The Keadby 3 Low Carbon CCGT Generating Station Project

Environmental Permit Variation Application

Appendix C – Site Condition Report

The Environmental Permitting (England and Wales) Regulations 2016

EPR Ref: EPR/YP3133LL/V011

Document Ref: 60625943-ACM-PM-RP-EN-002-A

Applicant: Keadby Generation Limited

Date: July 2021

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GLOSSARY

Abbreviation	Description
AEP	Annual Exceedance Probability or
ALC	Agricultural Land Classification
bgl	Below Ground Level
EA	Environment Agency
ES	Environmental Statement
IED	Industrial Emissions Directive
MCA	Mineral Consultation Areas
MSA	Mineral Safeguarding Areas
SPZ	Source Protection Zones

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1.0 SITE DETAILS

Name of the applicant	Keadby Generation Limited
Name of the installation	Keadby Power Station
Activity address	Keadby Power Station, Trentside, Keadby, North Lincolnshire (location shown in Figure 1 Annex A)
National grid reference	482020, 412040

1.1.1 This Site Condition Report details the Site of the proposed installation only, and does not include details of the existing installation.

2.0 CONDITION OF THE LAND AT PERMIT ISSUE

Environmental setting including:

- Geology
- Hydrogeology
- Surface waters

Geology

Although not mapped, Made Ground is expected across the proposed installation Site (the Site) given the historical site use, up to a depth of 2m. The Made Ground across the Site is made up of Artificial deposits on the natural ground's surface.

Below the Made Ground deposits lie deposits of clay and silt with subsequent layers with potential presence of silt, sand, peat and basal gravel, having a thickness of between 12 and 17m. These layers together comprise the Superficial Deposits at the Site.

The Bedrock deposits across the Site comprise Mercia Mudstone Group, consisting of predominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/ anhydrite widespread; sandstones are also present.

A review of available records, comprising BGS Geoindex website and published maps, selected historical BGS borehole records available from the Site and historical ground investigations (summarised in Volume II, Appendix 13A of the Environmental Statement (ES) (provided in Appendix B of the Main Supporting Document) indicate that the Site is underlain by the geological succession summarised below.

Geological stratum	Location	Anticipated thickness	Description
Made Ground	Made Ground is expected across the Site given the historical site use.	Up to 2m	Artificial deposits on the natural ground's surface.
Warp (artificially induced Alluvium)	Across the majority of the Site.	12 – 17m	Clay and silt.
Mercia Mudstone Group (bedrock)	Across the proposed installation Site and study area, beneath the superficial deposits.	Up to 200m	Dominantly red, less commonly green-grey, mudstones and subordinate siltstones with thick halite-bearing units in some basinal areas. Thin beds of gypsum/ anhydrite widespread; sandstones are also present.

Hydrogeology

The superficial geology (Alluvium/ Warp) is classified as a Secondary A aquifer. These are permeable layers capable of supporting water supplies at a local rather than strategic scale, and in some cases forming an important source of base flow to rivers. The bedrock geology (Mercia Mudstone Formation) is classified as a Secondary B aquifer. These are predominantly lower permeability layers which may store and yield limited amounts of groundwater due to localised features such as fissures, thin permeable horizons and weathering. These are generally the water-bearing parts of the former non-aquifers.

