common SSSI	1	0.002	0.2%	1.97	1.97	197%
OE27	Stainforth and Keadby Canal Corridor LWS	3	0.014	0.5%	2.28	2.29	76%
OE28	Keadby Wetland LWS	3	0.020	0.7%	2.28	2.30	77%
OE29	Keadby Wet Grassland LWS	3	0.017	0.6%	2.28	2.30	77%
OE30	Three Rivers LWS	3	0.013	0.4%	2.31	2.32	77%
OE31	Ash tip	1	0.001	0.1%	2.29	2.29	229%
OE32	Humber Estuary (at Blacktoft Sands) Ramsar, SPA, SAC and SSSI	3	0.005	0.2%	1.89	1.91	64%

CL = Critical Level, PC = Process Contribution, BC = Background Concentration, PEC = Predicted Environmental Concentration

Nitrogen Deposition – Critical Loads

5.2.1 The Environment Agency and Natural England have agreed that depositional impacts that are below 1% of the relevant critical load for a site can be regarded as insignificant. Guidance from the Institute of Air Quality Management (IAQM)

clarifies that the 1% threshold is not intended to be precise to a set number of decimal places but to the nearest whole number (paragraph 5.5.2.6 of IAQM) (2020).

5.2.2 Although again, the Proposed Development Change 3 results in small increases to the PC, the majority of sites have impacts that can be screened as being insignificant as they remain less than 1% of the critical load, or where this is not the case, the PC together with the background concentration do not exceed the critical load. This is consistent with the results presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

5.2.3 The only receptor where this is no longer the case is OE1-5, where the maximum N-deposition represents 1.3% of the critical load at the worst-case point (OE1), at all other points with the receptor however (OE2-5) the PC remains less than 1% of the critical load.

5.2.4 Further interpretation of the significance of these results is provided in **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum Volume II – **Application Document Ref. 6.2.11 – Rev 02**).

Table 8: Dispersion modelling results for ecological receptors – Nutrient nitrogen deposition (Kg N/Ha/Yr)

Receptor		Modified Background nitrogen deposition (kg N/ha/yr)	Most stringent Critical Load class applicable for the site	Lower value of applicable Critical Load range	PC (kg N/ha/yr)	PC % Critical Load	PEC (kg N/ha/yr)	PEC % Critical Load
OE1-5	Humber Estuary Ramsar, SSSI, SAC	20.2	Pioneer, Low-mid, mid-upper saltmarshes	20	0.26	1.3%	20.4	102%
OE6	Crowle Borrow Pits SSSI	36.6	Broad-leaved, mixed and yew woodland	10	0.06	0.6%	36.7	367%
OE7	Hatfield Chase Ditches SSSI	No features listed in APIS						
OE8	Eastoft Meadow SSSI	21.3	Neutral grassland	20	0.03	0.%	21.4	107%
OE9	Belshaw SSSI	No critical loads assigned for the features present						
OE10	Thorne Moor SAC	21.3	Degraded Raised Bogs	5	0.02	0.3%	21.3	427%
OE11	Epworth Turbary SSSI	18.9	Raised and blanket bogs	5	0.01	0.3%	18.9	379%
OE12	Risby Warren SSSI	26.1	Acid Grassland	8	0.04	0.4%	26.2	327%
OE13	Hatfield Moor SSSI	20.9	Raised and blanket bogs	5	0.01	0.2%	20.9	418%

Receptor		Modified Background nitrogen deposition (kg N/ha/yr)	Most stringent Critical Load class applicable for the site	Lower value of applicable Critical Load range	PC (kg N/ha/yr)	PC % Critical Load	PEC (kg N/ha/yr)	PEC % Critical Load
OE14	Messingham Heath SSSI	24.6	Acid Grassland	8	0.02	0.3%	24.6	307%
OE15	Tuetoes Hills SSSI	19.8	Acid Grassland	8	0.03	0.3%	19.8	248%
OE16	Haxey Turbary SSSI	18.9	Raised and blanket bogs	5	0.01	0.2%	18.9	379%
OE17	Rush Furlong SSSI	18.9	Neutral Grassland	20	0.01	0.1%	18.9	95%
OE18	Hewsons Field SSSI	18.5	Neutral Grassland	20	0.01	0.1%	18.5	93%
OE19	Messingham Sand Quarry SSSI	38.4	Broadleaved deciduous woodland	10	0.03	0.3%	38.4	384%
OE20	Manton and Twigmoor SSSI	22.7	Acid Grassland	8	0.02	0.3%	22.8	284%
OE21	Scotton and Laughton Forest Ponds SSSI	21.2	Fen, Marsh and Swamp (assumed)	10	0.02	0.2%	21.2	212%
OE22	Broughton Far Wood SSSI	41.9	Broad-leaved, mixed and yew woodland	15	0.05	0.4%	42.0	280%

Receptor		Modified Background nitrogen deposition (kg N/ha/yr)	Most stringent Critical Load class applicable for the site	Lower value of applicable Critical Load range	PC (kg N/ha/yr)	PC % Critical Load	PEC (kg N/ha/yr)	PEC % Critical Load
OE23	Broughton Alder Wood SSSI	Broad-leafed, mixed and yew woodland – Not sensitive to nitrogen deposition						
OE24	Scotton Beck Fields SSSI	21.2	Acid Grassland	10	0.02	0.2%	21.2	212%
OE25	Scotton Common SSSI	21.2	Dwarf Shrub Heath	10	0.02	0.2%	21.2	212%
OE26	Laughton Common SSSI	17.7	Acid grasslands	8	0.02	0.2%	17.7	221%
OE27	Stainforth and Keadby Canal Corridor LWS	19.7	Neutral grassland	20	0.12	0.6%	19.9	99%
OE28	Keadby Wetland LWS	33.8	Broadleaved deciduous woodland	10	0.27	2.7%	34.1	341%
OE29	Keadby Wet Grassland LWS	19.7	Coastal and floodplain grazing marsh	20	0.14	0.7%	19.8	99%
OE30	Three Rivers LWS	19.9	Coastal and floodplain grazing marsh	20	0.11	0.5%	20.0	100%

Receptor		Modified Background nitrogen deposition (kg N/ha/yr)	Most stringent Critical Load class applicable for the site	Lower value of applicable Critical Load range	PC (kg N/ha/yr)	PC % Critical Load	PEC (kg N/ha/yr)	PEC % Critical Load
OE31	Ash tip	19.8	Acid grassland	10	0.01	0.1%	19.8	198%
OE32	Humber Estuary at Blacktoft Sands (Ramsar, SAC, SPA and SSSI)	18.2	Rich Fens	15	0.04	0.3%	18.2	122%

Acid Deposition – Critical Loads

5.2.5 Although the Proposed Development Change 3 results in small increases to the PC, all sites have impacts that can still be screened as being insignificant as they remain less than 1% of the critical load. This is consistent with the results presented in **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**], therefore there is no change to the conclusions of the assessment as a result of the Proposed Development Change 3.

Table 9: Dispersion modelling results for ecological receptors – Acid deposition (Keq/Ha/Yr)

Receptor ID Site name		Acid deposition				PC acid deposition (keq/ha/yr)		
		Critical Load (keq/ha/yr)	Modified Baseline (keq/ha/yr)	Lowest Critical Load class applicable	Modified Baseline % of Critical Load	PC	PC % of Critical Load	PEC% of Critical Load
OE1-5	Humber Estuary Ramsar/ SAC/ SSSI	Fen, marsh and swamp – not sensitive to acidity						
OE6	Crowle Borrow Pits SSSI	Min CL Min N: 0.142 Min CL Max N: 2.694 Min CL Max S: 2.337	N: 2.6 S: 0.25	Unmanaged Broadleaved/ Coniferous Woodland	106%	0.019	0.7%	107%
OE7	Hatfield Chase Ditches SSSI	No features listed in APIS						
OE8	Eastoft Meadow SSSI	Min CL Min N: 0.438 Min CL Max N: 2.008 Min CL Max S: 1.57	N: 1.5 S: 0.2	Acid grassland	85%	0.002	0.0%	85%
OE9	Belshaw SSSI	No critical loads assigned for the features present						
OE10	Thorne Moor SAC	Min CL Min N: 0.321 Min CL Max N: 0.462 Min CL Max S: 0.141	N: 1.5 S: 0.2	Bogs	368%	0.001	0.0%	368%

Receptor ID Site name		Acid deposition				PC acid deposition (keq/ha/yr)		
		Critical Load (keq/ha/yr)	Modified Baseline (keq/ha/yr)	Lowest Critical Load class applicable	Modified Baseline % of Critical Load	PC	PC % of Critical Load	PEC% of Critical Load
OE11	Epworth Turbary SSSI	Min CL Min N: 0.321 Min CL Max N: 0.478 Min CL Max S: 0.157	N: 1.4 S: 0.2	Bogs	335%	0.001	0.0%	335%
OE12	Risby Warren SSSI	Min CL Min N: 0.223 Min CL Max N: 0.858 Min CL Max S: 0.42	N: 1.9 S: 0.4	Acid grassland	268%	0.003	0.0%	268%
OE13	Hatfield Moor SAC	Min CL Min N: 0.321 Min CL Max N: 0.475 Min CL Max S: 0.154	N: 1.5 S: 0.2	Bogs	358%	0.001	0.0%	358%
OE14	Messingham Heath SSSI	Min CL Min N: 0.366 Min CL Max N: 0.556 Min CL Max S: 0.19	N: 1.8 S: 0.2	Acid grassland	360%	0.001	0.0%	360%
OE15	Tuetoes Hills SSSI	Min CL Min N: 0.366 Min CL Max N: 0.556 Min CL Max S: 0.20	N: 1.4 S: 0.2	Acid grassland	288%	0.002	0.0%	288%
OE16	Haxey Turbary SSSI	Min CL Min N: 0.321 Min CL Max N: 0.477 Min CL Max S: 0.156	N: 1.4 S: 0.2	Bogs	335%	0.001	0.0%	335%

