dha environment

KEMSLEY PAPER MILL (K4) CHP PLANT, SITTINGBOURNE, KENT

EIA SCOPING REPORT

D S SMITH PLC

AUGUST 2017

DS Smith

The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017

REQUEST FOR SCOPING OPINION

Client:	**D S Smith Plc**
Project:	**Kemsley Paper Mill (K4) CHP Plant**
Date:	**August 2017**
Reference:	**TS/12321**
Author:	**Tim Spicer** **BSc MSc PIEMA**

DHA Environment
Eclipse House
Eclipse Park
Sittingbourne Road
Maidstone
Kent
ME14 3EN

Tel: 01622 776226
Email: info@dhaenvironment.co.uk
Web: www.dhaenvironment.co.uk
Twitter: www.twitter.com/dhagroup

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1 Introduction

1.1 Purpose of this Document

1.1.1 D S Smith Plc intends to apply to the Secretary of State for an Order granting development consent to decommission an existing gas fired Combined Heat and Power plant and build, commission and operate a new gas-fired Combined Heat and Power (CHP) plant to supply steam and power to their Kemsley Paper Mill, in Sittingbourne, Kent.

1.1.2 The proposed development constitutes a project falling within the definition of a Nationally Significant Infrastructure Project (NSIP) under the Planning Act 2008 by virtue of building, commission and operating an onshore generating station with an energy generating capacity of greater than 50MW and therefore requires a Development Consent Order (DCO) granting permission.

1.1.3 It is considered that the location, scale and nature of the proposed development notwithstanding the selection criteria in Schedule 3 of the corresponding Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter the EIA Regulations), may have the potential to give rise to significant effects on the environment. This being the case, the proposed development falls within Schedule 2 part 3(a) of the EIA Regulations and is considered to be an Environmental Impact Assessment (EIA) development, as defined by the EIA Regulations. The DCO application is therefore required to be accompanied by an Environmental Statement (ES), prepared in accordance with the EIA Regulations.

1.1.4 This report presents information to assist the Secretary of State in the process of preparing their written opinion on the scope of the information that should be set out in the ES. It outlines DHA Environment's initial assessment of the potentially significant environmental effects that the EIA would need to examine and the preliminary scope of the information that would need to be provided in the ES. DHA Environment in collaboration with RPS has prepared this report on behalf of D S Smith Plc in order to inform the Secretary of State's formal EIA scoping opinion under the EIA Regulations.

1.1.5 This scoping report constitutes a formal request for a scoping opinion under Regulation 10(1).

1.1.6 The initial output of the EIA process will be Preliminary Environmental Information (PEI), which will be the focus of formal pre-application consultation, and a final ES to be submitted in support of the DCO application.

1.2 Site Description

Location Plan

1.2.1 Regulation 10(3) (a) requires a request for a Scoping Opinion to be accompanied by "a plan sufficient to identify the land". Such a plan is provided as Figure 1.1.

Proposed Development Site

1.2.2 The proposed site lies adjacent to the south east corner of the existing Kemsley Paper Mill site approximately 600m west of the Swale Estuary and north of Milton Creek in the Borough of Swale, Kent. The site is roughly triangular in shape and consists entirely of existing concrete hardstanding. For identification purposes, the Scheme is centred on national grid reference (OS Grid reference 592007,166298) and its general location is shown in Figure 1.1 in red.

1.2.3 The site is accessed from the A249 via Swale Way via Ridham Avenue. An internal access road provides access to the proposal site. Figure 1.2 provides an aerial view of the site.

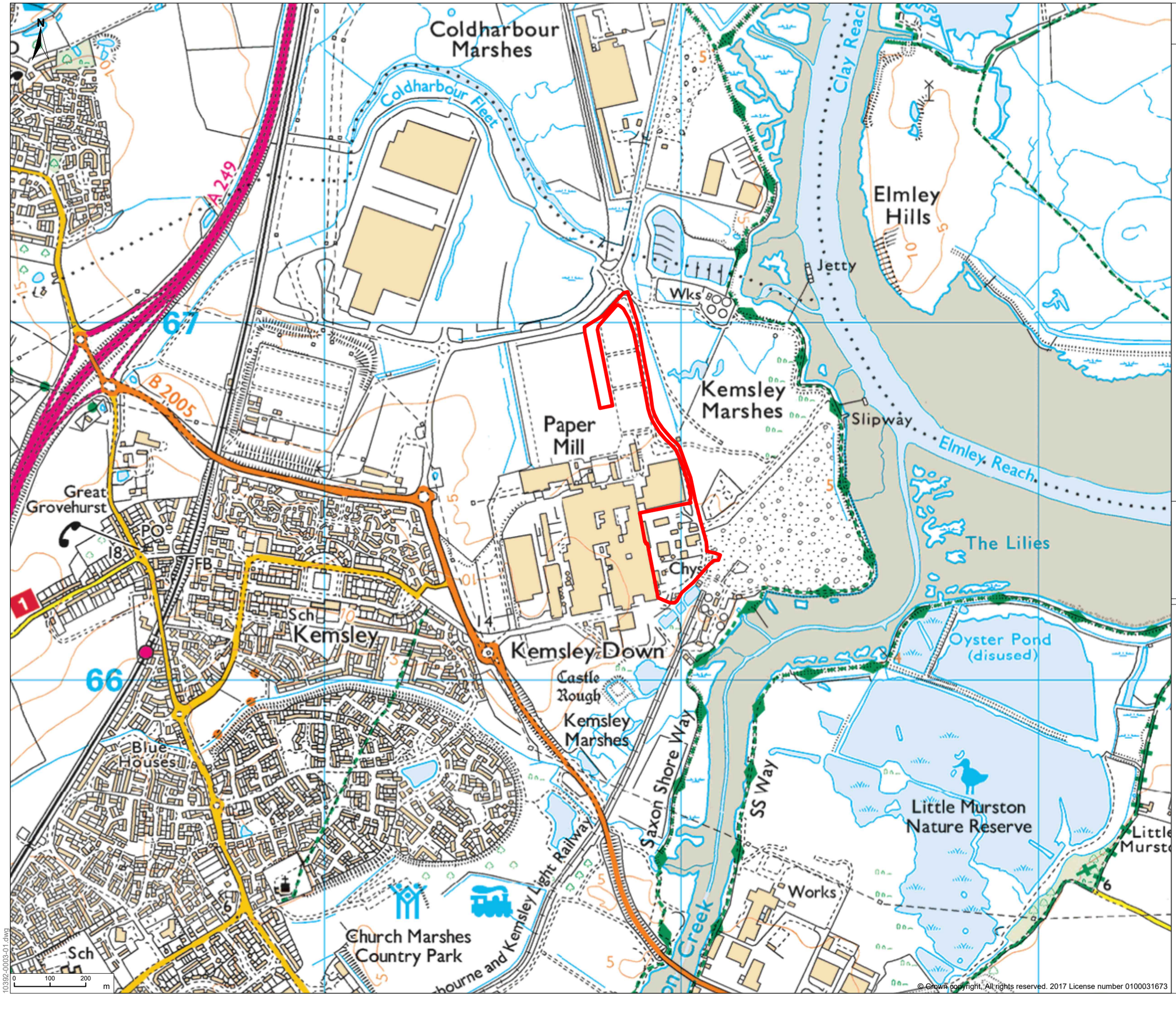
1.2.4 The site lies immediately east of the Kemsley residential suburb of Sittingbourne with the town centre some 2.5km south of the site.

1.3 Planning History

1.3.1 Swale Borough Council's online planning register records the following recent and relevant planning history related to the site and the Kemsley Paper Mill site as a whole as identified in Table 1.1 below:

Plan / Application	Description
16/507687/COUNTY	County matters application for the construction and operation of an Incinerator Bottom Ash (IBA) Recycling Facility on land adjacent to the Kemsley Sustainable Energy Plant. Kemsley Mill Ridham Avenue Sittingbourne Kent ME10 2TD. Permitted February 2017.
16/508468/EIASCO	Scoping Opinion for proposed Generating Station Power upgrade. Wheelabrator Kemsley Generating Station Ridham Avenue Sittingbourne Kent ME10 2TD. January 2017.
16/501228/FULL	Construction of a new baling plant building within an existing waste paper storage yard. Kemsley Mill Ridham Avenue Sittingbourne Kent ME10 2TD. Permitted May 24, 2016.
SW/10/444	Development of a sustainable energy plant to serve Kemsley Paper Mill, comprising pre-treated waste fuel reception, moving grate technology, power generation and export facility, air cooled condenser, 2 no. stacks (90 metres high), transformer, bottom ash facility, steam pipe connection, office accommodation, vehicle parking, landscaping, drainage and access. Land to the East of Kemsley Paper Mill, Kemsley, Sittingbourne, Kent, ME10 2TD. Permitted April 2011.

Table 1.1: Summary of Relevant Planning History



REQUEST FOR SCOPING OPINION

Legend

Application boundary

Notes

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RPS

dha environment

20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 **E:** rpsox@rpsgroup.com **F:** +44(0)1235 834 698

Client	DS Smith
Project	Kemsley K4
Title	Site location

Status	Drawn By	PM/Checked by
Draft	RM	NB
Job Ref	**Scale @ A3**	**Date Created**
OXF9163	1:10,000	Jul 2017

Figure Number

1.1

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Legend

Application boundary

Proposed buildings

1. Towns water
2. Package Boilers (6 off)
3. old WTP
4. Feed water tanks
5. Sewerage pumps
6. Gas stations
7. New WTP
8. New CHP
9. Raw water
10. LP & MP manifolds

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DS Smith

20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 **E:** rpsox@rpsgroup.com **F:** +44(0)1235 834 698

Client	DS Smith
Project	Kemsley K4
Title	Aerial view of the site

Status	Drawn By	PM/Checked by
Draft	RM	NB
Job Ref	**Scale @ A3**	**Date Created**
OXF9163	1:5,000	Jul 2017

Figure Number

1.2

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1.4 Nature and Purpose of the Development

Background

1.4.1 Kemsley Mill was originally built by Edward Lloyd in 1924 to produce newsprint. At that time, its four paper machines were the largest in the world.

1.4.2 D S Smith bought the whole site in 2008, investing over £100m to upgrade facilities to make lightweight corrugated case material (CCM). This is the first recycled lightweight paper manufactured in the UK. Kemsley Mill has an annual production capacity of around 800,000 tonnes made from 100% recycled waste paper and is the second biggest recovered fibre-based paper operation in Europe.

1.4.3 The Kemsley Paper Mill has a requirement for around 153 MWth (195 t/h) of steam and 50 MW of power when operating at full production. Like all paper mills, it requires this energy to be supplied reliably and continuously. The requirement can fluctuate quickly if any, or a combination of the three mill paper machines change process parameters. The current requirements are met from several sources: K1, a gas turbine CHP plant; K2, a waste plastics and sludge fired steam generator; six back-up package boilers; and can supplement any power shortfall via imported power if required. From 2019 a third party offsite energy from waste plant will supply up to 70 t/h of steam.