	Environment Agency (EA) Groundwater Maps show that the Site falls outside any Groundwater Source Protection Zones (SPZ). There are no SPZ within 1km of the Site. The Site is also identified to be located in an area with the groundwater vulnerability classified as medium-high. These are high priority groundwater resources that have limited natural protection. These areas are likely to be characterised by generally high leaching soils. This results in a medium-high overall pollution risk to groundwater from surface activities. The Site is indicated to be outside any surface water Safeguard Zones for Drinking Water. There is one licenced groundwater abstraction recorded within the Site. This abstraction point is indicated to be within the footprint of the existing Keadby Power Station (National Grid Reference 482619, 411656). It has multiple variations to the licence, with the most recent licensed to 'Siemens Public Limited Company' (Md/028/0083/040). The abstraction is listed as being for 'industrial/ commercial/ public services/ dewatering' and is related to the Keadby 2 Power Station (undergoing commissioning). Based on local authority consultation carried out as part of the ES, there are no records of private water abstractions within a 1km radius of the proposed installation Site. Groundwater levels within the historical borehole records reviewed indicate generally shallow groundwater levels within the superficial geology of between 0.9m - 3.0m below ground level (bgl). Occasionally, deeper groundwater strikes were recorded between 5.4m - 6.9m bgl. There is insufficient information to conclude at this stage whether these levels are representative of true groundwater levels across the wider area. The EA do not hold any groundwater level monitoring data within the Site boundary. **Hydrology** There are numerous surface water features located within the vicinity of the Site. The River Trent (tidal river) (Humber Upper) flows in a north-south direction to the east of the wider Keadby Power Station Site. The River Torne flows 20m south of the A18 junction. Sheffield and South Yorkshire Navigation/ Stainforth and Keadby Canal is to the south of the Site and crosses the northern section of the A18 access road flowing in a west-east direction. In addition, there are various named and unnamed drains in the Site's vicinity. Eight surface water abstractions have been identified in the vicinity of the Site. The Site is located within a nitrate vulnerable zone – surface water. The EA 'Flood map for planning' indicates that the Site and surrounding environs (other than a small, slightly elevated area between Keadby Common in the east, Keadby Boundary Drain in the west, and the Stainforth and Keadby canal to the south, and around Crowle) is within the EA's indicative Flood Zone 3 (defined as land assessed as having a 1 in 100 or greater annual probability of river flooding (>1% Annual Exceedance Probability or AEP), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5% AEP) in any year). However, land north of the Stainforth and Keadby canal benefits from flood defences (embankments) along the River Trent. Based on the information provided by the EA, it has been determined that during the existing scenario the Site is at a 'low' risk of flooding from tidal sources with the defences in place or resulting from overtopping of the defences during events that exceed a 0.5% AEP (1 in 200 chance) of flooding.

Pollution history including:

- Pollution incidents that may have affected land
- Historical land-uses and associated contaminants
- Any visual/olfactory evidence of existing contamination
- Evidence of damage to pollution prevention measures

Pollution History

Mapping Date	Description of Land
Circa 1885 – 1886	The Site is shown to be largely undeveloped with predominantly open fields. Properties are shown near to the western banks of the River Trent. A railway passed near to Keadby Junction, running broadly parallel adjacent to the south of the Site in a west-east direction.
1967 – 1969	A power station is shown to have been developed to the east of the Site (i.e. in the location of Keadby 1 generating station. Three mixed circular and rectangular tanks of unknown contents are present south and east of the power station. Railway lines, orientated in a west-east direction, occupy the land to the south of the Site and terminate, at the power station. Adjacent to the north of the railway lines is a conveyor system, presumably used for the transport of materials and fuels, such as coal, from trains to the power station. An area marked up as s slag heap is to the west of the Site, with 2 sludge pools also shown. Keadby Common Farm and White House Farm are to the east of the Site. Further to the east, an increase in properties is noted.
1978 – 1982	The Site remains shown as agricultural land. Circa seven mixed circular and rectangular tanks are shown to occupy the land directly south of the power station building.
1991 – 1994	The Site remains shown as agricultural land. Keadby Common Farm is no longer shown.
1995	The disused power station has become an electric generation station and a change in site layout is observed. The railway and conveyor system that was previously present terminating at the power station is now absent from the landscape. A set of small tanks and a single tank is located to the west; five tanks run parallel to the south, and an additional set of tanks is located east of the electric generation station. Further west from the electric generation station are three large tanks. The refuse heap and area of marshland to the south-west of the Site are now indicated to be absent. A large electric substation is now present directly to the east of the Site with electricity transmission cables and pylons connected to the electric generation station, with overhead cables leading off to the north, south and west. A building and