Receptor ID Site name		Acid deposition				PC acid deposition (keq/ha/yr)		
		Critical Load (keq/ha/yr)	Modified Baseline (keq/ha/yr)	Lowest Critical Load class applicable	Modified Baseline % of Critical Load	PC	PC % of Critical Load	PEC% of Critical Load
OE17	Rush Furlong SSSI	Min CL Min N: 0.295 Min CL Max N: 2.028 Min CL Max S: 1.59	N: 1.4 S: 0.2	Acid grassland	79%	0.001	0.0%	79%
OE18	Hewsons Field SSSI	Min CL Min N: 0.438 Min CL Max N: 2.048 Min CL Max S: 1.61	N: 1.3 S: 0.2	Acid grassland	73%	0.001	0.0%	73%
OE19	Messingham Sand Quarry SSSI	Min CL Min N: 0.142 Min CL Max N: 1.214 Min CL Max S: 1.016	N: 2.7 S: 0.3	Unmanaged Broadleaved/ Coniferous Woodland	247%	0.002	0.0%	247%
OE20	Manton and Twigmoor SSSI	Min CL Min N: 0.223 Min CL Max N: 0.556 Min CL Max S: 0.19	N: 1.6 S: 0.3	Acid grassland	342%	0.002	0.0%	342%
OE21	Scotton and Laughton Forest Ponds SSSI	Min CL Min N: 0.321 Min CL Max N: 0.484 Min CL Max S: 0.163	N: 1.5 S: 0.2	Bogs	351%	0.002	0.0%	351%

Receptor ID Site name		Acid deposition				PC acid deposition (keq/ha/yr)		
		Critical Load (keq/ha/yr)	Modified Baseline (keq/ha/yr)	Lowest Critical Load class applicable	Modified Baseline % of Critical Load	PC	PC % of Critical Load	PEC% of Critical Load
OE22	Broughton Far Wood SSSI	Min CL Min N: 0.285 Min CL Max N: 0.989 Min CL Max S: 0.704	N: 3.0 S: 0.3	Unmanaged Broadleaved/ Coniferous Woodland	334%	0.004	0.0%	334%
OE23	Broughton Alder Wood SSSI	Broad-leafed, mixed and yew woodland – Not sensitive to acidity						
OE24	Scotton Beck Fields SSSI	Min CL Min N: 0.366 Min CL Max N: 0.556 Min CL Max S: 0.19	N: 1.5 S: 0.2	Acid grassland	306%	0.001	0.0%	306%
OE25	Scotton Common SSSI	Min CL Min N: 1.035 Min CL Max N: 1.225 Min CL Max S: 0.19	N: 1.5 S: 0.2	Dwarf shrub heath	139%	0.002	0.0%	139%
OE26	Laughton Common SSSI	Min CL Min N: 0.223 Min CL Max N: 0.576 Min CL Max S: 0.21	N: 1.3 S: 0.2	Acid grassland	260%	0.001	0.0%	260%
OE27	Stainforth and Keadby Canal Corridor LWS	No information available						

Receptor ID Site name		Acid deposition				PC acid deposition (keq/ha/yr)		
		Critical Load (keq/ha/yr)	Modified Baseline (keq/ha/yr)	Lowest Critical Load class applicable	Modified Baseline % of Critical Load	PC	PC % of Critical Load	PEC% of Critical Load
OE28	Keadby Wetland LWS	No information available						
OE29	Keadby Wet Grassland LWS	No information available						
OE30	Three Rivers LWS	No information available						
OE31	Ash tip	No information available						
OE32	Humber Estuary at Blacktoft Sands (Ramsar, SAC, SPA and SSSI)	Fen, Marsh and Swamp - Not sensitive to acidity						

6.0 CONCULSIONS

6.1.1 The Proposed Development Change 3 results in PC increases at a number of the ecological receptors assessed. The increases are in general very small, and in the majority of cases, do not increase the percentage of the PC against the relevant critical level or load.

6.1.2 Where larger increases occur, mainly at the Humber Estuary receptor OE1-5 (due to this being the closest receptor downwind of the Proposed Development), the increases are not considered to change the conclusions of the assessment presented in **Chapter 8:** Air Quality of the ES Volume I (Document Ref. 6.2.8) [**APP-051**] and **Appendix 8B:** Air Quality – Operational Phase of ES Volume II (Document Ref. 6.3.6) [**APP-070**].

7.0 REFERENCES

ERM (2021). Keadby 2 – Ambient NOx, NO_2 and NH_3 Monitoring Report – Final. 7th May 2021.

Institute of Air Quality Management (IAQM) (2020). *A Guide to the Assessment of Air Quality Impacts on Designated Nature Conservation Sites, Version 1.1* [Online]. Available from: [redacted]

KEADBY 3
CARBON CAPTURE
POWER STATION

A collaboration between **SSE Thermal** and **Equinor**

Document Ref: 6.3.8

Planning Inspectorate Ref: EN010114

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Environmental Statement Addendum Volume II – Appendix 9A: Construction Noise Assessment Methodology

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

Date: April 2022

DOCUMENT HISTORY

Document Ref	6.3.8 - ES Addendum Volume II - Appendix 9A
Revision	2.0
Document Owner	AECOM

GLOSSARY

Abbreviation	Description
BS	British Standard Institute
NSR	Noise Sensitive Receptor

CONTENTS

TABLES

1.0 INTRODUCTION

1.1 Overview

1.1.1 This Technical Appendix supports **Chapter 9**: Noise and Vibration (ES Addendum Volume II – **Application Document Ref. 6.2.9 – Rev 02**) and describes the additional details for the construction noise assessment carried out as a result of Proposed Development Change 2 and considers the relevant Additional Information, detailed in **Chapter 9.**

1.1.2 No other Proposed Development Changes affect the construction noise assessment as outlined in Section 4 of ES Addendum Volume I.

2.0 CONSTRUCTION NOISE ASSESSMENT METHODOLOGY

2.1 Overview

2.1.1 Free-field construction noise levels were predicted at 10No. noise sensitive receptor (NSR) locations for construction of a temporary piled bridging structure which could be constructed where the Additional AIL Route crosses existing services including Keadby 1 Power Station cooling water pipework corridor.

2.1.2 The indicative construction noise levels were calculated using the procedures for prediction of construction noise set out in BS5228-1:2009+A1:2014 (British Standards Institute (BSI), 2014a).

2.1.3 A full list of plant associated with construction of a temporary piled bridging structure and associated sound power data from BS5228 (British Standards Institute (BSI), 2014a) and % on time assumed is presented in Table 1. The list of plant was sourced from other similar projects.

Table 1: Plant and Equipment Associated with Construction of the Temporary Piled Bridging Structure

Plant/Equipment	Sound Power Level (dB) Referenced from BS 5228	% on time used in calculations (based on 12 hr working day)	Mobile or static?	Number in operation
Crawler Mounted rig	117	100	Static	1
Hand-held welder (welding piles)	101	100	Static	1
Generator for welding	101	100	Static	1
Tracked excavator	99	100	Mobile	2
Concrete mixer truck	108	100	Mobile	4
Truck mounted concrete pump and boom arm	108	100	Mobile	2
Wheeled mobile telescopic crane	106	100	Static	2
Angle grinder	108	100	Static	1
Electric water pump	96	100	Mobile	1

3.0 REFERENCES

British Standards Institute (2014a) BS 5228-1:2009+A1:2014 – Code of practice for noise and vibration control on construction and open sites. Part 1: Noise

KEADBY 3
CARBON CAPTURE
POWER STATION

A collaboration between **SSE Thermal** and **Equinor**

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The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Environmental Statement Addendum Volume II – Appendix 9B: Operational Noise Information

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

Date: April 2022

DOCUMENT HISTORY

Document Ref	6.3.9 - ES Addendum Volume II - Appendix 9B
Revision	2.0
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GLOSSARY

Abbreviation	Description
CCGT	Combined Cycle Gas Turbine - a highly efficient form of energy generation technology. An assembly of heat engines work in tandem using the same source of heat to convert it into mechanical energy which drives electrical generators and consequently generates electricity.
CCP	Carbon Capture Plant – plant used to capture carbon dioxide (CO_2) emissions produced from the use of fossil fuels in electricity generation and industrial processes.
ES	Environmental Statement - a report in which the process and results of an Environment Impact Assessment are documented.
FEED	Front End Engineering Design - engineering which comes after the conceptual design or feasibility study focusing on the technical requirements and estimated investment cost for the project.
HRSG	Heat Recovery Steam Generator - an energy recovery heat exchanger that recovers heat from a hot gas stream. It produces steam that can be used in a process (cogeneration) or used to drive a steam turbine (combined cycle).
ISO	International Organization for Standardization – produce international standards for a range of markets.
LIDAR	Light Detection and Ranging - a remote sensing method that uses light in the form of a pulsed laser to measure ranges.
OS	Ordnance Survey - the national mapping agency for Great Britain.
PEI	Preliminary Environmental Information - an initial statement of the main environmental information available for a study area.

CONTENTS

TABLES

1.0 INTRODUCTION

1.1 Overview

1.1.1 This Technical Appendix supports **Chapter 9**: Noise and Vibration (ES Addendum Volume II – **Application Document Ref. 6.2.9 – Rev 02**) and describes the additional details for the operational noise assessment carried out as a result of Proposed Development Change 3 and considers the relevant Additional Information, detailed in **Chapter 9**.

1.1.2 No other Proposed Development Changes affect the operational noise assessment as outlined in Section 4 of ES Addendum Volume I.

2.0 OPERATIONAL NOISE INFORMATION

2.1 Noise model Settings

2.1.1 The Proposed Development with Proposed Development Change 3 was constructed in CadnaA (version 2021) acoustic modelling software. This software implements the sound propagation calculation methodology set out in ISO 9613-2:1996: Attenuation of Sound during Propagation Outdoors.