1.4.4 K1 is core to the paper mill's energy strategy. The existing K1 CHP Plant was supplied by John Brown Engineering in November 1995. The plant principally comprises a 42 MWe GE Frame 6B Gas Turbine which exhausts into two supplementary fired Waste Heat Recovery Boilers. Each boiler is capable of generating up to 150 MW (th) of steam at 525 °C and 125 bara. This steam is passed through a 38 MWe back pressure turbine manufactured by Mitsubishi. There are also six Cochran package boilers which can provide LP steam at circa 30t/hour per boiler.

1.4.5 The K1 plant is around 20 years old and is operated under a contract by E.On (Business Heat and Power). The current operating contract will end in February 2019. DS Smith has assessed the condition of K1 and is aware that it will require significant investment into the gas turbine (GT), waste heat recovery boilers (WHRBs) and steam turbine (ST). DS Smith therefore intends to replace the existing plant with a new plant, which will fully integrate with the remaining supply equipment and be constructed on available land adjacent to the existing K1 plant. The new plant will be expected to provide a further 20 years of reliable and efficient operation and sized to meet the projected site energy demands whilst maximising opportunities within the Energy market.

Neighbouring development

1.4.6 D S Smith have leased Wheelabrator Technologies Inc. an area of land immediately east of DS Smith's paper mill at Kemsley to construct a combined heat and power plant.

1.4.7 The Wheelabrator Kemsley facility (hereafter known as K3) will be able to process 550,000 tonnes of local residential and business waste each year generating up to 49.9 MW (gross) of clean, renewable energy to power UK homes and businesses.

1.4.8 This facility received the necessary planning and permitting permissions in August 2016 and construction of the facility commenced shortly afterwards.

1.4.9 Once operational K3 will supply up to 70 t/h of steam to the D S Smith's Kemsley Paper Mill. The electricity produced by K3 will be exported directly to the national grid.

1.4.10 K3 CHP Ltd (the Applicant) is currently preparing an application for development consent in order to seek an increase in the maximum electrical power output of the consented Wheelabrator Kemsley Generating Station, from 49.9 Megawatts electrical (MWe) to up to 75 MWe.

1.4.11 The proposed development sought by D S Smith Plc. is not linked to or reliant upon the aforementioned DCO application by K3 CHP Ltd i.e. the 70 t/h of steam to supply Kemsley Mill can be supplied as part of the extant permission without the DCO which is currently being sought.

Proposed development

1.4.12 The proposed development seeks to decommission the existing K1 CHP on the Site and build, commission and operate a new CHP plant. K1 will be decommissioned once the new CHP plant becomes fully operational which will be reflected in the amended Environmental Permit issued by the Environment Agency which controls the operation of the site. This permit variation application will be submitted alongside the DCO application and in place prior to any Order granting Development Consent.

1.4.13 It is anticipated that subject to obtaining the Order granting Development Consent the new gas-fired Combined Heat and Power (CHP) plant will become fully operational in 2020.

1.4.14 The new gas-fired Combined Heat and Power (CHP) plant, hereafter referred to as 'K4', will comprise the following:

- Gas turbine technology of around 52 MW nominal power output.
- Waste Heat Recovery Boilers (capable of supplementary firing) sized to provide an output of approximately 105 MWth steam.
- Steam Turbine technology of around 16 MW nominal power output.

1.4.15 The plant will require the following tie-ins to existing onsite facilities:

- Feed water from the new water treatment plant (WTP) (a new water treatment plant is currently under construction; planning not required but under building regulations. The water treatment plant will supply demineralised water (ion exchange technology) to the existing K1 plant and the K3 plant. Once K1 is decommissioned it will then supply K4)
- Potable water.
- Groundwater abstraction.

- Sewerage out take.
- Surface effluents out take.
- Control/Network connection.
- Gas from the existing gas let-down station.
- Steam to the existing LP and MP steam headers.
- Power to the existing transmission network and related communications connections.

1.4.16 No off site infrastructure will be required as part of the proposed development.

1.4.17 Figure 1.3 below shows the proposed location of K4 and surrounding tie-in plant.

1.4.18 Figure 1.4 shows the location of the proposed development relative to the existing K1 plant and the third party Wheelabrator Kemsley facility (K3).

REQUEST FOR SCOPING OPINION

Legend

Application boundary

Proposed buildings

1. Towns water
2. Package Boilers (6 off)
3. old WTP
4. Feed water tanks
5. Sewerage pumps
6. Gas stations
7. New WTP
8. New CHP
9. Raw water
10. LP & MP manifolds

Notes

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20 Western Avenue, Milton Park, Abingdon, Oxfordshire, OX14 4SH
T: +44(0)1235 821 888 **E:** rpsox@rpsgroup.com **F:** +44(0)1235 834 698

Client: DS Smith

Project: Kemsley K4

Title: Proposed site layout

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Draft	RM	NB
Job Ref	**Scale @ A3**	**Date Created**
OXF9163	1:1,250	Jul 2017

Figure Number

1.3

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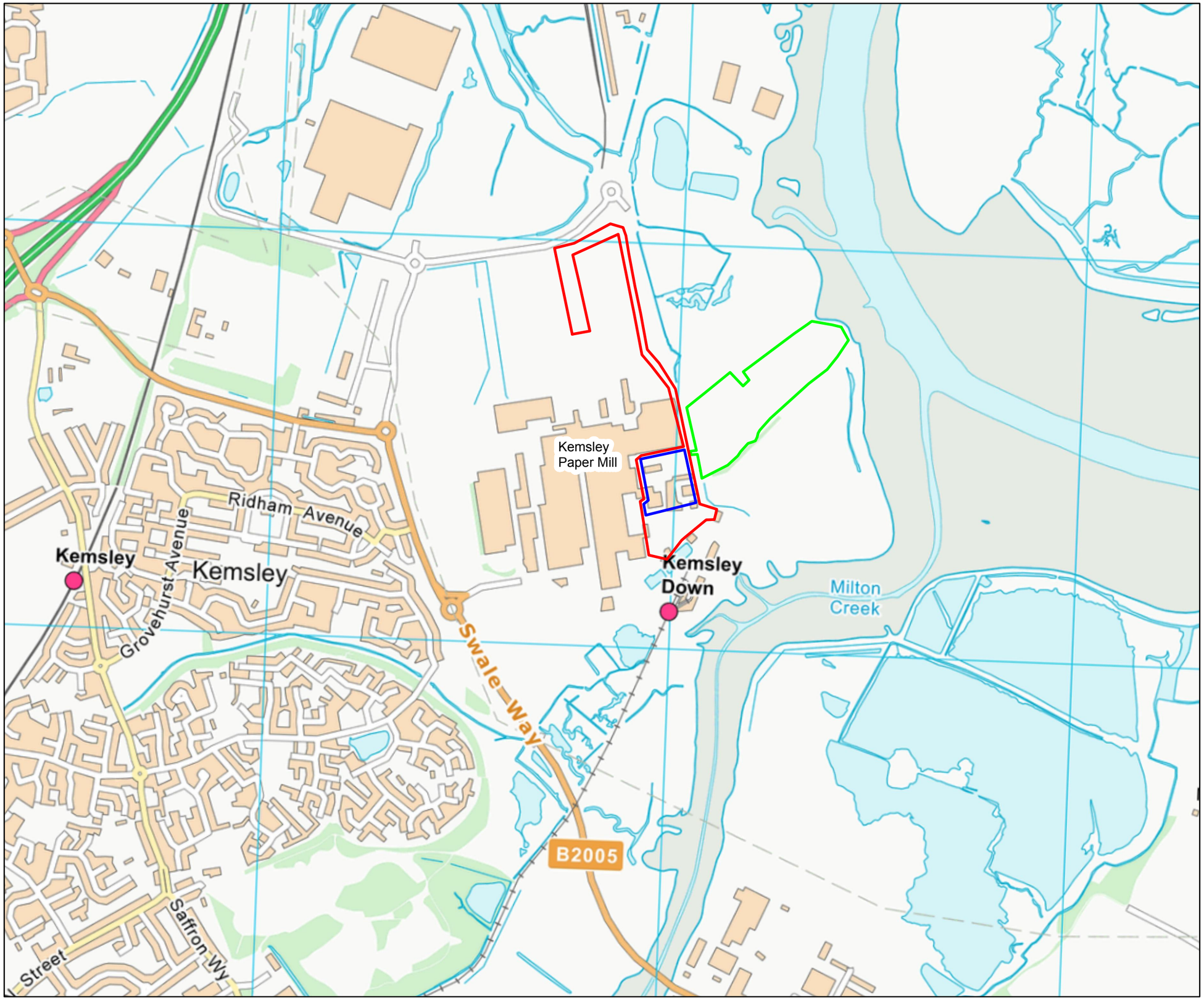


Legend

- Application Boundary
- Existing K1 Facility
- Permitted Wheelabrator Facility (currently under construction)

500 250 0 500 1,000 1,500 Meters

TITLE
Figure 1.4

CLIENT
DS SMITH PAPER LIMITED

PROJECT
K4 DCO PROJECT, KEMSLEY MILL, SITTINGBOURNE.

SCALE AT A3 1:15,000 | DATE July 2017 | JOB NO. 12321

dha environment
Eclipse House, Eclipse Park, Sittingbourne Road
Maidstone, Kent ME14 3EN

t: 01622 776226
e: info@dhaplanning.co.uk
w: www.dhaplanning.co.uk

1.5 Environmental impact assessment – an overview

1.5.1 The EIA Regulations require that development applications for a specified range of projects, termed EIA developments, are accompanied by an ES that reports the findings of an EIA of the development's significant environmental effects. The Department for Communities and Local Government's (DCLG) online National Planning Practice Guidance defines the purpose of EIA:

> *"The aim of Environmental Impact Assessment is to protect the environment by ensuring that a local planning authority when deciding whether to grant planning permission for a project, which is likely to have significant effects on the environment, does so in the full knowledge of the likely significant effects, and takes this into account in the decision making process."*

1.5.2 Whilst DCLG guidance relates principally to the Town and Country Planning (Environmental Impact Assessment) Regulations, the principal purpose of the 22 sets of EIA Regulations in the UK remains the same and guidance is therefore considered relevant where it relates to the core principles of EIA, notwithstanding the procedural differences across the various sets of Regulations.

1.5.3 Regulation 4(2) of the Infrastructure EIA Regulations 2017, in accordance with the 21 sets of other EIA Regulations, prohibits development consent for EIA development unless an EIA has been carried in respect of that application.

1.5.4 The environmental information gathered to undertake an EIA and its outcomes are reported in a document referred to as the ES. The ES then accompanies the application for the development consent for the proposed development.