		mast are present to the north of the electric generation station.
	2000 - 2006	The slag heap to the west of the Site is now shown as a disused Spoil Heap, and the sludge pits are no longer present. No notable changes.
	2020	Wind turbines are shown to the north of the Site, but no other changes are notable.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	**Evidence of Historic Contamination** Historical mapping has been reviewed to evaluate the potential for past activities, both on and adjacent to the Site, to have impacted upon the Site's environmental and land quality. The adopted 2003 Local North Lincolnshire Plan does not refer to any Mineral Safeguarding Areas (MSA) or Mineral Consultation Areas (MCA) in the area. Based on available data and local authority consultation carried out for the ES, there are no records of aggregate/ mineral quarrying or mining, non-coal mining or coal mining within 500m of the Site. As such, the risk from quarrying and mining can be considered to be negligible.	
Baseline soil and groundwater reference data	**Baseline Soil and Groundwater Information** As the proposed installation is to be installed on concrete hardstanding with controlled drains, using a limited type and quantity of potentially contaminating raw materials stored in appropriately secured and bunded containers, the likelihood of the new operations adversely affecting the surrounding environment is considered to be minimal. Therefore, based on the review of existing ground conditions and proposed installation operations, it is considered that the proposed activities do not pose a significant risk to the environment. As an Industrial Emissions Directive (IED) regulated activity, baseline conditions for the site will be collected as part of the detailed Phase II ground investigation to be undertaken prior to construction of the installation. Indicative potential pollution risks from the proposed operations and associated mitigation measures are shown in Table 1.	
Supporting information	• Design of a Site Protection and Monitoring Programme for Keadby Generation Ltd, Keadby Power Station, URS, 2018. • Landmark Information Group (May 2020) Envirocheck Historical maps report: Reference 242986885_1_1. • Environmental Resources Management (ERM) (2017). Phase II Baseline Investigation Keadby. • ES Volume I, Chapter 13 and Volume II, Appendix 13A (provided in Appendix B of the Main Supporting Document).	

3.0 PERMITTED ACTIVITIES

Permitted activities	• Section 1.1 Part A(1)(a): Burning of any fuel in an appliance with a rated thermal input of 50MW or more. • Section 6.10 Part A(1)(a): Capture of carbon dioxide streams from an installation for the purposes of geological storage pursuant to Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide.
Non-permitted activities undertaken	N/A
Document references for: • Plan showing activity layout; and • Environmental risk assessment.	 • Annex A - Figure 2 • Table 1 below

3.1.1 As demonstrated in Table 1, the activities undertaken at the proposed installation and the associated pollution prevention and containment measures are considered to represent a negligible risk of pollution to the underlying soil and groundwater, hence no collection of baseline data is proposed.

3.1.2 The proposed installation will maintain an incident register throughout the lifetime of the operations which will log any losses of containment or near misses, and record whether the loss was contained to the site systems (as expected) or managed to enter the underlying soil and groundwater, in which case the clean-up and remediation activities undertaken will be recorded.

3.1.3 The proposed installation will also maintain an infrastructure monitoring log to record the schedule inspection and maintenance of containment systems e.g. lubrication oil tank and bunding, and any significant maintenance or repair activities required. Details of the routine inspection and maintenance activities will be developed prior to commencement of operations, and will be in line with industry best practice.

4.0 CHANGES TO THE ACTIVITY

Have there been any changes to the activity boundary?	Yes, additional land is proposed to be added to the permit boundary by this variation application for the installation of Keadby 3 Power Station.
Have there been any changes to the permitted activities?	The following activities are proposed to be added to the environmental permit: • Section 1.1 Part A(1)(a): Burning of any fuel in an appliance with a rated thermal input of 50MW or more. • Section 6.10 Part A(1)(a): Capture of carbon dioxide streams from an installation for the purposes of geological storage pursuant to Directive 2009/31/EC of the European Parliament and of the Council on the geological storage of carbon dioxide.
Have any 'dangerous substances' not identified in the Application Site Condition Report been used or produced as a result of the permitted activities?	Yes, the proposed installation will include use of certain new chemicals, mainly for use in the carbon capture plant. Details of the new raw materials are provided in Annex B of this document.
Document references for: • Plan showing any changes to the boundary (where relevant) • Description of the changes to the permitted activities (where relevant) • List of 'dangerous substances' used/produced by the permitted activities that were not identified in the Application Site Condition Report (where relevant)	• Annex A - Figure 2 • Table 1, 60625943-ACM-PM-RP-EN-001-A • Annex B, and Table 1 below; Section 4.7 of the Main Supporting Document