Additional Data Sources - Proposed Power Plant Site

2.1.2 Data sources in addition to those in **Appendix 9B:** Operational Noise Appendix provided in ES Volume II (**Application Document Ref. 6.3.9**) are shown in Table 1.

Table 1: Modelling Input Data

Model element	Data package	Format	Source file	Received from	Received Data
Twin Absorber Sound Source Data	Noise Protection Concept Bid Stage	.pdf	GB1075_Keadby3_NPC_21_057_1_00	Project Team	18/01/2022
Site building dimensions	3D Site Model for Twin Absorber Layout	.nvd	KEADBY3 08-August 2021	Project Team	17/01/2022

Modelling Assumptions

2.1.3 The model was configured with the same specifications as for the assessment in the submitted ES with the exception of the changes shown in Table 2.

Table 2: Modelling Assumptions

Original Assumption	Updated Assumption
Proposed Development maximum building dimensions were provided by the Project Team, including those presented in **Chapter 4**: The Proposed Development (ES Volume I – **Application Document Ref. 6.2**);	Where the layout had changed as a result of Proposed Development Change 3 (i.e. up to two absorbers and stacks) building dimensions were as in the 3D Site Model. Where the layout was unchanged building dimensions were as in the submitted application.

Original Assumption	Updated Assumption
Sound power levels for the absorber unit and Direct Contact Cooler (DCC) have been modelled based on the assumption of 85 dB $L_{Aeq,T}$ at 1 m in free field conditions from the equipment enclosed in the building which has been assumed, as a worst-case, to be the same dimensions as the building. This sound source has then been assumed to be enclosed in a building of 100mm thick concrete producing a reverberant internal level which has been used to calculate sound emission from the absorber	Sound power levels for the absorber units and Direct Contact Cooler as provided. Updated CCP sound power levels

Table 3: Sound Power Levels CCP up to two absorbers

Source	Linear sound power levels each frequency band (dB)									Number in model	L_{WA} (dB)
	31	63	125	250	500	1k	2k	4k	8k		
Inlet gas blower casing	94	93	93	98	91	83	83	72	65	3	93
Absorber stack exhaust (point of emission to atmosphere)	112	103	102	95	101	93	89	77	79	2	100
Absorber stack casing*	-	-	-	-	-	-	-	-	-	-	-
Absorber	110	101	98	94	96	79	66	48	50	2	94
Direct Contact Cooler**	-	-	-	-	-	-	-	-	-	-	-
Compressor	149	138	117	89	76	72	60	53	50	1	114
Pumps*	107	111	110	99	88	81	79	77	D 74	14***	96

* Absorber stack casing not listed as a noise source in provided sound power data so assumed to have negligible sound power

** Direct Contact Cooler not listed as a noise source in provided sound power data so assumed to have negligible sound power

***two pumps for each of: Absorber auxiliaries; amine pumps; chemical storage pumps; compressor pumps; DCC auxiliaries; fire water tank pumps; steam condensate pumps

Uncertainty

2.1.4 Sources of uncertainty noted in paragraph 2.1.3 of **Appendix 9B** or the submitted ES are unchanged by Proposed Development Change 3.

3.0 REFERENCES

AECOM (2020) Appendix 11B: Operational Noise Information. Available online:

[redacted]

Bechtel Overseas Corporation (2019) CO2 Capture Facility at Karsto, Norway FEED Study report

Environmental Resources Management (ERM) (2016) Keadby 2 Power Station Environmental Statement

Environmental Resources Management (ERM) (2018) Keadby 2 Power Station Environmental Statement Update Report

KEADBY 3
CARBON CAPTURE
POWER STATION

A collaboration between **SSE Thermal** and **Equinor**

Document Ref: 6.3.14

Planning Inspectorate Ref: EN010114

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Environmental Statement Addendum Volume II – Appendix 11C: Preliminary Ecological Appraisal Report

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

Date: April 2022

DOCUMENT HISTORY

Document Ref	6.3.14 Addendum Appendix 11C
Revision	2.0
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GLOSSARY

Abbreviation	Description
AIL	Abnormal Indivisible Load
ES	Environmental Statement
INNS	Invasive non-native species
PEA	Preliminary Ecological Appraisal

CONTENTS

1.0 INTRODUCTION

1.1 Overview

1.1.1 This Technical Appendix provides an addendum to **Appendix 11C:** Preliminary Ecological Appraisal (PEA) Report (Application Document Ref. 6.3.14) [**APP-078**]) and supports **Chapter 11**: Biodiversity and Nature Conservation (ES Addendum Volume II – **Application Document Ref. 6.2.11 – Rev 02**).

1.1.2 It considers the relevant Additional Information and Proposed Development Changes, as summarised below.

1.1.3 Section 2 of ES Addendum Volume I (**Application Document Ref. 6.2.1 - 6.2.7 Rev 02)** provides an overview of the Proposed Development Changes. Section 4.0, Table 4 of ES Addendum Volume I provides a scoping assessment of the Proposed Development changes including the rationale for those Proposed Development changes that are considered to require assessment.

1.1.4 The following Proposed Development Changes are relevant to the PEA Report and are considered within this appendix of the ES Addendum:

- Change 2 - Changes to the Additional AIL Route (**Work No. 10A**) (Contractor/ outage compound area, east of Keadby 1 Power Station and north of Keadby 1 Power Station) all affected land is under the control of the Applicant but requires a change to the Order Limits.

1.1.5 None of the other Proposed Development Changes alter the parameters and conclusions of the previous PEA Report, and consequently these have not been considered further.

1.1.6 The following figures are provided to support this updated Technical Appendix at the end of this report:

- **Figure 11C.1** – Statutory Nature Conservation Designations;
- **Figure 11C.2** –Non-statutory Nature Conservation Designations;
- **Figure 11C.3** – Phase 1 Habitat Survey Map; and
- **Figure 11C.4** – Location of Key Constraints.

2.0 RELEVANT LEGISLATION, PLANNING POLICY AND GUIDANCE

2.1.1 There are no changes to the legislation, planning policy and guidance relevant to this addendum of the PEA Report, as set out in **Appendix 11A**: Biodiversity and Nature Conservation Legislation and Planning Policy (**Application Document Ref 6.3.12)** [**APP-076**]).

3.0 METHODS

3.1 Desk Study

3.1.1 A desk study was completed for the previous assessment and did not require update for this ES Addendum. The results are presented in the PEA Report (**Appendix 11C** (Document Ref. 6.3.14) [**APP-078**]).

3.1.2 Since publication of the PEA Report, an ecological monitoring survey of bat boxes located on Trent Road has been completed (ERM, 2021). These bat boxes were installed as an ecological enhancement measure for Keadby 2 Power Station. The results of these monitoring surveys have been utilised in this Addendum.

3.2 Update Phase 1 Habitat Survey and Protected and Notable Species Appraisal

3.2.1 Supplementary Phase 1 Habitat survey data was gathered on 11th January 2022 for the additional land areas relevant to Proposed Development Change 2 (the Additional AIL Route (**Work No. 10A**)).

3.2.2 The survey was undertaken by appropriately experienced AECOM ecologists in accordance with the standard survey method (Joint Nature Conservation Committee, 2016), as described in **Appendix 11C:** Preliminary Ecological Appraisal Report (Application Document Ref 6.3.14) [**APP-078**]).

3.2.3 The Phase 1 Habitat survey was 'extended' to include an appraisal of the potential suitability of the habitats present to support protected and notable species of plants or animals. Field signs, habitat features with potential to support protected or notable species, but no detailed protected species surveys were carried out for the purposes of this PEA Addendum, other than those described in the bullet points below:

- updated badger (*Meles meles*) survey – (see Appendix 11D: Confidential Badger Survey Report (**Application Document Ref. 6.3.15 – Rev 02**) for the approach taken and the results of the survey; and
- assessment of the suitability of any additional trees or buildings present in accordance with the method statement originally provided within **Appendix 11C:** Preliminary Ecological Appraisal Report (Application Document Ref 6.3.14) [**APP-078**]).

3.3 Limitations

3.3.1 There are no limitations to the survey work undertaken in January 2022. The survey followed appropriate methods and was undertaken in favourable weather conditions. While January is not an optimal time of year for habitat survey, sufficient data could be gathered to identify the ecological features of relevance to this PEA Report addendum.

4.0 RESULTS

4.1 Habitats

4.1.1 This section supplements the habitat baseline for the additional land areas relevant to Proposed Development Change 2, which requires an extension to the Order Limits. The relevant habitats and the relationship of these to the Order Limits are shown on the updated **Figure 11C.3** which has been updated to show the Order Limits and is provided with this Addendum. The relevant habitats are described below.

4.1.2 The Proposed Development Change 2 Additional AIL Route crosses the amenity grassland road verges of Trent Road (Photograph 1). This is a species-poor closely mown grassland type of negligible biodiversity and nature conservation value.

Photograph 1 – Amenity grassland adjacent to Trent Road

4.1.3 There is also a small semi-mature broad-leaved plantation on the alignment of the Additional AIL Route on the southern side of Trent Road (encompassed by Target Note 6 in **Appendix 11C** (Document Ref. 6.3.14) [**APP-078**]). The largest trees in the plantation are London plane (*Platanus x hispanica*) trees of approximately 40cm stem diameter, but all other trees are more recent plantings and of approximately 15cm stem diameter (Photograph 2). The northern road

verge has two semi-mature ash (*Fraxinus excelsior*) trees, which would be lost to the Additional AIL Route, and a small ornamental conifer tree (as shown in Photograph 1, above). The plantation is of local biodiversity and nature conservation value.