1.5.5 There is no standard format for an ES. The EIA Regulations require that an ES at least contains the information specified in Schedule 4 of the Regulations, a copy of which is provided in Appendix I of this report for information.

1.5.6 The EIA process for the proposed development will take account of the guidance provided by PINS in the form of the non-statutory National Infrastructure Advice Notes. These provide advice and information on a range of issues arising throughout the whole life of the application process. Although in many cases they include recommendations from PINS about the approach to particular matters of process, it is not a requirement for developers or others to have regard to the content of advice notes. Notwithstanding this DHA Environment on behalf on D S Smith have had due regard to the relevant PINS guidance within this scoping report as appropriate:

- Advice Note Three: EIA consultation and notification (the Planning Inspectorate, 2015a);
- Advice Note Seven: Environmental Impact Assessment, Preliminary Environmental Information, Screening and Scoping (the Planning Inspectorate, 2015b);
- Advice Note Nine: Rochdale Envelope (the Planning Inspectorate, 2012);

- Advice Note Ten: Habitat Regulations Assessment (the Planning Inspectorate, 2016);
- Advice Note Twelve: Transboundary Impacts (the Planning Inspectorate, 2015c); and
- Advice Note Eighteen: The Water Framework Directive (The Planning Inspectorate 2017)

1.6 Limitations and assumptions

1.6.1 This scoping report has been informed by information from previous applications on the Kemsley Paper site supplemented by desk based information sources. All assumptions and recommendations set out in this report are based on professional experience. DHA Environment is an Institute of Environmental Management and Assessment EIA Quality Mark registrant.

1.7 Other related legislation

1.7.1 In producing the Scoping Report due regard has been had to other related environmental legislation including the Conservation of Habitats and Species Regulations 2010 (as amended), the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 and the Environmental Permitting (England and Wales) Regulations 2010 which transpose the Industrial Emissions (Integrated Pollution Prevention and Control) Directive (Recast) (IE(IPPC)D) (Directive 2010/75/EU).

1.7.2 Where relevant the requirements of the EIA Regulations and related legislation environmental will be co-ordinated and cross referenced as appropriate.

1.7.3 An amended Environmental Permit will be sought to reflect the proposed decommissioning of K1 and the operation of the new K4 plant. This permit variation application will be submitted alongside the DCO application and in place prior to any Order granting Development Consent.

2 Scoping an Environmental Impact Assessment

2.1 Background

2.1.1 The advice given in the DCLG EIA guidance (under the section "What Information should the Environmental Statement contain") is that:

> *"Whilst every Environmental Statement should provide a full factual description of the development, the emphasis of Schedule 4 is on the "main" or "significant" environmental effects to which a development is likely to give rise. The Environmental Statement should be proportionate and not be any longer than is necessary to assess properly those effects. Where, for example, only one environmental factor is likely to be significantly affected, the assessment should focus on that issue only. Impacts which have little or no significance for the particular development in question will need only very brief treatment to indicate that their possible relevance has been considered."*

2.1.2 This approach is reinforced by case law. Judgements have stated that, even in relation to the minimum requirements for an ES, not every possible effect has to be considered. The focus should be on the main effects and on remedying the significant adverse effects. The Milne judgement (R v Rochdale MBC ex parte Milne) states that:

> *"the environmental statement does not have to describe every environmental effect, however minor, but only the main effects or likely significant effects".*

2.2 The purpose of scoping

2.2.1 There is no statutory provision as to the form of an Environmental Statement however; it must contain the information specified in Schedule 4.

2.2.2 The Secretary of State's scoping opinion (provided pursuant to Regulation 10(1) of the EIA Regulations) represents their formal opinion on the information that needs to be presented in the ES. The Secretary must consult the consultation bodies for a period of 28 days prior to adopting a scoping opinion.

2.2.3 The purpose of scoping is to 'scope in' only those aspects considered to have likely significant environmental effects. Where a particular environmental feature, or component of it, has not been included within the proposed scope of the EIA, this is not to suggest that there will be no associated effects; rather that these are not considered to be among the significant effects. These effects will be given brief treatment (within this scoping report) to indicate that their possible relevance has been considered, but no detailed assessment work is proposed for them.

2.2.4 As required under the EIA Regulations, scoping is an identification process that will need to be kept under review throughout the EIA process, ensuring any new potentially significant environmental effects are identified and included. DHA Environment will amend the scope of the EIA as required and, in the event of a significant change to the proposals or the baseline conditions, may approach the Secretary of State for a further scoping opinion.

2.2.5 In accordance with Regulation 14(3) (a) the ES must be based on the most recent scoping opinion adopted (so far as the proposed development remains materially the same as the proposed development which was subject of that opinion).

2.3 Scoping methodology

2.3.1 The scoping methodology used in this report has two stages, explained in this section. The subsequent chapter addresses the second stage of scoping, summarising the findings of both stages and identifying those matters to be included in the EIA for each topic heading, before setting out the proposed assessment methodology for each topic heading. The concluding chapter summarises all of the matters that DHA Environment considers should be addressed in the EIA.

2.3.2 There is no formal definition of main or significant effects in the Regulations, although guidance provided by the European Union advises that:

> *"Those responsible for scoping often find difficulties in defining what is 'significant'. A useful simple check is to ask whether the effect is one that ought to be considered and to have an influence on the development consent decision."*

2.3.3 Stage 1 uses a checklist of environmental features and their components to identify:

i. Those environmental features, or components of them, that clearly have the potential to be subjected to likely significant environmental effects arising from the proposed development.

ii. Those environmental features, or components of them, that may be subjected to effects arising from the proposed development, but it is not clear whether these effects have the potential to be 'likely significant' (further consideration is required to determine whether these should be included in the EIA).

iii. Those environmental features, or components of them, that are either of no relevance to the proposed development, or will clearly not be subjected to 'likely significant 'effects from the proposed development. Reasons are stated for potential effects that are assessed as being unlikely to be significant and that do not therefore require further assessment (i.e. they are scoped-out).

2.3.4 This checklist is based on the features of the environment referred to in the EIA Regulations and:

- Environmental Impact Assessment (EIA), A handbook for scoping projects (Environment Agency 2002).
- Guidance on EIA Scoping (European Commission, 2001)
- Guidelines for environmental impact assessment (The Institute of Environmental Management and Assessment, 2004)

2.3.5 Due regard has been given to the proximity of the proposed development to sensitive areas as set out in Schedule 3, in the determination of likely significant effects where

relevant. A map of the site relative to sensitive receptors in proximity to the proposed development is provided in Appendix II of this report.

2.3.6 A large group of potential environmental effects were examined, as set out in Table 2.1 below. Where potential environmental effects were identified, those that clearly have the potential to be significant are highlighted red and those that could be significant but require more detailed analysis are highlighted orange.

Environmental aspect	Component	Possible significant construction effect envisaged?	Possible significant operational effect envisaged?	Possible significant effect during decommissioning envisaged?	Comments
Traffic and transport	Infrastructure	No	No	No	It is not considered that the proposed development will require the construction or significant alteration to local road infrastructure to facilitate the proposed development.
	Traffic flows	Yes	No	Yes	The proposed development will alter the traffic composition on the local road network during the construction and decommissioning stages associated with the HGV movements and oversized and abnormal loads. During operation there will be minimal vehicle movements associated with the proposed development limited to periodic maintenance intervals. No significant effects are therefore anticipated during the operational stages of the development.
	Pedestrians and cyclists	Yes	No	Yes	The resultant change in traffic composition may affect highway safety, and result in fear, intimidation and/or severance for pedestrians and cyclists.
	Air traffic	No	No	No	There will be no air traffic associated with the proposed development. Whilst the stack height of the GT and resultant plume is unknown at this stage it is considered unlikely to be sufficient to present a significant hazard to air traffic movements or safety particularly given the lack of operational airfields on the vicinity of the site.

	Public transport	No	No	No	The site is well served by public transport including Kemsley Railway Station and bus services. It is not anticipated that the proposed development will generate sufficient numbers of construction workers that should they travel by public transport capacity problems would result.
Air Quality	Local air quality (criteria pollutants)	No	Yes	No	The Institute of Air Quality Management (IAQM) air quality assessment guidance states that assessment may be required for proposals that increase the AADT of Heavy Duty Vehicles by >100 or Light Duty Vehicles by >500 for sites that are not within or adjacent to an AQMA. Within an AQMA or adjacent to an AQMA proposals that increase the AADT of Heavy Duty Vehicles by >25 or Light Duty Vehicles by >100 may require assessment. The proposed development lies some distance from the nearest AQMA's in Sittingbourne. It is considered unlikely that traffic from the propose development will route through Sittingbourne albeit it is possible that some construction traffic may route through the AQMA on the M20 at Maidstone. Notwithstanding this it is considered unlikely that the proposed development will result in traffic movements in excess of the thresholds. On the basis of the above it can therefore be concluded that there will be no significant traffic related air quality effects. The operation of the gas fired turbine will result in emissions to air of combustion related gases including nitrogen dioxide. Whilst at this stage it is anticipated that due to subsequent advances in technology since the previous facility was installed in 1995 that emission levels will fall, the subsequent design and operation of the plant is not yet determined and cannot be confirmed. Releases to air are regulated by the Environment Agency and controlled by ELVs stipulated by the requirements of Annex VI of Directive 2010/75/EU. Detailed dispersion modelling of point source emissions to air including nitrogen dioxide will be undertaken to quantify the effects of the emissions of human and ecological receptors in accordance with the Environmental Permitting (England and Wales) Regulations 2010 and IAQM guidance and reported in both the ES and the permit application.
	Dust	Yes	No	Yes	The proposed development lies in relative proximity to the Swale SSSI, SPA and Ramsar site and residential receptors (400m and 600m respectively). An assessment of construction dust on human health and ecological receptors has therefore been scoped into the EIA on a precautionary basis.

	Odour	No	No	No	The proposed development is not considered to be a significant odour emitting source.
	Transboundary air quality	No	No	No	The scale and location of the proposed development suggests the potential for significant effects on transboundary air quality is negligible.
Climate Change	Global climate and greenhouse gas emissions	No	Yes	No	The operation of the gas fired turbine will result in direct releases of combustion related greenhouse gas (GHG) emissions and indirect GHG emissions via the extraction and supply of gas fuel. Construction of the proposed development will also give rise to GHG emissions directly (from plant used on-site) and indirectly (from production of materials and energy resources used). Whilst at this stage it is anticipated that due to subsequent advances in technology since the previous facility was installed in 1995, that the emissions levels will fall, the subsequent design and operation of the plant is not yet determined and therefore impacts on greenhouse gas emission and climate change are scope into the assessment on a precautionary basis.
	Vulnerability of the development to climate change	No	Yes	Yes	The proposed development has an anticipated lifespan of approximately 20-25 years. The anticipated effects of climate change over this period are not considered to present a significant vulnerability risk to the proposed development except by virtue of proximity to the River Swale and associated flood risk. The Met Office UK Carbon Projections ('UKCP09') dataset (Met Office and Defra, n.d.) provides probabilistic projections of change in climatic variables in regions of the UK over time under several potential future global emissions scenarios. Even under a high emissions scenario, the high-magnitude (low-probability) climatic changes within the proposed development's operational lifetime are not considered likely to give rise to any significant impact on the development to which its design would need to respond or which would affect decommissioning. The effects of climate change related sea and river level rise over the lifespan of the development are not included in the Met Office Carbon Projection Dataset and will be included in the flood risk assessment of the proposed development on a precautionary basis, although not considered to present significant vulnerability.