5.0 MEASURES TAKEN TO PROTECT LAND

Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can't, you need to collect land and/or groundwater data to assess whether the land has deteriorated.	There will be no changes to the existing permitted activities, and existing activities are reported to not have resulted in any pollution events. Additional land is proposed to be added to the permit boundary by this application for the installation of proposed installation. The proposed installation site has not been used for any permitted activities. The relevant part of Keadby Common was historically associated with a former coal-fired power station that was demolished in the 1990s. The area was then used for arable production until circa 2017/ 2018. The proposed installation site will have pollution prevention measures in place to prevent pollution events, including but not limited to, concrete hard standing across the operational areas, bunding for all chemical storage containers, closed drainage for operational areas and monitoring of all process emissions from the installation.
Document references for: • Inspection records and summary of findings of inspections for all pollution prevention measures • Records of maintenance, repair and replacement of pollution prevention measures	Main Supporting Document

6.0 POLLUTION INCIDENTS THAT MAY HAVE HAD AN IMPACT ON LAND, AND THEIR REMEDIATION

Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can't, you need to collect land and /or groundwater reference data to assess whether the land has deteriorated while you've been there.	There will be no changes to the existing permitted activities, and existing activities are reported to not have resulted in any pollution events. Additional land is proposed to be added to the permit boundary by this application for the installation of Keadby 3 Power Station. The proposed installation site has not been used for any permitted activities. The proposed installation will have pollution prevention measures in place.
Document references for: • Records of pollution incidents that may have impacted on land • Records of their investigation and remediation	N/A

7.0 SOIL GAS AND WATER QUALITY MONITORING (WHERE UNDERTAKEN)

Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this.	There will be no changes to the existing permitted activities, and existing activities are reported to not have resulted in any pollution events. Additional land is proposed to be added to the permit boundary by this application for the installation of Keadby 3 Power Station. The proposed installation site has not been used for any permitted activities. The relevant part of Keadby Common was historically associated with a former coal-fired power station that was demolished in the 1990s. The area was then used for arable production until circa 2017/ 2018. A detailed ground investigation will be undertaken prior to construction of the proposed installation to gather baseline data.
Document references for: • Description of soil gas and/or water monitoring undertaken • Monitoring results (including graphs)	N/A