Photograph 2 – Plantation on Trent Road showing the trees that would need to be removed

4.1.4 The extension to the Additional AIL Route then follows the alignment of a narrow habitat corridor between the boundary fence of the Keadby 1 Power Station and National Grid land to the north. The habitat in this area is neutral semi-improved grassland (Target Note 5 in **Appendix 11C** (Document Ref. 6.3.14) [**APP-078**]). The grassland is unmanaged and is heavily invaded by bramble (*Rubus fruticosus* agg.) scrub (Photograph 3). Flora observed include false oat-grass (*Arrhenatherum elatius*), common bent (*Agrostis capillaris*), cock's-foot (*Dactylis glomerata*), creeping cinquefoil (*Potentilla reptans*), lady's bedstraw (*Galium verum*), cowslip (*Primula veris*), ribwort plantain (*Plantago lanceolata*), common knapweed (*Centaurea nigra* agg.), ground-ivy (*Glechoma hederacea*), ploughman's-spikenard (*Inula conyzae*), creeping thistle (*Cirsium arvense*) and common ragwort (*Jacobaea vulgaris*). This grassland is considered to have local biodiversity and nature conservation value.

Photograph 3 – Unmanaged semi-improved neutral grassland located to the north of Keadby 1 Power Station

4.1.5 At Chapel Lane, the extension to the Additional AIL Route intersects a stand of semi-mature broad-leaved plantation woodland with ash and oak (*Quercus* sp.). The plantation is of 20-30 years of age and is of local biodiversity and nature conservation value.

4.2 Protected and Notable Species

4.2.1 This section updates the protected and notable species baseline for the additional land areas relevant to Proposed Development Change 2, which requires an extension to the Order Limits. The additional data does not alter the original assessment presented in **Appendix 11C:** Preliminary Environmental Appraisal Report (Document Ref. 6.3.14) [**APP-078**]).

Badger

4.2.2 The implications for badger arising from Proposed Development Change 2 are addressed in **Appendix 11D**: Confidential Badger Survey Report (**Application Document Ref**. **6.3.15 – Rev 02**).

Bats

4.2.3 Proposed Development Change 2 will require relocation of the bat boxes located on an ash tree adjacent to Trent Road. The relevant tree is Tree 2, as described in Annex 11C of **Appendix 11C:** Preliminary Environmental Appraisal Report (Application Document Ref. 6.3.14) [**APP-078**]). Monitoring surveys (ERM, 2021) confirm that the bat boxes have not been used by bats in 2021. Therefore these bat boxes do not currently contain bat roosts.

4.2.4 There are no further trees relevant to Proposed Development Change 2 that have features suitable for roosting bats. Therefore, the wider assessment given in the **Appendix 11C:** Preliminary Environmental Appraisal Report (Application Document Ref. 6.3.14) [**APP-078**]) does not need to be amended.

4.2.5 Proposed Development Change 2 would require relocation of the portacabins adjacent to Trent Road that are used as offices. The design and good condition of these portacabins mean that they are not suitable for use by roosting bats. Therefore, relocation of the portacabins does not alter the assessment of bats given in **Appendix 11C:** Preliminary Environmental Appraisal Report (Application Document Ref 6.3.14) [**APP-078**]).

Other Species

4.2.6 There are no other species that require specific consideration in relation to Proposed Development Change 2. The species assessment presented in the **Appendix 11C:** Preliminary Environmental Appraisal Report (Application Document Ref. 6.3.14) [**APP-078**]) remains appropriate for Proposed Development Change 2.

4.3 Invasive Non-native Species

4.3.1 No further records of Invasive non-native species (INNS) were identified during the updated Phase 1 habitat survey. The assessment presented in the **Appendix 11C:** Preliminary Environmental Appraisal Report (Application Document Ref 6.3.14) [**APP-078**]) remains appropriate for Proposed Development Change 2.

4.4 Identification of Potential Biodiversity Constraints

4.4.1 No substantive new constraints are identified in relation to Proposed Development Change 2. However, the additional habitat losses will need to be accounted for within the **Chapter 11**: Biodiversity and Nature Conservation (**Application Document Ref 6.2.11 – Rev 02**), along with any related implications for the committed habitat and species mitigation measures.

5.0 REFERENCES

ERM (2021) *Keadby BMP Artificial Habitats 2021 Monitoring Summary*. Report to SSE.

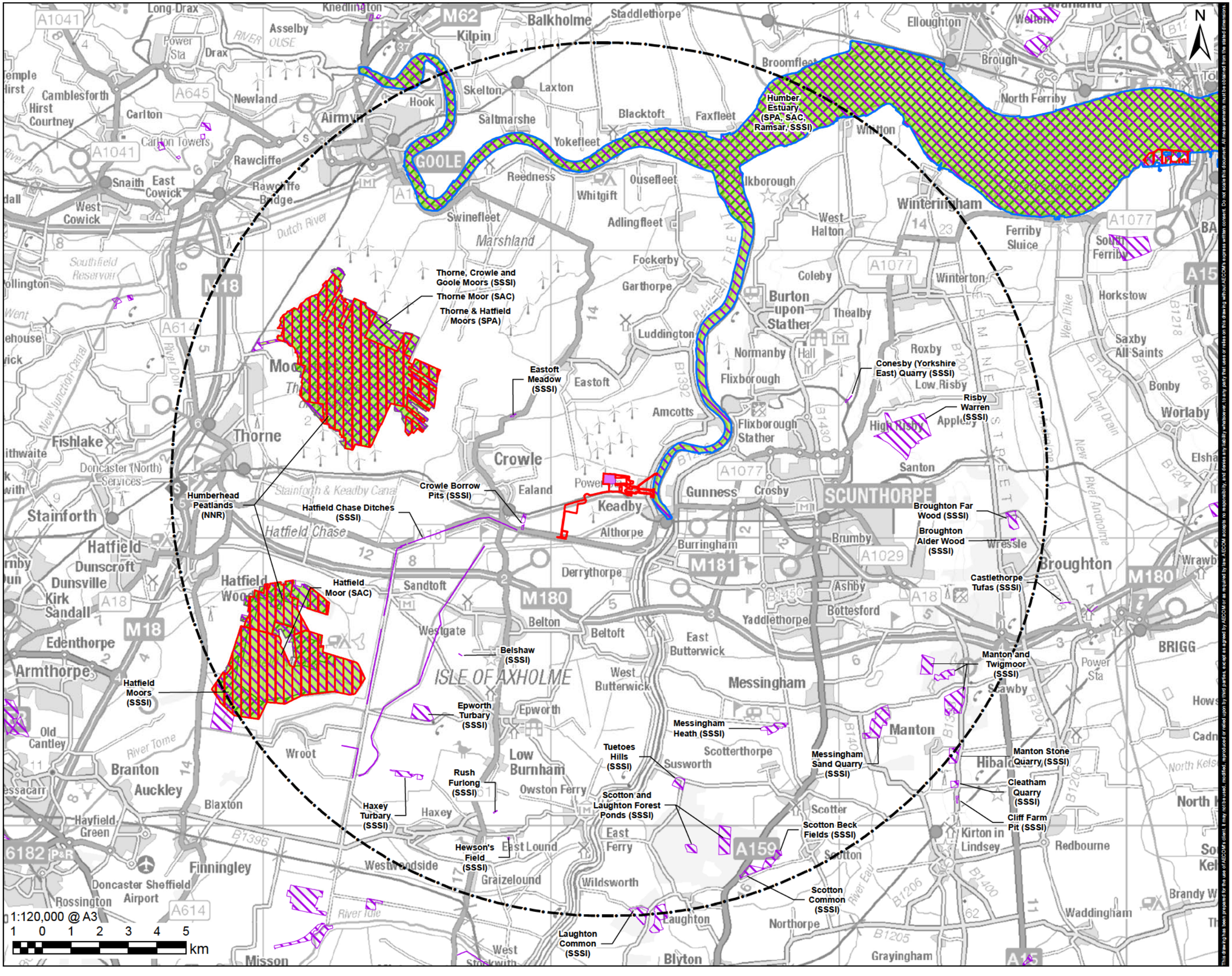
Joint Nature Conservation Committee (2016) *Handbook for phase 1 habitat survey – a technique for environmental audit*. Joint Nature Conservation Committee, Peterborough

FIGURES

Filename: K:\07 CAD & GIS\02_Maps\PEA Preliminary Environmental Assessment\ES Addendum Version\K_ES_Add_PEA_Fig_11C.1_Stat_Designations_15km_A3_20220328_R02.mxd

Drawn: JW Checked: CA Approved: HN Date: 28/03/2022

Revision: 02



AECOM

PROJECT

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

CLIENT

Keadby Generation Limited

CONSULTANT

AECOM Limited
2 City Walk
Leeds
LS11 9AR
T: 0113 391 6800
www.aecom.com

LEGEND

- The Order Limits
- Main Site
- 15km Study Area (Measured From Main Site)
- National Nature Reserve (NNR)
- Ramsar Site
- Site of Special Scientific Interest (SSSI)
- Special Area of Conservation (SAC)
- Special Protection Area (SPA)