Noise and vibration	Noise	Yes	Yes	Yes	The perception of sound level is subjective, but as a general guide a 10dB(A) increase can be taken to represent a doubling of loudness, whilst a change in the order of 3dB(A) is generally considered to be just perceptible. Guidelines for the Environmental Assessment of Road Traffic (1993) state that: "typically, a halving or doubling of flow produces a 3dB(A) change in noise level." This level of change in traffic flows is not anticipated and so no assessment of road traffic noise is proposed. The site lies 600m and 400m respectively from the nearest residential receptor and the Swale SPA. On a precautionary basis construction and decommissioning noise has been scoped into the ES. Whilst it is anticipated that the new gas turbine will be no louder that the existing K1 facility, given the proximity of sensitive receptors this is scoped into the ES for completeness.
	Vibration	Yes	No	No	At this stage it is not known whether foundation piling will be required to facilitate the proposed development. Should the need for foundation piling subsequently be identified the need for a vibration assessment will be reviewed as part of the EIA process.
Human Heath	Direct or indirect deleterious effects on human health	Yes	Yes	Yes	The likely significant health impacts of the proposed development are considered to relate to air quality, noise during construction, the potential exposure of construction workers to contamination during the construction process and the risk of major accidents and or disasters These affects are proposed to be addressed within the relevant technical chapters/appendices and a standalone Human Health Assessment is not proposed for inclusion in the ES unless specifically requested.
Community, Social and Economic Effects	Population profile and density	No	No	No	The proposed development will not alter the population profile or density of the locality.
	Demography	No	No	No	The proposed development will have no significant effect on local demography.
	Housing supply	No	No	No	No housing is proposed as part of the proposed development.

	Employment	No	No	No	The proposed development will have no associated increase in staffing numbers.
	Lifestyle/standard of living	No	No	No	Given the nature of and location of the proposed development no effects on lifestyle or standard of living are envisaged. Effects on noise, air quality and landscape will be addressed in their relevant chapters in the ES as proposed.
	Education, health and other local services	No	No	No	The proposed development will have no associated effects on education, health or other local services.
	Local environmental amenity	No	No	No	Effects on local environmental amenity will be addressed in the transport, air quality, noise and landscape and visual impacts assessments in the ES.
	Electromagnetism/radiation	No	No	No	The proposed development will have no significant effect on electromagnetism /radiation.
	Telecommunications	No	No	No	The proposed development will have no significant effect on telecommunications.
	Tourism	No	No	No	The proposed development given its proposed location and existing context is not envisaged to result in significant effects on local tourism.
	Archaeology	Yes	No	No	The wider area saw extensive activity from early times, with remains of ritual, settlement and agricultural origin being recorded on the mainland and on Sheppey. At least part of the higher ground of the Kemsley Ridge is known to have been used for occupation activity during the prehistoric and Roman periods, while the alluvial floodplain would have been marshland and would have been exploited for a number of purposes, including salt making and pottery manufacture as well as hunting and fishing. Although previously developed, there is a possibility that archaeological remains may survive within the proposal site.

Heritage	Scheduled Monuments	Yes	Yes	No	There is a Scheduled Monument, Castle Rough, a medieval moated site approximately 300m south of the proposed development location. In addition, there are several designated assets around the proposal site, the settings of which may be affected by the proposed development. On this basis it is proposed to undertake a baseline desk assessment in the first instance, followed by an environmental statement chapter.
	Architecture / buildings / structures	No	No	No	There are no listed buildings in proximity to the site, such that given the site's current context and industrialised appearance no significant effects on their setting would occur.
	Historic parks and gardens	No	No	No	There are no historic parks and gardens in proximity to the site.
	Other historic interest	No	No	No	The proposed development is not considered likely to result in significant effects on other features of historical interest.
Ground Conditions	Geology and geomorphology	No	No	No	No significant effects on geology or geomorphology are envisaged to result from the proposed development.
	Ground contamination	Yes	Yes	Yes	Given the historic industrial use of the site prior to stringent environmental controls there is the possibility for hotspots of contamination to exist on site. The construction process of the proposed development may therefore create new pollutant-receptor pathways to both construction workers, ground water and nearby surface waters.
	Mineral resources	No	No	No	No mineral extraction is proposed as part of the development and it does not lie in a minerals safeguarding area.
Land Use	Agriculture / horticulture	No	No	No	The site comprises existing hardstanding.
	Forestry	No	No	No	The site comprises existing hardstanding.

	Recreation / open space / rights of way	No	No	No	The site is in private ownership with no public access.
	Mineral extraction	No	No	No	No mineral extraction on site is proposed.
	Industrial / commercial / retail	No	No	No	The proposed development consists of industrial related development, the effects on the proposed land use and its compatibility with surrounding land uses is considered to be addressed within the scope of the ES as proposed and therefore no standalone land use chapter is proposed.
	Residential	No	No	No	No residential development is proposed.
	Health / social / education	No	No	No	No health, social or education development land uses are proposed.
	Waste disposal	No	No	No	No waste disposal or related development is proposed.
Landscape and visual effects	Landform / topography	No	No	No	There are no proposed changes to the landform/topography of the site
	Landscape/ townscape character	Yes	Yes	No	Whilst the development is unlikely to significantly alter the character on the site and thereby the character of the area, its intrinsic link with its visual impact means for completeness it will be considered as appropriate within the ES.
	Protected landscapes	No	No	No	The site does not lie within the North Downs AONB and is not considered to be visible from within it.
	Sensitive views	Yes	Yes	No	The proposed development will require a flue sufficient to result in the adequate dispersion of pollutants and steam to avoid effects on air quality. At this stage it is not possible to quantify the exact height of the flue or associated plume and therefore the visual effects of the flue are to be included in the ES on a precautionary basis.

Biodiversity	Habitat types	No	Yes	No	The site as existing consists entirely of concrete hard standing, so no on site effects on habitat types will therefore occur. The operation of the gas fired turbine will result in emissions to air of combustion related gases including NOx. Whilst at this stage it is anticipated that due to subsequent advances in technology since the previous facility was installed in 1995, that emissions levels will fall, the subsequent design and operation of the plant is not yet determined. NOx and nutrient nitrogen can have deleterious effects on plant species composition within an area. Given the proximity of the Swale SSSI and SPA the effects of NOx and nitrogen deposition are scoped into the ES and will be co-ordinated with the Air
	Faunal communities	No	No	No	The proposed development is considered unlikely to significantly affect the conservation status of faunal communities. Effects on individual protected species in proximity to the site will be considered. The nature of the development is such that significant effects on overall faunal communities are unlikely.
	Individual / protected species	No	Yes	No	Construction noise may have adverse effects on overwintering birds which constitute interest features of the SPA. Similarly nitrogen effects on habitat composition may have indirect effects on protected species.
	Ecosystem integrity	No	No	No	The scale and nature of the proposed development suggests significant effects on ecosystem integrity are unlikely.
	Wildlife conservation	No	Yes	No	The proposed development has the potential to affect interest features of the nearby Swale SPA, SSSI though nitrogen emissions and construction noise, and the creation of new contamination pathways during construction.
	Resource management	No	No	No	The management of natural resources will not be affected.
	Natural processes	No	Yes	No	NOx and nutrient nitrogen can have deleterious effects of plant species composition within an area. Given the proximity of the Swale SSSI and SPA the effects of NOx and nitrogen deposition are scoped into the ES and will be co-ordinated with the HRA as necessary.

Waste	Demolition waste	No	No	No	The scale of the demolition required is not considered to result in a significant quantum of demolition waste.
	Waste management	No	No	No	The proposed development will not generate significant contaminated waste or constitute a waste management facility.
Water Environment	Surface water quality	Yes	Yes	Yes	Mobilisation of oil and fuels via uncontrolled surface water run-off during demolition and construction activities may affect local surface water quality.
	Surface water quantity and flood risk	Yes	Yes	Yes	The site lies in flood zone 1 (low flood risk) albeit in close proximity to the River Swale. The drainage strategy for the site is intrinsically linked to the safeguarding of water quality. An assessment of the likely flood risk of the development over its operational life span will be included in the assessment to addresses the developments vulnerability to climate change.
	Surface water temperature	No	No	No	No processes are proposed that could change surface water temperature.
	Groundwater quality	Yes	No	No	Given the nature of the development and its proposed location on concrete hardstanding there is not considered to be a significant risk to groundwater from the operation of the Gas Turbine. There is the potential should any contamination hotspots exist on site for contamination to migrate into groundwater if disturbed. This will be addressed as part of the ground conditions chapter, and cross referenced as necessary in the water environment assessment chapter.
	Groundwater quantity	No	No	No	The extent of groundwater bearing strata beneath the site is limited and therefore the proposed development is not considered to result in a significant reduction in the recharge area of the groundwater bodies in comparison to their total area.
	Groundwater temperature	No	No	No	No processes are proposed that could change groundwater temperature.
	Coastal / oceanic water quality	Yes	Yes	No	Pollution during construction and demolition activities and runoff from developed areas may affect surface water quality in the Swale Estuary.

	Coastal water temperature	No	No	No	No processes are proposed that could change groundwater temperature.
	Coastal processes / hydrodynamics	No	No	No	No processes are proposed that could affect coastal processes/hydrodynamics.
	Water resource (ground/surface)	No	Yes	No	The proposed development will require a water supply in order to generate the steam required in the paper recycling process. At this stage it is unknown whether the future volume of water required will exceed that already used and so the effect on groundwater resources is scoped into the ES on a precautionary basis.
Risk of major accidents and or disasters	Risk of major accidents and or disasters and their potential for significant environmental effects	No	Yes	No	Gas turbines within acoustic enclosures can present fire and explosion hazards. The pipework systems are complex, and a leak of gas, can ignite from the hot turbine surfaces or from other sources. Such instances can have significant environmental effects particularly on human health and safety.

3 Potential Environmental Impacts

3.1 Scoping - stage 2

3.1.1 The stage 1 process set out in table 2.1 has identified those environmental effects that will be considered in the stage 2 process and those that will not be included in the EIA.

3.1.2 As well as summarising the environmental effects that clearly have the potential to be significant, stage 2 of the scoping process involves a more detailed examination of effects including those where it is not clear whether these effects have the potential to be significant.