Table 1: Qualitative Risk Assessment of Materials Stored at the Installation

SUBSTANCES	RELEVANT ACTIVITY	POTENTIAL FOR POLLUTION FROM THE RELEVANT ACTIVITY	EXISTENCE OF POLLUTION PREVENTION MEASURES	NATURE OF PRIMARY CONTAINMENT	TESTING AND INSPECTION OF PRIMARY CONTAINMENT	NATURE OF SECONDARY CONTAINMENT	TESTING AND INSPECTION OF SECONDARY CONTAINMENT	NATURE OF TERTIARY CONTAINMENT	TESTING AND INSPECTION OF TERTIARY CONTAINMENT	ADEQUACY OF POLLUTION PREVENTION MEASURES YES/NO	ARE THE PROPOSED INTEGRITY TESTING OF POLLUTION PREVENTION MEASURES ADEQUATE YES/NO	IS THERE AN ADEQUATE DOCUMENTED MANAGEMENT SYSTEM TO DEMONSTRATE OPERATOR MANAGEMENT AND COMPETENCE WITH THE RELEVANT ACTIVITY	LIKELIHOOD OF POLLUTION
Natural Gas	Delivery via pipeline	Loss due to leak in delivery pipework	Yes	Gas supply pipework	Pipework to be subjected to regular testing under Pressure Systems Safety Regulations.	N/A	N/A	N/A	N/A	Yes	Yes	Yes	Negligible
CCP Solvent	Delivery by vehicle	Spillage during off-loading e.g. Flex hose/ connection failure	Yes	Road tanker/ retractable delivery hoses	Visual inspection of road tanker and delivery hoses to be carried out. Deliveries via reputable supplier using vehicles which are fit for purpose.	Concrete hardstanding draining via an oil water interceptor to a suitable attenuation tank/ pond.	Visual inspection of concrete hardstanding, and the interceptor to ensure it is in good working condition.	Spill kits to be available on site	Scheduled inspections	Yes	Yes	Yes - To be developed prior to first delivery	Negligible
	Storage	Leak from bulk storage	Yes	1 x approx. 3,000m^3 above ground bulk tank for lean solvent 1 x approx. 200m^3 above ground bulk tank for fresh solvent	Newly built above ground storage tanks to be situated outdoors. Will be subject to routine visual checks and inspection in line with manufacturer guidance.	The tank will be installed in a concrete bund in compliance with CIRIA C736 guidelines, with level alarms to identify high levels of accumulated water.	Regular visual inspection of bunding, and testing of alarms.	Site hardstanding	Scheduled inspections	Yes	Yes	Yes	Negligible
Urea/ ammonia solution	Delivery by vehicle	Spillage during off-loading e.g. Flex hose/ connection failure	Yes	Road tanker/ retractable delivery hoses	Visual inspection of road tanker and delivery hoses to be carried out. Deliveries via reputable supplier using	Concrete hardstanding draining via an oil water interceptor to a suitable attenuation tank/ pond.	Visual inspection of concrete hardstanding, and the interceptor to ensure it is in good working condition.	Spill kits to be available on site	Scheduled inspections	Yes	Yes	Yes - To be developed prior to first delivery	Negligible