NOTES

ISSUE PURPOSE

PRELIMINARY ECOLOGICAL APPRAISAL ENV STATEMENT ADDENDUM

PROJECT NUMBER

60625943

SHEET TITLE

Statutory Nature Conservation Designations

SHEET NUMBER

Figure 11C.1

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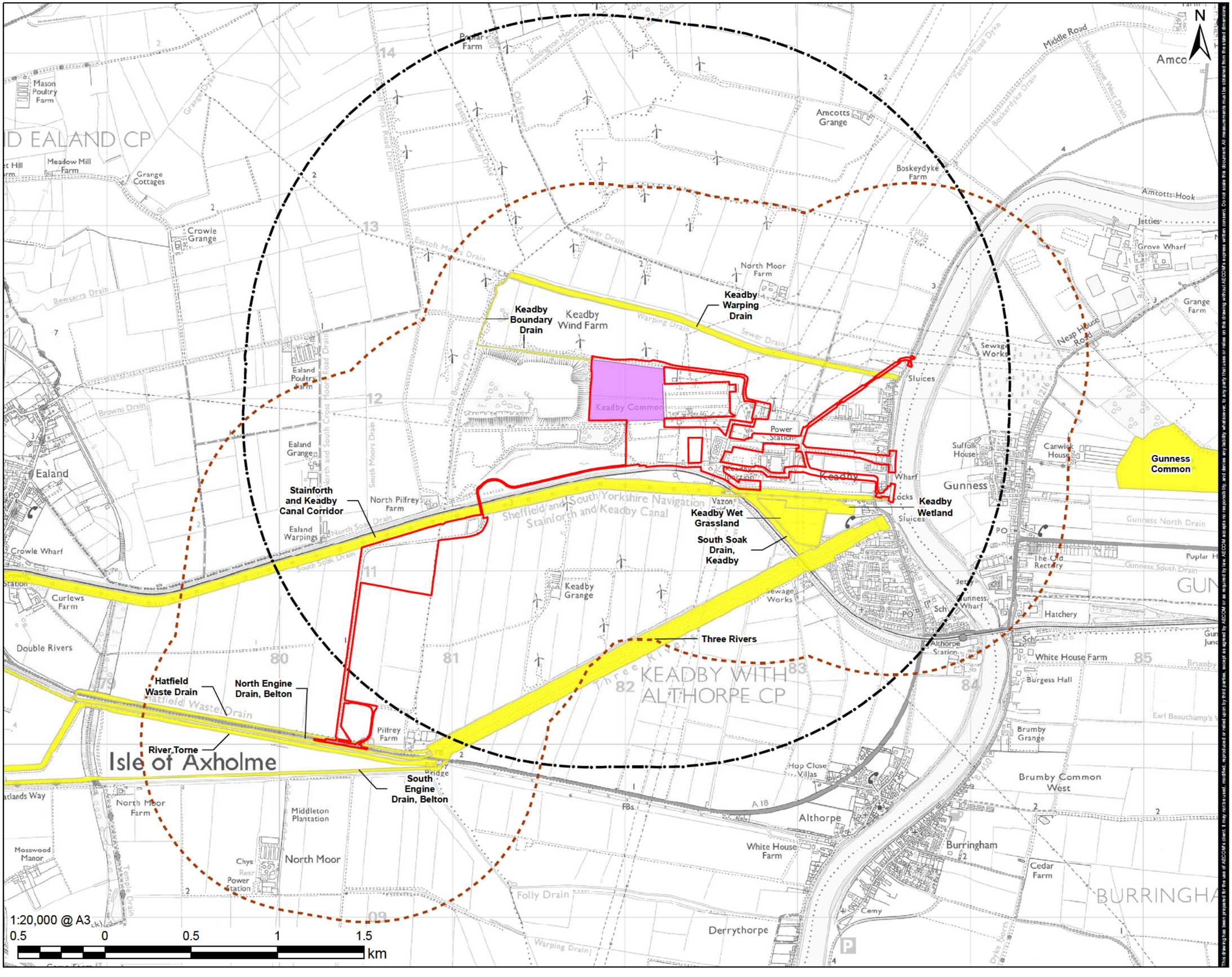
Revision: 02



AECOM

PROJECT

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

CLIENT

Keadby Generation Limited

CONSULTANT

AECOM Limited
2 City Walk
Leeds
LS11 9AR
T. [redacted]

LEGEND

- The Order Limits
- 1km Study Area (From The Order Limits)
- Main Site
- 2km Study Area (From Main Site)
- Local Wildlife Site (LWS)

NOTES

ISSUE PURPOSE

PRELIMINARY ECOLOGICAL APPRAISAL ENV STATEMENT ADDENDUM

PROJECT NUMBER

60625943

SHEET TITLE

Non-Statutory Nature Conservation Designations

SHEET NUMBER

Figure 11C.2

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Revision: 02 Drawn: JW Checked: CA Approved: HN Date: 28/03/2022

N

Keadby Common

Glew Drain

Drain 1

Keadby Common Drain

Sewer Drain

Drain 6

North Soak Drain

Stainforth & Keadby Canal

River Trent

Keadby

1:4,000 @ A3

50 25 0 50 100 150 200 m

AECOM

PROJECT

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

CLIENT

Keadby Generation Limited

CONSULTANT

AECOM Limited
2 City Walk
Leeds
LS11 9AR
ww[redacted]

LEGEND

- The Order Limits
- Broadleaved Parkland/Scattered Tree
- Scrub - Scattered
- Target Note
- Defunct Hedge - Species-poor
- Dry Ditch
- Fence
- Intact Hedge - Native Species-rich
- Intact Hedge - species-poor
- Soft Cliff
- Acid Grassland - Unimproved
- Bare Ground
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- Broadleaved Woodland - Semi-natural
- Buildings
- A — Cultivated/Disturbed Land - Amenity Grassland
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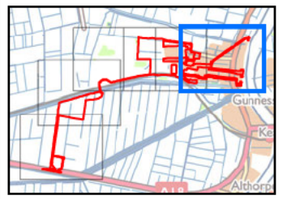

NOTES

ISSUE PURPOSE

PRELIMINARY ECOLOGICAL APPRAISAL ENV STATEMENT ADDENDUM

PROJECT NUMBER

60625943

SHEET TITLE

Phase 1 Habitat Survey
Sheet 1 of 5

SHEET NUMBER

Figure 11.C3

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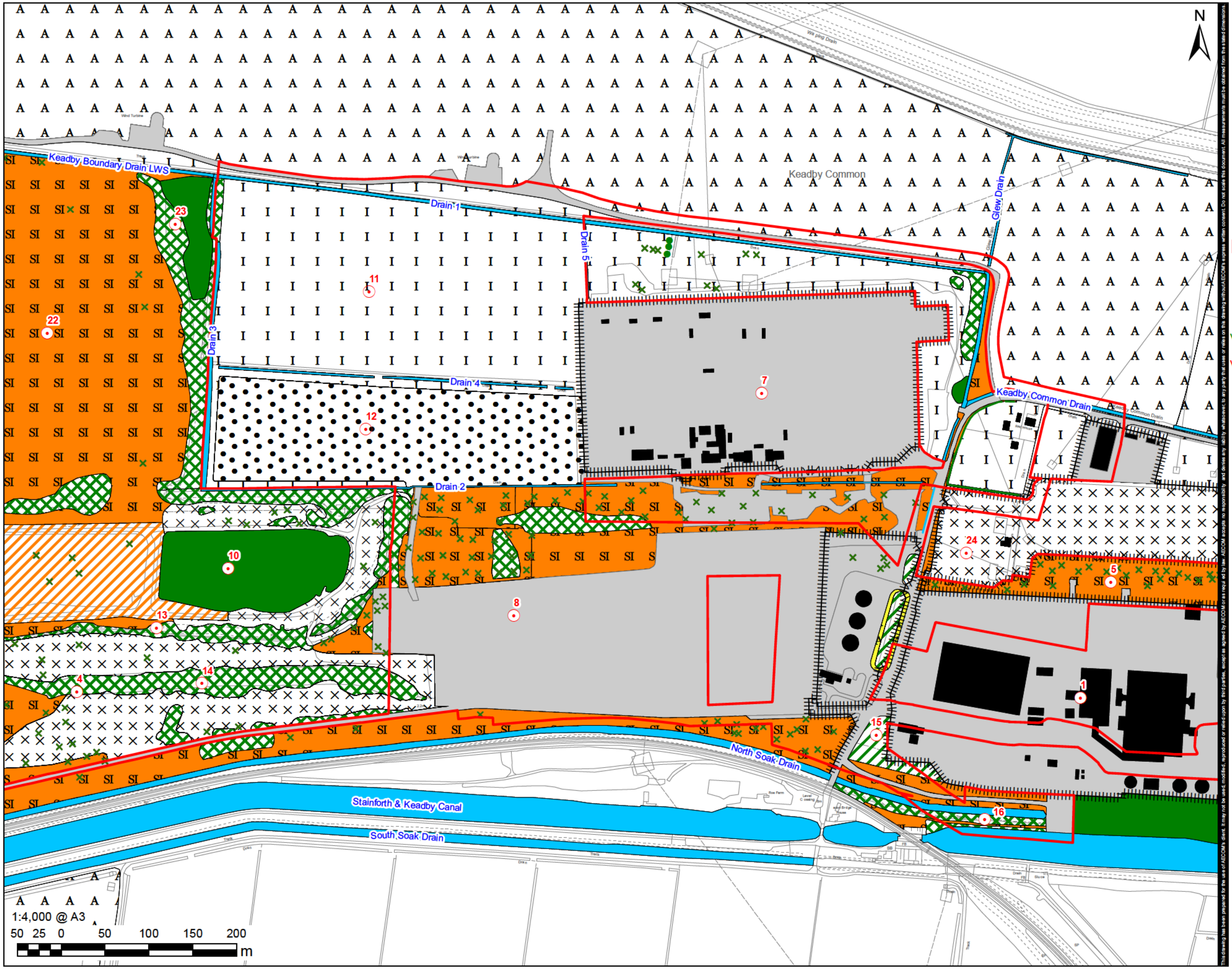