3.1.3 For each environmental topic considered in stage 2, an outline is provided of the baseline conditions (where these are known at this stage). This information is followed by an outline of the scope of the assessment (i.e. those effects scoped in or out of the assessment) and the proposed assessment methodology.

3.1.4 Decisions about the likely significant effects of the proposed development and therefore the scope of the assessment have been based upon professional judgement, with reference to the project description, and using information about:

- the receptors (people and environmental resources) that could be affected by the proposed development;
- the activities involved in constructing and operating the proposed development;
- changes that could result from these activities (e.g. changes in traffic flows or land cover as a result of the proposed development);
- the expected magnitude and other characteristics of the environmental changes that could result from these activities and that could affect important receptors;
- the susceptibility of important receptors to exposure to these changes e.g. how biodiversity receptors might be affected by changes in land cover; and
- the extent to which the design of the proposed development avoids or reduces any potential effects (where applicable).

3.1.5 If the information that is available does not enable a robust conclusion to be reached that a potential effect is not likely to be significant, then in accordance with the precautionary principle the effect is then taken forward for further assessment.

3.1.6 This process has been based on available details of the proposed development, the currently available baseline data and the judgment of experienced EIA practitioners.

3.1.7 Chapter 4 of this scoping report summarises all of the matters that will be addressed in the EIA.

3.2 Traffic and transport

Background

3.2.1 The proposed development will generate construction staff movements, Abnormal Indivisible Loads and HGV movements throughout the day during its construction and decommissioning. During its operation, there will be no deliveries, no staff and only ad-hoc vehicles associated with maintenance.

3.2.2 A construction programme has not yet been established but it is likely that the construction process would be in the order of 20 months, during which it would generate in the order of up to 40 two-way HGV movements per day.

3.2.3 These HGV movements could impact upon sensitive receptors along the adjacent road network, for example resulting in fear and intimidation to vulnerable road users.

3.2.4 The chapter will therefore establish a baseline position during a 2019 / 2020 future year when the construction would be ongoing, estimate the number of and routeing of construction HGVs and construction staff, and assess the effects of these upon the baseline position to determine any significant effects.

Currently known baseline

3.2.5 The proposed site is located to the north of Sittingbourne on the Sittingbourne Relief Road B2005 (Swale Way), Kemsley. The site is broadly bounded by Swale Way to the west, Ridham Avenue to the south, Barge Way to the north and the Kemsley Sustainable Energy Plant (currently under construction) to the east.

3.2.6 The A249 is located approximately 2 km to the north and west of the site and is accessed via Swale Way. The A249 connects with both the A2 west of Sittingbourne and the M2 at Junction 5 approximately 8 km south of the site. To the north, the A249 provides access to the Isle of Sheppey.

3.2.7 The first section of the Sittingbourne Northern Relief Road routes broadly west to east and links the southern roundabout of the A249 'Dumbbell' junction north of Kemsley to the Paper Mill. The second section was completed in 2011 and routes broadly north to south from the Paper Mill to the Eurolink Industrial Estate. The purpose of the Northern Relief Road is to relieve the A2 that runs east to west through Sittingbourne.

3.2.8 Two points of vehicular access are currently available to the existing Kemsley Paper Mill. The southern access is via Ridham Avenue to the south of the mill site and is used by HGVs (including those requiring use of the weighbridge) and staff and visitor cars. Ridham Avenue connects with the first section of the Sittingbourne Relief Road (Swale Way) at a roundabout west of the Paper Mill. The main site car park is provided to the south of the site. The other site access that is less intensively used is located at the north-east corner of the site and is accessed via Barge Way.

3.2.9 Traffic flows collected in 2016 show that there are up to approximately 19,000 vehicle movements per day on Swale Way and up to approximately 6,000 vehicle movements

per day on Barge Way. Given the strategic nature and trunk road status of the A249, traffic flows are far higher and in the region of double those on Swale Way.

Potential significant effects

3.2.10 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to result in likely significant traffic and transport related effects. However, it is proposed that the ES chapter will scope out operational phase traffic effects on the basis that there will be no deliveries to the CHP and the only vehicle movements will be associated with maintenance on an ad-hoc basis.

3.2.11 At this stage it is not possible to determine whether the effects identified at stage 1 are likely to be significant and therefore on a precautionary basis they are proposed to be included within the EIA scope. The following effects will therefore be assessed in the EIA.

- Construction staff, HGV and Abnormal Indivisible Loads on the adjacent road network during construction;
- Effects on local pedestrians and cyclists associated with construction traffic.

3.2.12 It is proposed that the ES chapter will scope out decommissioning phase traffic effects. This is on the basis that decommissioning traffic flows are no more than but are typically lower than construction traffic flows. This is because materials are demolished and / or broken down on site and is thus not as bulky as those during the construction phase, which results in lower vehicle movements. The effects identified during the construction phase would be applicable to those during the decommissioning phase and thus any mitigation measures or management measures identified for the construction phase would equally apply to the decommissioning phase. There is no requirement for a specific detailed assessment to determine this, as this can be identified from the construction phase assessments.

Proposed assessment methodology

3.2.13 The scope and methodology of the assessments will be agreed with Highway Officers at KCC (and Highways England). We propose to undertake the Environmental Impact Assessments for traffic and transport using guidance set out in the following documents:

- Planning Practice Guidance: Travel Plans, Transport Assessments and Statements in Decision Taking (PPG, 2014);
- Guidelines for the Environmental Assessment of Road Traffic (IEMA, 1993); and
- The Design Manual for Roads and Bridges (DMRB) Volume 11 Environmental Assessment (Highways Agency et al. 2008).

3.2.14 A desktop review will be undertaken to identify the key locations where transport issues may be raised. These baseline studies will identify potential road network constraints and inform potential routes for delivery and construction vehicles. The assessment of impacts on the adjacent road network will assess the traffic flows predicted as a result of

the traffic generated by the construction of the CHP against forecast baseline traffic flows. The scope and duration of predicted impacts will be quantified.

3.2.15 Roads and infrastructure within the study area will be identified from Ordnance Survey (OS) mapping and will include Barge Way, Swale Way, the A249 north of Swale Way and the A249 south of Swale Way.

3.2.16 On refinement of the traffic and transport study area, existing traffic flow information will be obtained from the Local Highway Authority (Kent County Council), and Highways England (HE) where relevant, and from recent traffic surveys undertaken for other projects and applications nearby (including the Kemsley Sustainable Energy Plant) to identify the current capacity and potential constraints of the road network. This will include results from Automatic Traffic Counts (ATC), Manual Classified Counts (MCC) and Annual Average Daily Flow (AADF) calculations.

3.2.17 Personal Injury Accident (PIA) data for road traffic accidents will be obtained from the Local Highway Authority.

3.2.18 Records of existing bus service routes, cycle paths and train services will be obtained from Kent County Council, Swale Borough Council, Network Rail and relevant service operators.

3.2.19 Site visits will also be undertaken to audit the transport networks within the traffic and transport study area.

3.2.20 The significance of transport environmental effects is assessed by considering the interaction between the magnitude of the impacts and the sensitivity of the receptors in the vicinity of transport corridors. This assessment compares the baseline situation with the development, taking into account other schemes that are likely to affect future baseline conditions.

3.2.21 Consistent with the above IEMA guidance (Guidelines for the Environmental Assessment of Road Traffic), the following will be considered in this chapter:

- Driver Delay (which is a function of highway capacity);
- Severance of Routes;
- Pedestrian Delay;
- Pedestrian amenity;
- Accidents and Road Safety; and
- Hazardous, Dangerous and Abnormal Indivisible Loads.

3.2.22 To determine the study area on which to assess the above effects, the IEMA guidance recommends two rules to be considered when determining a whether the impact of traffic should be assessed on a road link:

- Rule 1: Include highway (road) links where traffic flows will increase by more than 30 % (or the number of heavy goods vehicles will increase by more than 30 %); and

- Rule 2: Include any other specifically sensitive areas where total traffic flows have increased by 10 % or more.

3.2.23 The 30 % threshold is based upon research and experience of the environmental effects of traffic, with less than a 30 % increase generally resulting in imperceptible changes in the environmental effects of traffic. The guidance considers that projected changes in total traffic flow of less than 10 % creates no discernible environmental effect.

3.2.24 The guidance considers the following receptors to be sensitive to the potential impact of traffic increase:

- People at home;
- People in work places;
- Sensitive groups such as children;
- The elderly or the disabled;
- Sensitive locations such as hospitals, churches, schools or historical buildings;
- People walking or cycling;
- Open spaces;
- Recreational sites;
- Shopping areas;
- Sites of ecological/nature conservation value; and
- Sites of tourist/visitor attraction

3.2.25 The determination of the sensitivity of receptors to environmental effects will be broadly based on the criteria of value, adaptability, tolerance and reversibility. In terms of transport impacts, receptors comprise people living, using facilities and using transport networks in the area. Given that all persons are deemed to be of equal value, sensitivity to changes in transport conditions is generally focussed on vulnerable user groups who are less able to tolerate, adapt to and recover from those changes. Vulnerable groups would include school children and the elderly. Table 3.2.1 summarises the general criteria for identifying receptor sensitivity by relating the presence of vulnerable groups to identifiable physical features within the environment.

Sensitivity	Definition
Very High	Those receptors with high sensitivity with site-specific reasons for being particularly sensitive to changes in traffic flows (e.g. community with high incidence of mobility impairment requiring to cross roads to access essential facilities).
High	Receptors of greatest sensitivity to traffic flows (e.g. schools, colleges, playgrounds, accident black spots, retirement homes, urban/residential roads without footways that are used by pedestrians, etc.).
Medium	Traffic flow sensitive receptors (e.g. congested junctions, doctors' surgeries, hospitals, shopping areas with roadside frontage, roads with narrow footways, un-segregated cycle ways, community centres, parks, recreation facilities, etc.).
Low	Receptors with some sensitivity to traffic flow (e.g. places of worship, public open space, nature conservation areas, listed buildings, tourist attractions and residential areas with adequate footway provision, etc.).
Negligible	Receptors with low sensitivity to traffic flows and those sufficiently distant from affected roads and junctions.

Table 3.2.1 : Definition of Terms Relating to the Sensitivity of Traffic and Transport f s Relating to the Sensitivity of Traffic and Transport

3.2.26 Magnitude is defined in general terms in guidance contained in Volume 11 of DMRB and is summarised in the context of transport in Table 3.2.