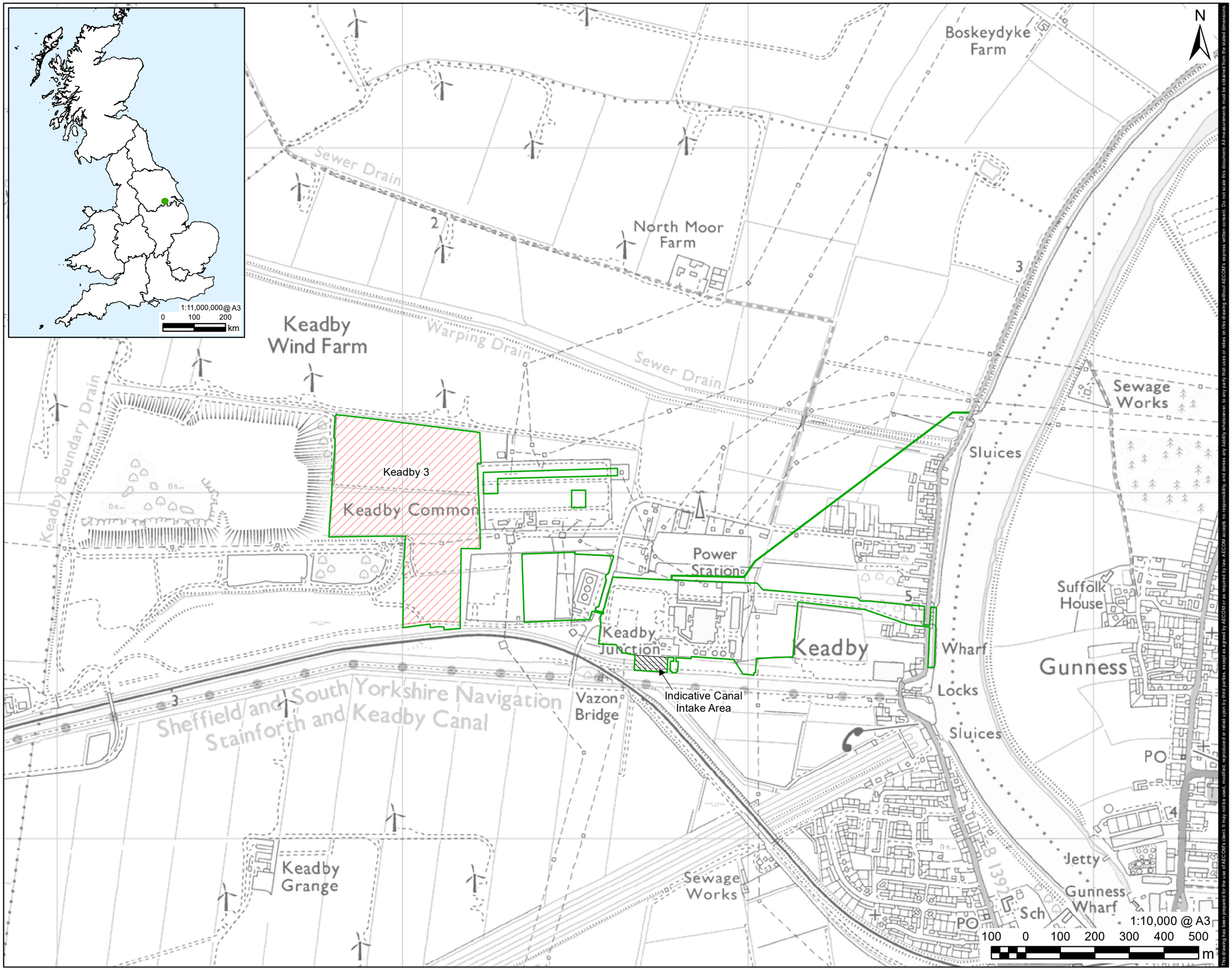
SUBSTANCES	RELEVANT ACTIVITY	POTENTIAL FOR POLLUTION FROM THE RELEVANT ACTIVITY	EXISTENCE OF POLLUTION PREVENTION MEASURES	NATURE OF PRIMARY CONTAINMENT	TESTING AND INSPECTION OF PRIMARY CONTAINMENT	NATURE OF SECONDARY CONTAINMENT	TESTING AND INSPECTION OF SECONDARY CONTAINMENT	NATURE OF TERTIARY CONTAINMENT	TESTING AND INSPECTION OF TERTIARY CONTAINMENT	ADEQUACY OF POLLUTION PREVENTION MEASURES YES/NO	ARE THE PROPOSED INTEGRITY TESTING OF POLLUTION PREVENTION MEASURES ADEQUATE YES/NO	IS THERE AN ADEQUATE DOCUMENTED MANAGEMENT SYSTEM TO DEMONSTRATE OPERATOR MANAGEMENT AND COMPETENCE WITH THE RELEVANT ACTIVITY	LIKELIHOOD OF POLLUTION
					vehicles which are fit for purpose.								
	Storage	Leak from bulk storage	Yes	100 m^3	Newly built above ground storage tanks to be situated outdoors. Will be subject to routine visual checks and inspection in line with manufacturer guidance.	The tank will be installed in a concrete bund in compliance with CIRIA C736 guidelines, with level alarms to identify high levels of accumulated water.	Regular visual inspection of storage containers and bund	Sealed drainage system	Scheduled inspections	Yes	Yes	Yes	Negligible
Acid wash rundown from absorber and DCC air stripper acid washes for off-site removal	Storage	Leak from storage	Yes	Dedicated waste container having a capacity of approx. 450m^3, with a closed drain.	New storage containers. Will be subject to routine visual checks and inspection.	The hazardous waste storage containers will be kept locked to prevent accidental loss.	Regular visual inspection of storage.	Site hardstanding and containment sump	Scheduled inspections	Yes	Yes	Yes	Negligible
Reflux purge from stripper column for off-site removal	Operation	Leak from storage	Yes	Dedicated waste container having a capacity of approx. 30m^3, with a closed drain.	New storage container. Will be subject to routine visual checks and inspection.	The hazardous waste storage containers will be kept locked to prevent accidental loss.	Regular visual inspection of storage.	Site hardstanding and Containment sump	Scheduled inspections	Yes	Yes	Yes	Negligible
Small quantities of waste chemicals and oils	Maintenance	Leak from storage	Yes	Dedicated waste containers, with segregated storage of hazardous and non-hazardous waste.	New storage containers. Will be subject to routine visual checks and inspection.	The hazardous waste storage containers will be kept locked to prevent accidental loss.	Regular visual inspection of storage.	Site hardstanding and Containment sump	Scheduled inspections	Yes	Yes	Yes	Negligible
Reclaimer Waste (comprising Denatured Amine and Salts formed	Storage	Leak from storage	Yes	Up to approx. 30m^3 dedicated waste containers, with segregated storage of	New storage containers. Will be subject to routine visual checks	The hazardous waste storage containers will be kept locked to prevent	Regular visual inspection of storage.	Site hardstanding and Containment sump	Scheduled inspections	Yes	Yes	Yes	Negligible