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Phase 1 Habitat Survey

Sheet 2 of 5

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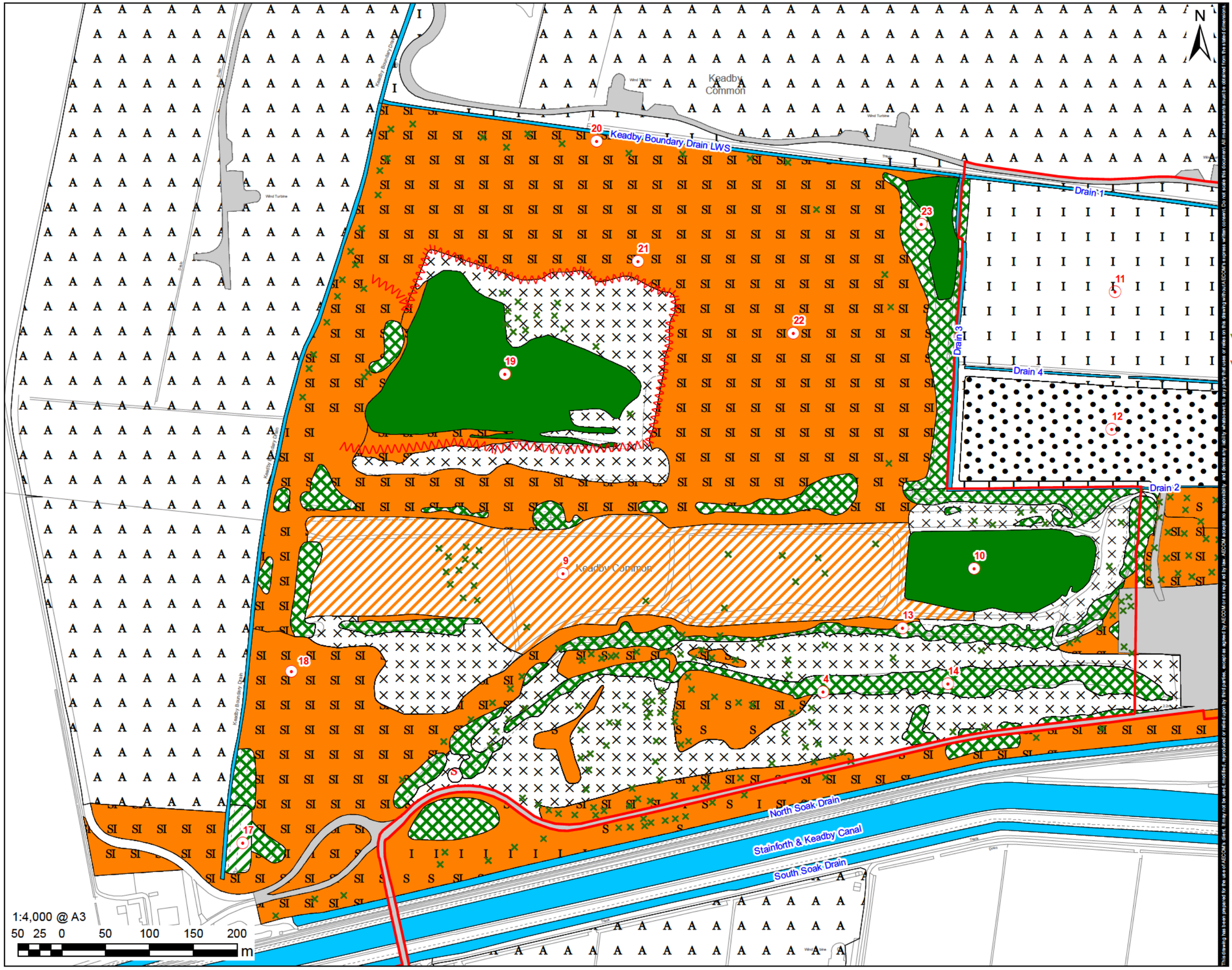

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2 City Walk
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[redacted]

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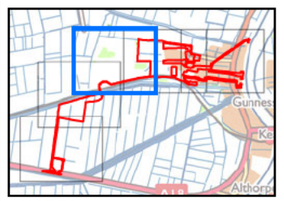

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Sheet 3 of 5

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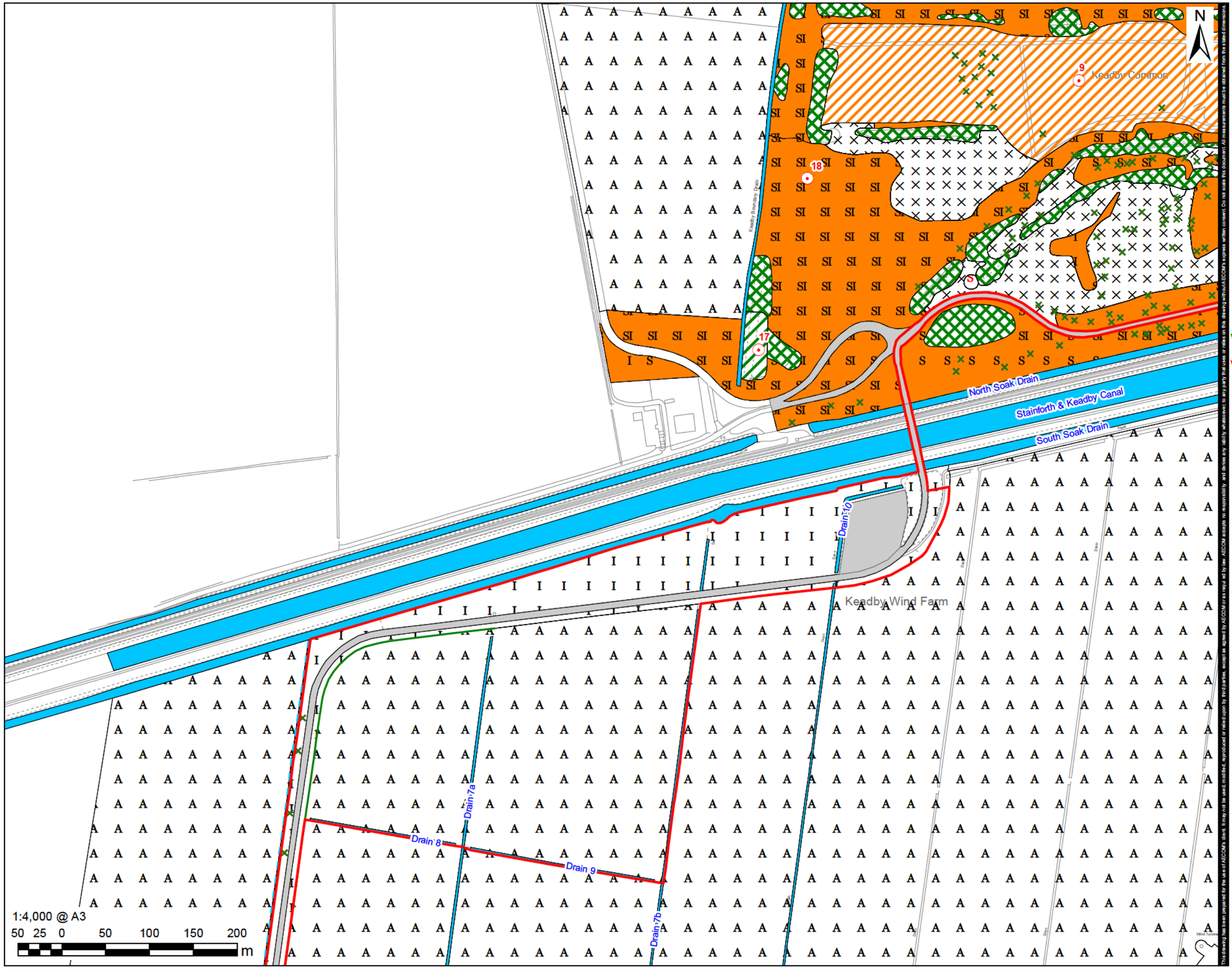

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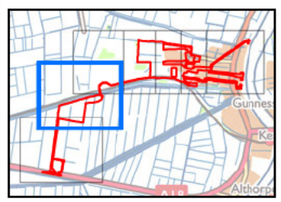

NOTES

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Phase 1 Habitat Survey
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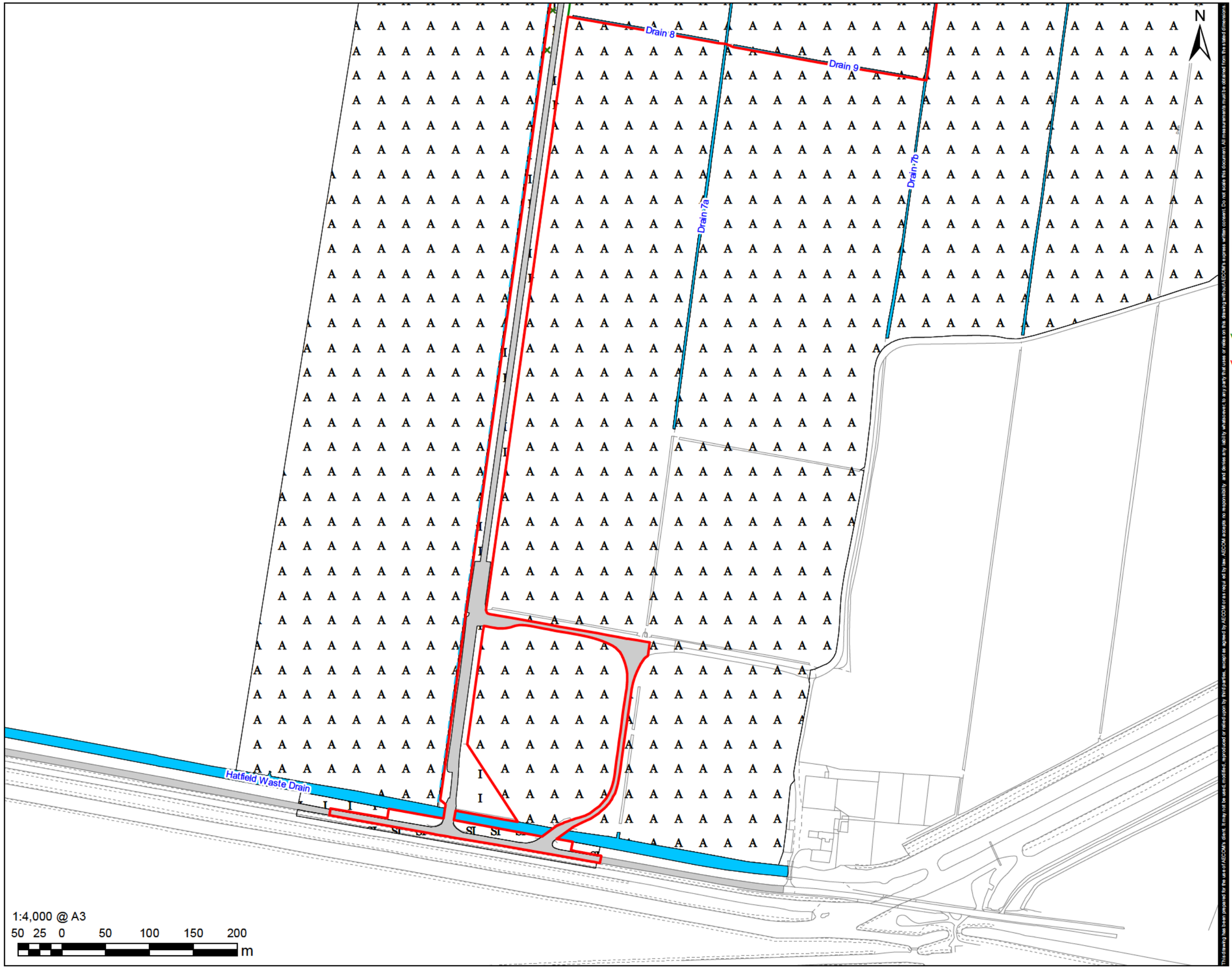