Magnitude	Definition
High	Substantial or total loss of capability for movement along or across transport corridors, loss of access to key facilities and loss of highway safety. Severe delays to travellers (adverse). Large scale improvement in the capability for movement along and across transport corridors, major improvement in access to key facilities, in highway safety and in delays to travellers (beneficial).
Medium	Moderate loss of capability for movement along or across transport corridors, loss of access to key facilities and loss of highway safety. Severe delays to travellers (adverse). Moderate improvement in the capability for movement along and across transport corridors, major improvement in access to key facilities, in highway safety and in delays to travellers (beneficial).
Low	Some measurable loss of capability for movement along and across transport corridors, some measurable loss of access to key facilities and some measurable loss of highway safety. Some measurable increase in delays to travellers (adverse). Some measurable increase in the capability for movement along and across transport corridors, some measurable increase in access to key facilities and some measurable increase in highway safety. Some measurable increase in delays to travellers. Reduced risk of negative impacts occurring (beneficial).
Negligible	Very minor loss of capability for movement along and across transport corridors, very minor loss of access to key facilities and very minor loss of highway safety. Very minor increase in delays to travellers (adverse). Very minor increase in capability for movement along and across transport corridors, very minor increase in access to key facilities and very minor increase in highway safety. Very minor decreases in delays to travellers (beneficial)
No Change	No loss of capability for movement along and across transport corridors, no change of access to key facilities and highway safety. No delays to travellers.

Table 3.2.2: Definition of terms relating to the magnitude of an impact upon traffic and transport receptors (Highways Agency et al., 2008)(Highways relating to the magnitude of an impact upon traffic and transport receptors (Highways Agency et al., 2008)

3.2.27 The definitions in Table 3.2.2 above will be applied to each effect using professional judgement to determine their magnitude of impact, with the exception of severance. With particular reference to severance for highly trafficked roads the above categories of magnitude of impact can be defined by the percentage change ranges set out in Table 3.2.3 below. Table 3.2.3 is based on IEMA Guidelines for the Environmental Assessment of Road Traffic (1993), paragraph 4.31.

Change in Traffic Flow	Magnitude (adverse or beneficial)
Change in total traffic or HGVs flows over 90%	High
Change in total traffic or HGVs flows 60 – 90%	Medium
Change in total traffic or HGVs flows 30 - 60%	Low
Change in total traffic or HGVs flows of less than 30%	Negligible

Table 3.2.3: Magnitude (extent) of impact and changes in flows in relation to severance (IEMA, 1993)

3.2.28 Transport environmental effects will also be assessed in terms of their duration, their frequency and in terms of their reversibility and these will be taken into account in identifying the significance of transport environmental effects of the CHP.

3.2.29 The significance of effects would be evaluated, taking into consideration the relevant policy context and the likely changes to baseline conditions. The significance levels would also be informed by the sensitivity and magnitude of effects and the significance matrix set out in Table 3.2.4.

Sensitivity	Magnitude of Change				
	No change	Negligible	Low	Medium	High
Negligible	Negligible	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	Negligible	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	Negligible	Negligible/ Minor	Minor	Moderate	Moderate or Major
High	Negligible	Minor	Minor or Moderate	Moderate or Major	Major or Substantial
Very High	Negligible	Minor	Moderate or Major	Major or Substantial	Substantial
Source: HA 205/08, DMRB Volume 11, Section 2 Part 5, Table 2.4					

Table 3.2.4 : Significance of Effect Table

3.2.30 For the purposes of the assessment, those effects identified as being of 'moderate' or greater significance will be regarded as being 'significant' in the context of the EIA regulations. Effects of 'minor' or lesser significance will be identified but will not be considered significant in the context of the EIA regulations. Effects will either be adverse or beneficial.

3.2.31 Cumulative impacts on traffic arising from the project alongside other projects within the area will be considered within the Environmental Statement. For traffic and transport the worst case scenario would be that which results in the highest levels of HGV movements, particularly at sensitive locations, if a combination of strategic projects were to come forward to construction at the same time. Cumulative impacts will be

considered on the basis of those schemes identified in Section 3.12 and any additional sites identified through consultation with KCC Highways and Highways England as relevant.

3.3 Air quality

Background

3.3.1 The proposed development has the potential to give rise to changes in air quality at sensitive receptors in the vicinity of the site through fugitive dust emissions associated with site preparation, construction and decommissioning work, and through emissions to air associated with the operation of the gas turbine.

3.3.2 For the construction phase of the proposed development the key pollutant is dust, covering both particulate matter with a mean aerodynamic diameter of less than 10 microns (PM_{10}) that is suspended in the air that can be breathed, and the deposited dust that has fallen out of the air onto surfaces and which can potentially cause temporary annoyance effects.

3.3.3 For the operational phase of the proposed development, the main pollutant from the K4 Gas Turbine is nitrogen oxides (NO_x). Emissions of total NO_x from combustion sources comprise nitric oxide (NO) and NO_2. The NO oxidises in the atmosphere to form NO_2. The UK Air Quality Strategy sets objectives for NO_2 and the assessment of operational impacts therefore focuses on changes in NO_2 concentrations.

3.3.4 The key air quality objectives relevant to this proposal are an hourly-mean NO2 concentration of 200 $\mu g.m^{-3}$ (not to be exceeded more than 18 times a year) and an annual-mean NO_2 concentration of 40 $\mu g.m^{-3}$).

Currently known baseline

3.3.5 The local authority, Swale Borough Council (SBC), has designated four areas as Air Quality Management Areas (AQMAs):

- AQMA 1 – Newington AQMA, 6 km west of application site
- AQMA 2 – Ospringe Street, Faversham, 9.7 km southwest of application site
- AQMA 3 – East Street, Sittingbourne, 3 km south of application site
- AQMA 4 – St Pauls Street, Sittingbourne, 2.8 km south of application site

3.3.6 The Application Site is not located within a designated AQMA. As such, air quality at the Application Site is likely to be good.

3.3.7 The Defra mapped NO_2 concentration estimate for the grid square of the Application Site is 16.5 $\mu g.m^{-3}$, well below the Air Quality Strategy objective of 40 $\mu g.m^{-3}$.

3.3.8 Current air quality in the area will be characterised with specific regard to the findings of Swale Borough Council's Review and Assessment process, the results of available local monitoring and data available in the Defra maps.

Potential significant effects

3.3.9 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to lead to significant environmental effects on air quality.

3.3.10 Whilst at this stage it is anticipated that due to subsequent advances in technology since the previous facility was installed in 1995 that emission levels will fall, the subsequent design and operation of the plant is not yet determined and cannot be confirmed. Therefore on a precautionary basis they are proposed to be included within the EIA scope. The following effects will therefore be assessed in the EIA.

- Emissions associated with the operation of the Gas Turbine and their effects on human health and ecological receptors
- Dust and emissions during construction and decommissioning (demolition)

Proposed assessment methodology

3.3.11 The risk of impacts from dust and emissions during demolition / construction of the proposed development will be assessed, having regard to the Institute of Air Quality Management (IAQM) *'Guidance on the assessment of dust from demolition and construction'.*

3.3.12 Generic mitigation measures designed to control dust nuisance effects and emissions during construction, consistent with the level of risk, will be recommended. These will be drawn from the IAQM *'Guidance on the assessment of dust from demolition and construction'.*

3.3.13 The effects of emissions from K4 (assumed to be nitrogen oxides only) will be evaluated using the ADMS 5 dispersion model. The dispersion modelling will take account of terrain, local building and meteorology effects. We will use five years of hourly sequential meteorological data collated at Gravesend:

- Determine the stack height for the Gas Turbine to establish the minimum height at which local buildings are not predicted to affect dispersion.
- Annual-mean NO_2 concentrations will be modelled for a grid of receptors centred on the combustion plant and selected sensitive human-health receptors.
- Concentrations of nitrogen oxides, nutrient nitrogen deposition and acid deposition rates will be modelled for a grid of receptors at the Swale Special Protection Area (SPA), Medway Estuary and Marshes SPA, Thames Estuary and Marshes SPA; and Queendown Warren Special Area of Conservation (SAC).

3.3.14 The effects of cumulative emissions from K4 will be evaluated by including K2 and K3 nitrogen oxides emissions within a single model.

3.3.15 Cumulative air quality effects arising from the project alongside other projects within the area from other industries/activities (e.g., industrial/commercial development, coastal infrastructure) would be included in the assessment.

3.3.16 The significance of the illustrated effects of the combustion of the gas will be described using professional judgement and relevant criteria, including those set out in the Environmental Protection UK (EPUK)/IAQM (January 2017) Land-Use Planning & Development Control: Planning For Air Quality document.

3.3.17 Mitigation measures to improve air quality during the operational phase will be recommended, should initial results of the assessment show any adverse air quality effects arising from the proposed development.

Transboundary Effects

3.3.1 It is not considered that there is any potential for significant transboundary effects to occur as a result of the project. The potential for this will however be reviewed following result of the modelling exercise identified above.

3.4 Climate change

Background

3.4.1 This section of the scoping report considers the assessment of potential impacts on and due to climate change. Climate change here is considered broadly in terms of the impact of greenhouse gas emissions (GHGs) caused directly or indirectly by the proposed development, which contribute to climate change. Vulnerability of the development to climate change related sea and river level rise and increase rainfall intensity (to be included in the Water Environment Assessment as set out in section 3.10).

Currently known baseline

3.4.2 With regard to current climate, the baseline is the local and regional climate and resulting weather patterns, recorded in Met Office data. This is in the context however of trends in global climate changes affecting the UK climate, which at their present rates may be considered part of the known baseline (Jenkins, et al., 2009).

3.4.3 With regard to current GHG emissions, the baseline is the existing operation of K1, its direct GHG emissions, and the emissions it displaces from other grid-connected generation sources due to the electricity it exports outside the site. Again, changes in this baseline are also known, principally the ongoing decrease in carbon intensity of grid electricity generation.

Potential significant effects

3.4.4 Stage 1 identified the possibility of significant effects due to: (a) construction and operational stage GHG emissions; and (b) Vulnerability of the development to climate change related sea and river level rise and increase rainfall intensity (to be included in the Water Environment Assessment as set out in section 3.10.

3.4.5 GHG emissions would contribute to the effect of global climate change. Assessment guidance (IEMA, 2017) indicates that in principle, any GHG emissions may be considered to be significant, and advocates as good practice that GHG emissions should always be reported at an appropriate, proportionate level of detail in an ES.

3.4.6 With regard to operational GHG emissions, the main impact would be direct GHG releases from natural gas combustion, comprising mainly CO_2 with a minor component of CH_4 and N_2O. Indirect GHG emissions would also be generated through the supply chain for the facility's gas fuel consumed in operation; these are expected to be relatively minor compared to the direct GHG releases but are proposed to be included in the assessment. GHG emissions from other operational activities (e.g. staff traffic and non-fuel process consumables) are considered to be *de-minimis* and not proposed to be assessed.

3.4.7 With regard to construction-stage GHG emissions, the main impact would be the 'embodied carbon' in construction materials used, i.e. the indirect GHG emissions from the supply chain for those materials. These are expected to be relatively minor compared to operational emissions, but also to have higher uncertainty, and so are

proposed to be estimated where possible to consider whether effects may be significant. Direct GHG emissions from construction activities (e.g. fuel consumption by construction plant) are considered to be *de-minimis* and not proposed to be assessed.