SUBSTANCES	RELEVANT ACTIVITY	POTENTIAL FOR POLLUTION FROM THE RELEVANT ACTIVITY	EXISTENCE OF POLLUTION PREVENTION MEASURES	NATURE OF PRIMARY CONTAINMENT	TESTING AND INSPECTION OF PRIMARY CONTAINMENT	NATURE OF SECONDARY CONTAINMENT	TESTING AND INSPECTION OF SECONDARY CONTAINMENT	NATURE OF TERTIARY CONTAINMENT	TESTING AND INSPECTION OF TERTIARY CONTAINMENT	ADEQUACY OF POLLUTION PREVENTION MEASURES YES/NO	ARE THE PROPOSED INTEGRITY TESTING OF POLLUTION PREVENTION MEASURES ADEQUATE YES/NO	IS THERE AN ADEQUATE DOCUMENTED MANAGEMENT SYSTEM TO DEMONSTRATE OPERATOR MANAGEMENT AND COMPETENCE WITH THE RELEVANT ACTIVITY	LIKELIHOOD OF POLLUTION
from corrosion products)				hazardous and non-hazardous waste.	and inspection.	accidental loss.							
Diesel	Delivery by vehicle	Spillage during off-loading e.g. Flex hose/ connection failure	Yes	Road tanker/ retractable delivery hoses	Visual inspection of road tanker and delivery hoses to be carried out. Deliveries via reputable supplier using vehicles which are fit for purpose.	Concrete hardstanding draining via an oil water interceptor to a suitable attenuation tank/ pond.	Visual inspection of concrete hardstanding, and the interceptor to ensure it is in good working condition.	Spill kits to be available on site	Scheduled inspections	Yes	Yes	Yes - To be developed prior to first delivery	Negligible
	Storage	Leak from bulk storage	Yes	<5m^3 bulk tank	Newly built double skinned tank. Will be subject to routine visual checks and inspection in line with manufacturer guidance.	The tank will be double skinned and installed in a concrete bund in compliance with CIRIA C736 guidelines, with level alarms to identify high levels of accumulated water.	Regular visual inspection of bunding, and testing of alarms.	Site hardstanding	Scheduled inspections	Yes	Yes	Yes	Negligible

SUBSTANCES	RELEVANT ACTIVITY	POTENTIAL FOR POLLUTION FROM THE RELEVANT ACTIVITY	EXISTENCE OF POLLUTION PREVENTION MEASURES	NATURE OF PRIMARY CONTAINMENT	TESTING AND INSPECTION OF PRIMARY CONTAINMENT	NATURE OF SECONDARY CONTAINMENT	TESTING AND INSPECTION OF SECONDARY CONTAINMENT	NATURE OF TERTIARY CONTAINMENT	TESTING AND INSPECTION OF TERTIARY CONTAINMENT	ADEQUACY OF POLLUTION PREVENTION MEASURES YES/NO	ARE THE PROPOSED INTEGRITY TESTING OF POLLUTION PREVENTION MEASURES ADEQUATE YES/NO	IS THERE AN ADEQUATE DOCUMENTED MANAGEMENT SYSTEM TO DEMONSTRATE OPERATOR MANAGEMENT AND COMPETENCE WITH THE RELEVANT ACTIVITY	LIKELIHOOD OF POLLUTION
Water treatment chemicals (including Corrosion inhibitors, oxygen scavenger, phosphate, and biocides)	Storage	Leak from storage containers	Yes	<20m^3 (Typical storage quantities limited to between 0.1m^3 to 2m^3)	Chemicals to be stored in intermediate bulk containers (IBCs) within drip trays and other suitable bunds, in the dedicated store. These will be subject to routine visual checks and inspection in line with manufacturer guidance.	Drip trays and other appropriate bund for small containers.	Regular visual inspection of storage containers and drip trays.	Sealed drainage system in the store draining to the attenuation pond/ tank via oil water interceptors and wastewater sump.	Scheduled inspections	Yes	Yes	Yes	Negligible
Back-up water treatment chemicals (including Corrosion inhibitors, oxygen scavenger, phosphate, and biocides)	Storage	Leak from storage containers	Yes	<10m^3 (Typical storage quantities limited to between 0.1m^3 to 2m^3)	Chemicals to be stored in intermediate bulk containers (IBCs) within drip trays and other suitable bunds, in the dedicated store. These will be subject to routine visual checks and inspection in line with manufacturer guidance.	Drip trays and other appropriate bund for small containers.	Regular visual inspection of storage containers and drip trays.	Sealed drainage system in the store draining to the retention pond via oil water interceptors and wastewater sump.	Scheduled inspections	Yes	Yes	Yes	Negligible