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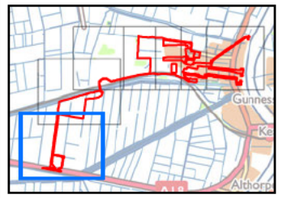

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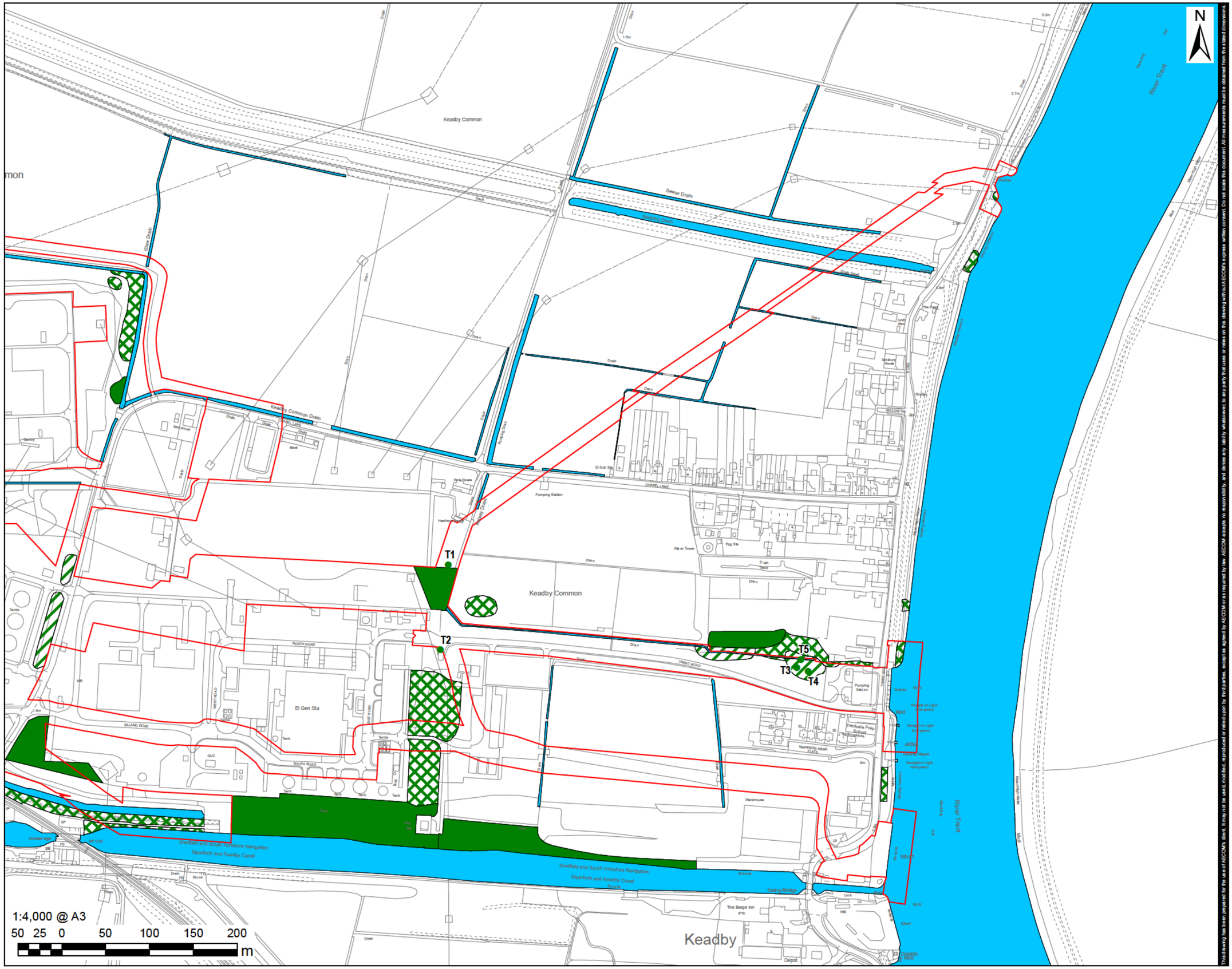

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AECOM Limited
2 City Walk
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[redacted]

LEGEND

- The Order Limits
- Trees suitable for roosting bats
- Wall Cotoneaster (Cotoneaster Horizontalis)
- Open Mosaic Habitat
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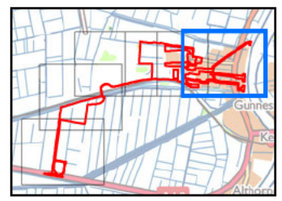
- Scrub - dense/continuous



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Location of Key Constraints
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Figure 11C.4

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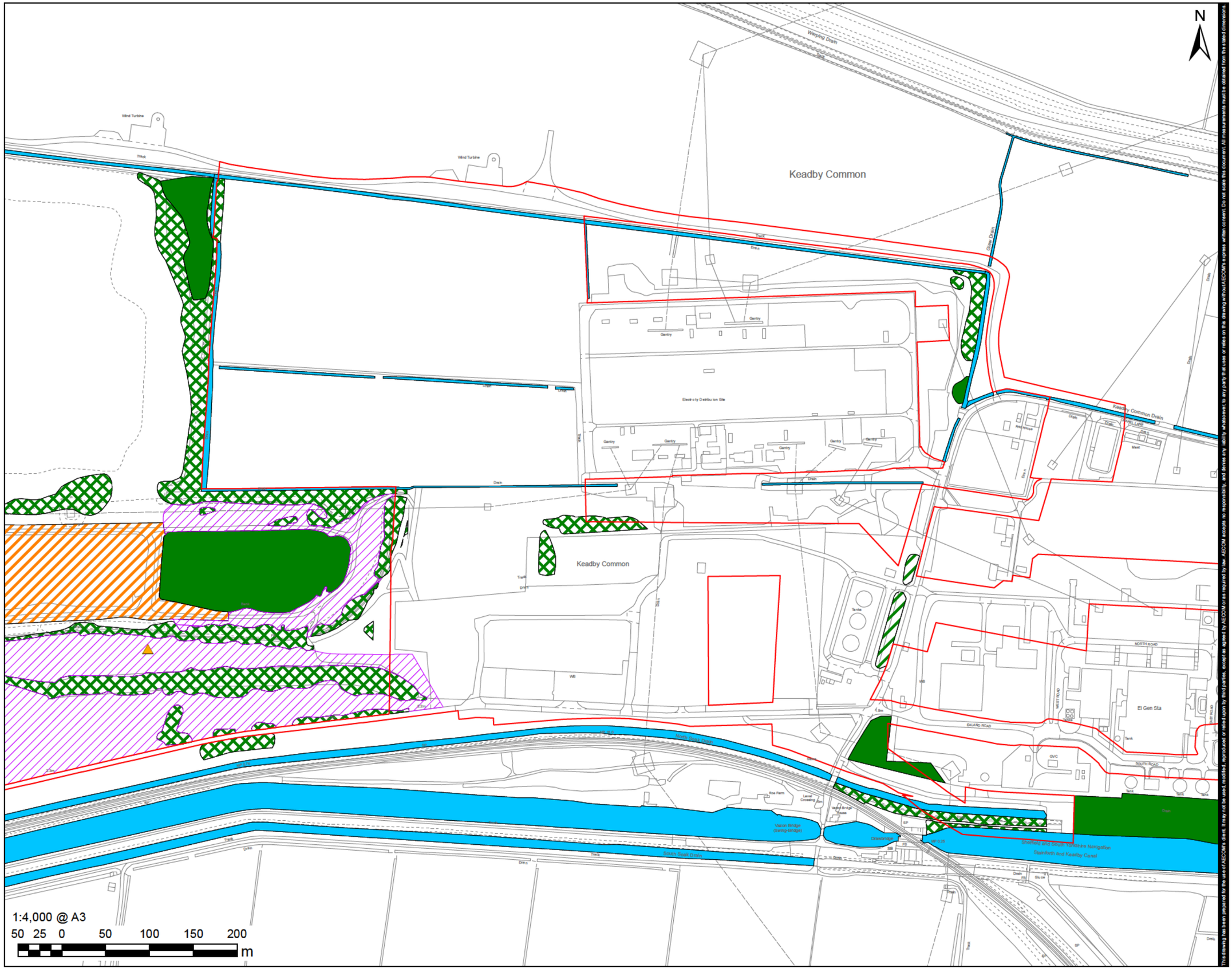