Proposed assessment methodology

3.4.8 Direct and indirect operational GHG emissions caused by the proposed development will be calculated based on the energy balance for K4. The emissions of the replaced K1 generator and displaced grid electricity generation due to exported electricity will also be calculated, and from this the net emissions attributable to K4 derived. Annual operational GHG emissions and cumulative total GHG emissions over the proposed operating lifetime (taking into account changes in the future baseline such as grid electricity generation decarbonisation, where feasible) will be presented in the ES. Emissions factors and projections published by BEIS and Defra will be used.

3.4.9 The boundary of the operational assessment will be direct GHG emissions from combustion and indirect lifecycle GHG emissions from gas fuel supply for K1 and K4, and the equivalent boundary for the average of grid-connected electricity generators whose generation is displaced by exported electricity from K1 and K4.

3.4.10 Indirect construction-stage GHG emissions caused by the proposed development will be calculated based on published lifecycle emissions factors for the construction materials whose volume and carbon intensity are estimated to be most significant (e.g. concrete and steel) and for major engineered components (e.g. gas turbine and boilers), insofar as possible. The boundary of the assessment will be defined by the available published lifecycle assessments for such materials and components.

3.4.11 There are no clear, generally-agreed thresholds or methods for evaluating the significance of GHG impacts in EIA. The IEMA guidance referenced above recommends contextualising a development's GHG impacts, for example on a sectoral basis or compared to the UK's national carbon budget.

3.4.12 It is considered that broadly speaking, the significance of the proposed development's GHG emissions can be contextualised in the following ways:

- with reference to the absolute magnitude of net GHG emissions as a percentage of the UK's national carbon budget;
- through considering any reduction in absolute GHG emissions and GHG intensity of K4 (i.e. tCO_2e/MWh of useful energy generated) compared to the replaced K1 generator;
- through comparing the GHG emissions intensity of K4 to current typical baseline emissions intensity for such energy generation in this sector, and projections for future changes in that baseline; and/or
- with reference to whether the proposed development contributes to and is in line with the UK's national carbon budget sectoral goals for GHG emissions reduction, which are consistent with science-based commitments to limit global climate change to an internationally-agreed level.

3.4.13 Taking these factors into account, where applicable, the evaluation of significance will ultimately be a matter of professional judgement, as it is not considered that a fixed numerical threshold can be defined.

Cumulative effects

3.4.14 GHG emission impacts by their nature are cumulative with all other global sources, so this forms an integral part of the assessment.

Trans-boundary effects

3.4.15 GHG emission impacts by their nature lead to a trans-boundary effect on global climate change, the significance of which will be concluded on the basis of the assessment identified above.

3.5 Noise

Background

3.5.1 This section of the Scoping Report considers the assessment of noise and vibration effects of relevance to the project and considers the potential impacts and likely significant effects from the construction, operation, maintenance and decommissioning of the project in terms of noise and vibration effects on prescribed receptors, including residential and ecological receptors in the area.

Currently known baseline

3.5.2 Baseline noise data gathered to support previous ES assessments for this and other sites within the Kemsley Paper Mill will be used to determine a representative baseline noise level across the site and wider area. Surveys to gather additional baseline noise data will be undertaken where appropriate.

3.5.3 No measurement of baseline vibration is required.

Potential significant effects

3.5.4 It is proposed that the EIA includes an assessment of noise effects associated with all phases of the project in the context of a current and future baseline environment when the project is likely to become operational. The assessment will establish whether any proposed mitigation is sufficient and whether further mitigation is required.

3.5.5 The potential noise impacts associated with the project include:

- Noise generated by construction plant located at the project site.
- Vibration generated by construction plant, located at the project site.
- Operational noise, including noise from both fixed and mobile plant.
- Operational vibration will be controlled at source, and would be most unlikely to be perceptible beyond the immediate structure of the buildings. A qualitative assessment, scoping out detailed predications is considered to be appropriate but will be confirmed and reviewed within the EIA.

Proposed assessment methodology

3.5.6 The baseline sound environment would be determined from the results of data acquired from measurement surveys undertaken following the guidance contained within BS 7445-1:2003, BS 7445-2:1991 and BS 4142:2014. Locations would be representative of the nearest noise sensitive receptors.

Construction Effects

3.5.7 Construction effects will be considered using the Code of practice for noise and vibration control on construction and open site, BS 5228-1:2009+A1:2014 Noise, and BS

5228-2:2009+A1:2014 Vibration. For construction noise, the BS 5228:1:2009+A1:2014 example method 1 – The ABC method criteria will be followed. Vibration generated from construction plant will be assessed qualitatively.

Operational Effects

3.5.8 Noise levels arising from the operation of the project would be predicted using SoundPLAN modelling software, implementing the methodology contained within ISO 9613-2. Broadband internal noise levels for the areas containing the most significant noise generating plant and Sound Reduction Indices (SRIs) of the facades of the building will be provided by the project engineers. A generic spectral shape that is representative of internal diffuse reverberant noise levels within a project would be applied to the calculated source terms. A spectral shape would be applied to the SRIs that are representative of the type of cladding from which the project will be built.

3.5.9 Operational effects will also be considered in the context of the wider industrial area, so as to quantify any potential cumulative effects with other developments as set out in section 3.12.

Decommissioning Phase

3.5.10 The potential effects during decommissioning will be qualitatively compared with those associated with the construction phase.

3.6 Ground conditions

Background

3.6.1 This section of the Scoping Report covers ground conditions, with particular emphasis on land and groundwater contamination.

3.6.2 An assessment is required as part of the EIA to determine the nature of effects on human health, controlled waters and structures that may result from the Proposed Development in light of the ground conditions encountered across and adjacent to the development area.

Currently known baseline

3.6.3 Whilst we are currently not in receipt of any specific ground investigation reports or contaminated land assessments in the relation to the Development area, previous assessments relating to adjacent areas have defined the likely ground conditions and the contamination status of the wider area. The key reports are:

- Phase II Intrusive Site Investigation, Kemsley Paper Mill, Sittingbourne, Kent. Prepared (RPS, 2009);
- Interpretative Ground Investigation Report, Pre-Commencement Works for the Sustainable Energy Plant - Kemsley Paper Mill, Sittingbourne, Kent (RPS, 2011); and
- Kemsley Paper Mill, Geotechnical and Environmental Site Investigation (URS, 2013).

3.6.4 A review of the above reports identified that the ground conditions beneath the Proposed Development area are likely to comprise:

- Existing concrete hardstanding;
- Made Ground: Variable composition and containing fragments of brick, concrete, wood, glass, metal, organic material, ash and clinker;
- Superficial Deposits: Alluvium of between 2m and 13m in thickness, typically comprising a soft to stiff mottled grey orange clay;
- Bedrock: London Clay Formation - a stiff bluish clay typically between 2.5m and 8m in thickness;
- Bedrock: Lambeth Group - sequences mainly of clay, some silty or sandy, with some sands and gravels. Typically between 8.0m and 18.0m in thickness;
- Bedrock: Thanet Formation – generally a pale yellow-brown, fine-grained sand that can be clayey and glauconitic. Typically between 21 and 40m in thickness; and

- Bedrock: Upper Cretaceous White Chalk Subgroup at depth.

3.6.5 The geological strata are classified by the Environment Agency as follows:

- Alluvium: Secondary Aquifer;
- London Clay Formation: Unproductive strata;
- Lambeth Group / Thanet Sand: Secondary A Aquifer; and
- Chalk: Principal Aquifer.

3.6.6 Localised areas of perched water are expected to be encountered within the Made Ground and more granular units in the alluvium. Saturated groundwater conditions are expected in the granular Lambeth Group/Thanet sands and the dual porosity chalk aquifer at depth. The London Clay Formation and clay rich units of alluvium are expected to hydraulically separate the deep groundwater from shallow perched water bodies. The groundwater in the deeper aquifer units are therefore expected to be confined by the London Clay Formation.

3.6.7 Given the historical industrial land-use at the site the presence of contamination within the soils and shallow perched waters cannot be discounted. Investigation of the wider area has identified contamination within the Made Ground and shallow perched waters in the form of heavy metals, asbestos, Total Petroleum Hydrocarbons, Polycyclic Aromatic Hydrocarbons, Semi Volatile Organic Compounds and Volatile Organic Compounds. Ground gases have also been identified in the surrounding area, considered to be associated with local landfilling activities (Described in further detail within paragraph 3.5.9.).

3.6.8 The principal receptors for possible contamination that may reside at the site are construction workers / site end-users (human health), groundwater beneath / adjacent to the Proposed Development area and surface water to the east (River Swale). The clay rich nature of the alluvium encountered in the adjacent areas, which is considered likely to extent below the Development area, indicates that it is unlikely to constitute a viable aquifer unit. The low permeability London Clay Formation and the alluvium is also expected to restrict the vertical migration of any contamination associated with soils and/or perched water bodies, thereby affording protection to the underlying aquifer units. However, the use of a piled foundation solution as part of development design could create preferential pathways for contaminant migration.

3.6.9 Kemsley Waste Disposal Site is located approximately 100m to the east of the Development area comprising a landfill of some 11 Ha in area. The landfill has been used for the disposal of wastes generated by the Kemsley Mill paper making processes since the commissioning of the mill in 1928. The history of landfilling is varied with the earliest sections of landfilling being relatively uncontrolled with limited engineered containment. Improved practice will have been implemented over time with capping over the whole site now in place. The capping system installed across the entire landfill between 1993 and 2004 comprises a 0.6 m clay cap overlain by a 0.4 protective layer of topsoil. It is understood that landfill gas production at the Kemsley Waste Disposal site is managed to the satisfaction of the regulatory authorities. This site has the potential to

generate ground gases that could pose a risk to the Development area where appropriate mitigation measures are not taken.

Potential significant effects

3.6.10 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to lead to significant environmental effects on ground conditions and groundwater quality.

3.6.11 At this stage it is not possible to determine whether the effects identified at stage 1 are likely to be significant and therefore on a precautionary basis they are proposed to be included within the EIA scope. The following effects will therefore be assessed in the EIA.

- Ground contamination and human health including construction workers, operational staff and the general public.
- Ground contamination and controlled waters including surface and groundwater bodies
- Ground gas and human health including construction workers, operational staff and general public

Proposed assessment methodology

3.6.12 The ES chapter will include an assessment of the likely significant effects from the construction, operation and maintenance, and decommissioning of the project on controlled water receptors (groundwater and surface water) and the human health of construction workers and site users.