ANNEX A: FIGURES

- Figure 1 – Site Location Plan
- Figure 2 – Site Layout



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Revision: 01 Drawn: JW Checked: CN Approved: RW Date: 20/07/2021

AECOM

PROJECT

Keadby 3 Low Carbon CCGT Generating Station Environment Permit Application

APPLICANT

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CONSULTANT

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LEGEND

- Installation Boundary
- Proposed PCC Site
- Indicative Canal Intake Area

NOTES

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ISSUE PURPOSE

ENVIRONMENT PERMIT APPLICATION

PROJECT NUMBER

60625943

SHEET TITLE

Installation Location Plan

SHEET NUMBER

Appendix C - Figure 1

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Drawn: JW Checked: CN Approved: RW Date: 01/07/2021
Revision: 01

AECOM

PROJECT

Keadby 3 Low Carbon CCGT Generating Station
Environment Permit Application

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LEGEND

- Proposed Installation Boundary
- A - Natural Gas Receiving Area
- B - Gas Turbine and Auxillaries
- C - HRSG and Auxillaries
- D - Steam Turbine and Auxillaries
- E - Power Island Electrical Equipment
- F - Flue Gas Fans and Ducting
- G - Flue Gas Cooling
- H -Absorber
- I - Stripping and Reclaiming
- J - Storage and Consumables
- K - Compression and Dehydration
- L - National Grid CO2 AGI
- M - Cooling Towers
- N - Gate House, Security and Parking
- O - Administration, Control Room and Stores Buildings
- P - Raw Water Treatment
- Q - Surface Water Attenuation Pond
- Emergency Access and Egress

NOTES

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ISSUE PURPOSE

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SHEET TITLE

Indicative Proposed Installation Layout

SHEET NUMBER

Annex A - Figure 2

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ANNEX B: LIST OF RAW MATERIALS

Material	Purpose	Estimated Maximum Storage Quantity (m^3)	Indicative Annual Consumption (tpa)
46% Sodium hydroxide	DCC wastewater stripper dosing and reclaimer waste treatement	64	7,000
98% Sulphuric acid	DCC wastewater pH control and absorber acid washing	54	8,000
Fresh solvent	100% solvent delivery to site	150	2,000
Bulk solvent	Operational solvent storage (35wt%)	4,500	N/A
Anti-foaming agents	For addition to the solvent (if required).		
Ammonia/Urea	SCR plant	100	tbc
Hydrogen	Deoxygenation package feedstock	35	15
Pt catalyst	Assume 10m^3 of Pt catalyst in H2 service operating at ~130°C, type, fill volume and replacement rate tbc in FEED.		
Diesel	Emergency Diesel Generator Storage	5	1
Water treatment chemicals (biocides, antiscalants, oxygen scavenger etc)	Raw water treatment plant dosing; demineralised water plant ion exchange regeneration; cooling water circulation and steam system dosing	1-2	tbc
Nitrogen	Storage tank blanketing		