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PROJECT

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

CLIENT

Keadby Generation Limited

CONSULTANT

AECOM Limited
2 City Walk
Leeds
LS11 9AR
T: [redacted]

LEGEND

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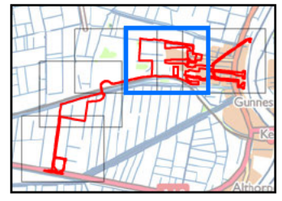

NOTES

ISSUE PURPOSE

PREL MINARY ECOLOGICAL APPRAISAL ENV STATEMENT ADDENDUM

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Location of Key Constraints

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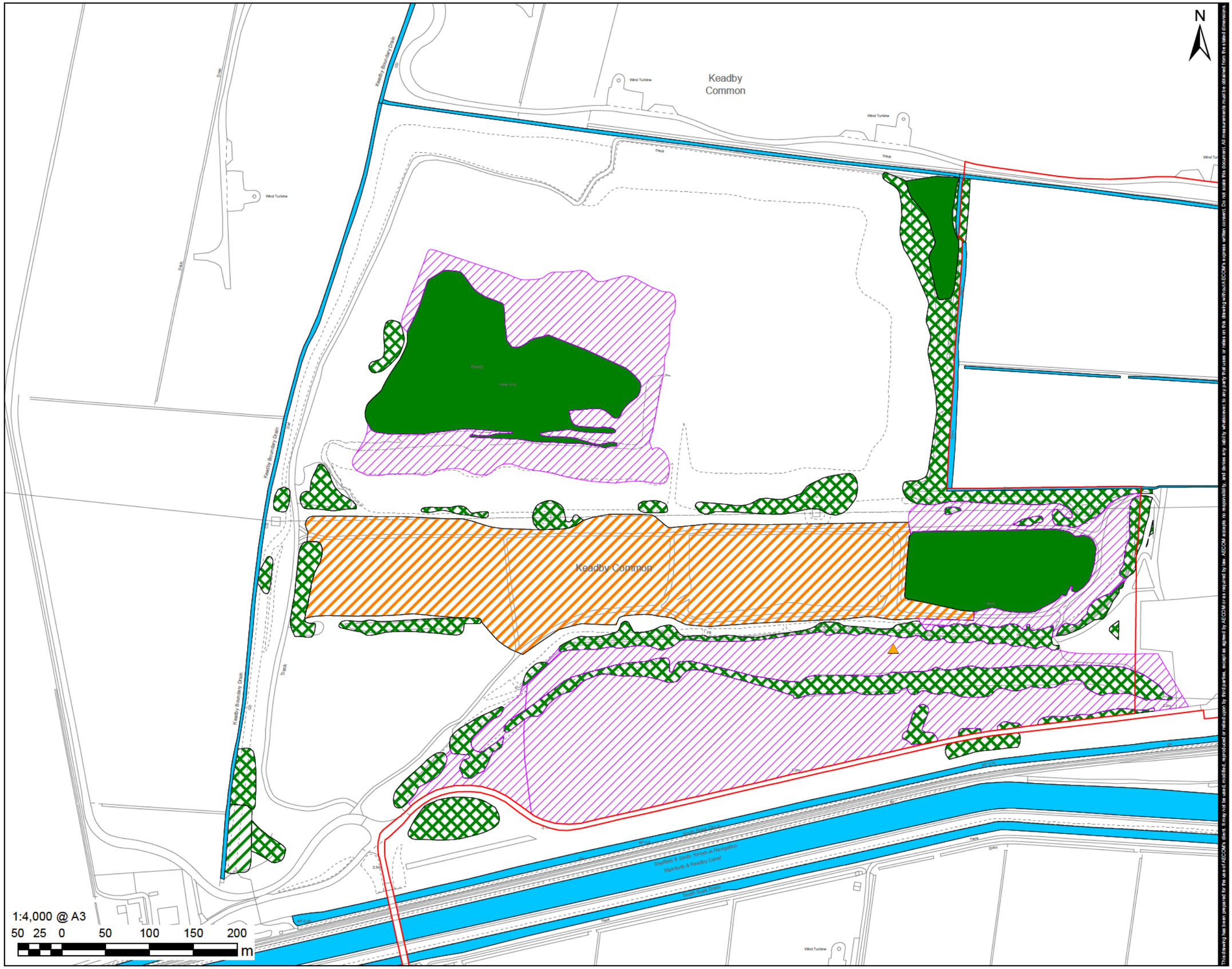

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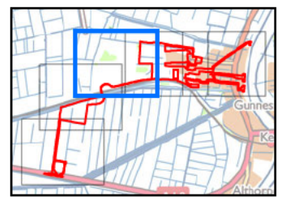

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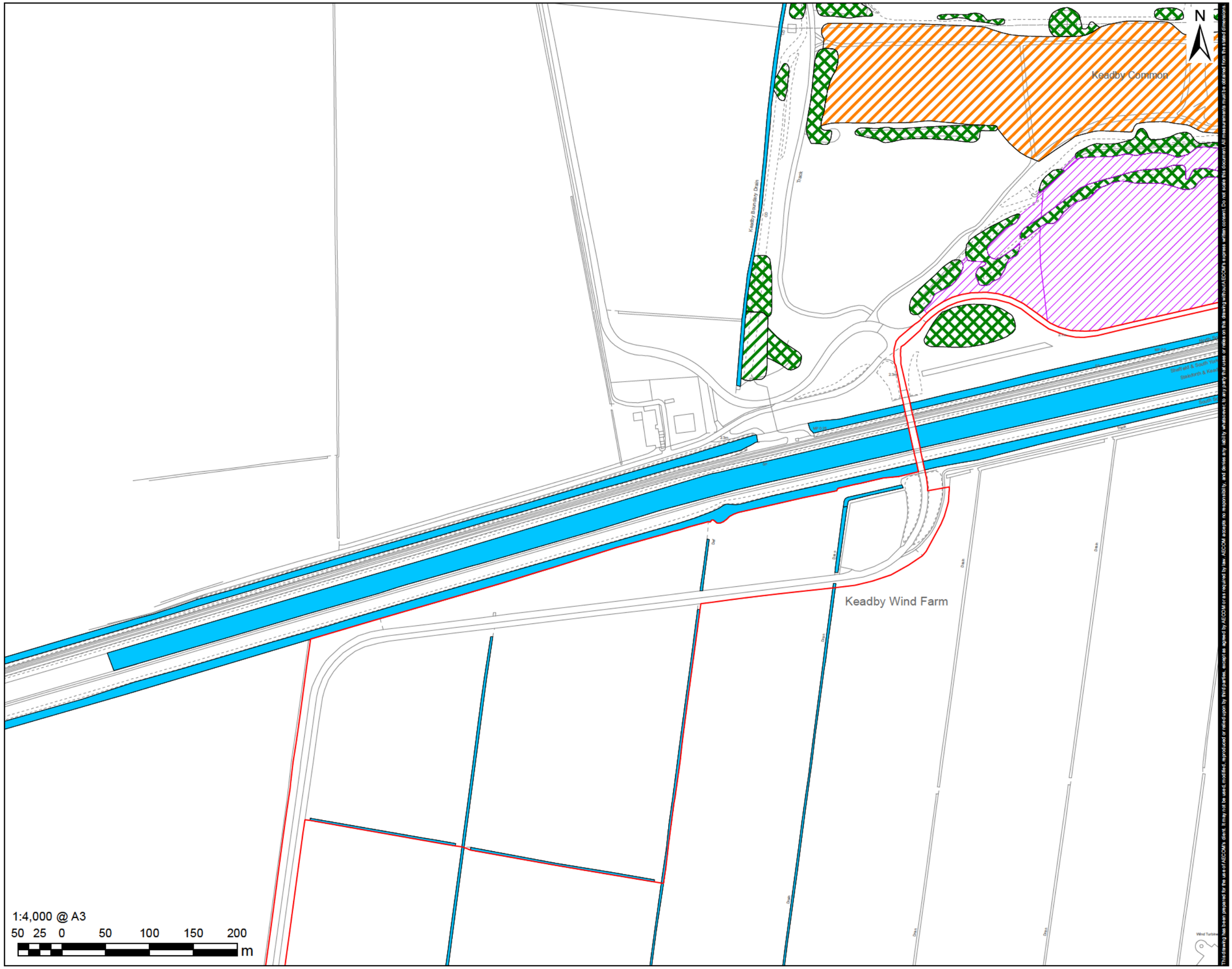

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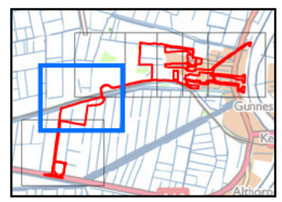

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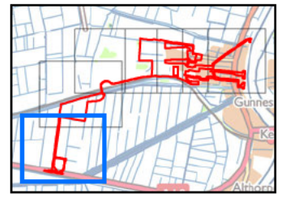

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Figure 11C.4

KEADBY 3
CARBON CAPTURE
POWER STATION

A collaboration between **SSE Thermal** and **Equinor**

Document Ref: 6.3.15

Planning Inspectorate Ref: EN010114

The Keadby 3 (Carbon Capture Equipped Gas Fired Generating Station) Order

Land at and in the vicinity of the Keadby Power Station site, Trentside, Keadby, North Lincolnshire

Environmental Statement Addendum Volume II – Appendix 11D: Confidential Badger Survey Report

The Planning Act 2008

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

Applicant: Keadby Generation Limited

Date: April 2022

DOCUMENT HISTORY

Document Ref	6.3.15/ES Addendum Appendix 11D
Revision	2.0
Document Owner	AECOM

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