3.6.13 The baseline conditions within the Development area will be established through a series of assessments that will take consideration of the following key guidance documents:

- BS10175:2011 + A1:2013 Code of Practice for Investigation of Potentially Contaminated sites;
- BSI BS1377:1990 Methods of Test for Soils for Civil Engineering Purposes;
- BSI BS5930:1999 Code of Practice for Site Investigations;
- Model Procedures for the Management of Contaminated Land, Contaminated Land Report 11;
- Environment Agency, 2004;· Contaminated Land Exposure Assessment (CLEA) Guidelines;
- The LQM/CIEH Generic Assessment Criteria for Human Health Risk Assessment (2nd Edition), July 2009;

- Surface Water Environmental Quality Standards (EQS), UK Drinking Water Standards; and

- Assessing Risks Posed by Hazardous Ground Gases to Buildings, CIRIA Report C665.

3.6.14 The assessments will follow the pollutant (source–pathway-receptor) linkage approach to identify potential sources of contamination within the Development area, the type and location of environmental receptors and the pathways by which the receptors may be affected.

3.6.15 The following outline approach shall be adopted for the risk assessment and assessment of significance of effects:

- Desk Top Study (DTS) and Preliminary Risk Assessment (PRA) Report: Review of all historical and publically available sources information pertinent to the site and its immediate environs. This shall include the Conceptual Site Model (CSM) and associated pollutant linkages and the preliminary (qualitative) assessment of risk;

- Definition of 'Study Area' and baseline period: on the basis of the results of the DTS the Study Area (area that could potentially be impacted by the proposed development) can be defined and baseline date for the assessment determined;

- Define Baseline Conditions for the Study Area: It is assumed that sufficient data will be available for the site, although the DTS could conclude that intrusive investigation works may be required to adequately define the baseline conditions and the potential for contamination. Where this is the case this intrusive ground investigation will be undertaken in support of the Ground Conditions chapter;

- Definition of the sensitivity of receptors; and

- Qualitative assessment of significance of effects on the basis of the magnitude of effect and sensitivity of receptor.

3.6.16 The significance of likely effects during construction, operation and decommissioning of the project will be assessed by consideration of the sensitivity of the key attributes of the hydrogeology resources that may be affected and the magnitude of the predicted impact on them. The assessment will consider the likelihood of harm occurring, taking into account potential sources of contamination and receptors that may be affected by such contamination.

3.6.17 This will be in accordance with the assessment matrix and methodology outlined within the remainder of this section. For the purposes of this assessment any effect that is moderate or above will be considered to be significant.

Sensitivity of Potential Receptor

3.6.18 The sensitivity of potential receptors will be qualitatively described and categorised based on the terminology in Table 3.5.1.

Sensitivity	Typical Descriptors	Examples
High	High importance and rarity, and limited potential for substitution.	On site future site occupants e.g. staff, through chronic exposure to contamination Principal aquifer with licensed groundwater abstractions Excellent quality surface water bodies
Medium	Medium importance and rarity, limited potential for substitution.	Off-site future site occupants e.g. staff on adjacent sites Secondary A aquifer Good quality surface water bodies
Low	Low importance and rarity.	Secondary undifferentiated aquifer Satisfactory quality surface water bodies
Negligible	Very low importance and rarity.	Unproductive strata Poor quality surface water bodies

Table 3.5.1: Receptor Sensitivity Criteria

Magnitude of Impact

3.6.19 The magnitude of potential impacts will be qualitatively described and categorised based on the terminology in Table 3.5.2.

Magnitude	Criteria	Example / Description
High	Results in loss of attribute and likely to cause exceedance of statutory objectives and/or breaches of legislation.	Category 1 – Soil contamination that could result in a 'contaminated land' designation under Part IIA, i.e. significant possibility of significant harm to human health or controlled waters. Or A change of planning use deems that the concentrations of contaminants in the land may be harmful to receptors Remedial Action under Part IIA will be required Or Loss of resource or severe damage to characteristics, features or elements e.g. of a geologically designated site.
Medium	Results in impact on integrity of attribute or loss of part of attribute possibly with / without exceedance of Statutory objectives or with/ without breaches in legislation.	Category 2 - Soil contamination that could provide a strong case for considering that the risks are of significant concern so as to be designated as 'contaminated land' designation under Part IIA. Or A change of planning use deems that the concentrations of contaminants in the land may be harmful to receptors Remedial Action under Part IIA will be required on a precautionary basis. Or Partial loss of / damage to characteristics, features or elements e.g. of a geologically designated site.
Low	Results in minor impact on attribute.	Category 3 – Soil contamination could arise but the concentrations would not be considered significant or there is a low likelihood of serious pollution. Or A change of planning use deems that the concentrations of contaminants in the land are not capable of harming receptors.

		It is unlikely that remedial action will be required, however land owners may consider remedial actions to reduce contamination outside of the Part IIA or planning regime. Or Minor damage to characteristics, features or elements e.g. of geological feature of interest.
Negligible	Results in no discernible change or an impact on attribute of insufficient magnitude to affect the use / integrity.	Soil contaminants present, but risk assessment suggests negligible / low risk to human health. Or Very minor damage to characteristics, features or elements e.g. of geological feature of interest.

Table 3.5.2 : Impact Magnitude Criteria

Cumulative Effects

3.6.20 An assessment of cumulative effects is not considered to be required. As other schemes come forward for development, the land involved in those developments and any potential contamination within those sites will need to undergo assessment to evaluate the risks and the significance of effects posed by those developments. Following that assessment, any identified requirement for remediation should be completed prior to the start of, or as a justified part of, the construction phase. Accepting that other proposed developments in the area around the site are adequately assessed, remediated and mitigated, they should themselves result in no significant adverse effects, and it is therefore considered that there would be no measurable cumulative effects.

Transboundary Effects

3.6.21 It is not considered that there is any potential for transboundary effects on hydrology receptors to occur as a result of the project.

3.7 Landscape and visual effects

Background

3.7.1 The landscape, townscape and visual resources chapter of the Environmental Statement will describe and assesses the existing landscape and townscape character and views of the application site and study area. This will include the character and features of the landscape and townscape and the changes as a result of the proposed development during construction, operation and maintenance and decommissioning, during the daytime and at night. In addition, it will consider the potential visual effects as a result of the proposed development.

Currently known baseline

Landscape and Townscape Character

3.7.2 The application site currently comprises concrete hardstanding and forms part of the operational land within the DS Smith site. The character of the local landscape within the Borough of Swale has been assessed as part of the Swale Landscape Character and Biodiversity Appraisal Supplementary Planning Document in September 2011. The application site forms part of the Sittingbourne urban area which lies outside any of the landscape character areas identified within the assessment.

3.7.3 The immediate surroundings of the site are divided between the industrial townscape of Sittingbourne and the natural estuary landscape of The Swale within the Chetney and Greenborough Marshes landscape character area. Large scale industrial buildings and chimneys at the DS Smith Paper Mill form the northern and western site boundaries, separating the location from the residential districts of Sittingbourne. To the east lies the large grassy hill of the restored landfill site. To the south lies the infrastructure associated with a water treatment plant.

3.7.4 There are no designated landscapes which lie within the site area. The North Kent Marshes Special Landscape Area (SLA) extends over the Swale and neighbouring coastal landscape. This area includes the Chetney and Greenborough Marshes which lie next to the site and extend along Milton Creek. This area is valued for the open character of its landscape. Other designated landscapes within the borough include an Area of High Landscape Value approximately 1 km to the south-east of the site. This area of landscape lies inland of the marshes and includes the Teynham Fruit Belt. The Kent Downs Area of Outstanding Natural Beauty (AONB) lies on high land approximately 10 km to the south-east of the site.

Views

3.7.5 The site is currently not visible in views from the majority of the settlement of Sittingbourne due to industrial development on the edge of the town and the restored landfill mound. To the south-east of the site the channel of the Swale and low lying landscape of the Isle of Sheppey allow more open, longer distance views. Key people likely to have views of the proposals include;

- Walkers using the Saxon Shore Way long distance footpath beside The Swale and Milton Creek
- Users of public open space at Church Marshes Country Park
- Pedestrians using the pavements on Swale Way,
- Walkers using public footpaths at Elmley National Nature Reserve on the Isle of Sheppey
- Walkers using public footpaths at Furze Hill on the Isle of Sheppey
- Occupiers of residential properties at Tonge Corner,
- Occupiers of vehicles travelling on Swale Way
- Occupiers of vessels on The Swale
- Employees within commercial and industrial premises on the northern edge of Sittingbourne.

Future Baseline Conditions

3.7.6 Several large scale industrial schemes associated with the DS Smith Kemsley Paper Mill site are consented, such as the Generating Station and IBA recycling facility. These lie in close proximity to the proposal site and will create a more intensively development future baseline situation.

Potential significant effects

3.7.7 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to lead to environmental effects on the landscape and associated visual effects. In order to determine whether these effects are likely to be significant and therefore should be included within the EIA scope, the following sub-headings have been examined further in stage 2 of the scoping process:

- Effects on landscape and townscape character during and post construction phase, including night time lighting, as relevant
- Effects on sensitive visual receptors during and post construction phase, including night time lighting, as relevant

Landscape and Townscape Character

3.7.8 Due to the industrial character of the existing site area, its redevelopment would not result in the removal of any important existing features. New buildings and infrastructure would form an extension of the existing character of neighbouring land at DS Smith. Significant adverse effects on townscape character during construction, operation or decommissioning, during the day or at night, would be unlikely.

3.7.9 Significant adverse effects on nearby landscape character areas would also be unlikely due to the relatively small scale of the proposals and their similar nature to the industrial context.

Visual Amenity

3.7.10 There are unlikely to be any significant adverse effects during construction, operation or decommissioning on views gained by visual receptors within the study area as a result of the proposals. The proposed buildings and structures would generally be visible in front of a backdrop of existing large scale industrial buildings at the paper mill. There are unlikely to be any locations where new industrial buildings or structures at the proposal site would be seen in a view that does not already contain views of large areas of existing industry.

3.7.11 At this stage the design and exact height of the flue and the extent of the visible plume are not known therefore, as a precautionary approach, visual effects and associated effects on landscape character will be included in the EIA scope.

Proposed assessment methodology

3.7.12 As a matter of best practice, the assessment will be undertaken based on the relevant guidance on landscape and visual assessment within the Landscape Institute and Institute of Environmental Management and Assessment (2013) 'Guidelines for Landscape and Visual Impact Assessment' (GLVIA) 3rd Edition.

3.7.13 A Zone of Theoretical Visibility (ZTV) of the proposed development will be generated to establish the study area based on a maximum flue height and/or main building height. Baseline analysis work will be undertaken to identify the existing townscape character of the site, adjacent townscape of Sittingbourne and landscape of Kent and the Isle of Sheppey and their sensitivity to change. Reference to any published landscape assessments will be made, including the Landscape Assessment of Kent (Kent County Council, 2004) and the Swale Landscape Character and Biodiversity Appraisal (Swale Borough Council, 2011).

3.7.14 Baseline work will be undertaken to confirm the visual receptors that are likely to have views of the proposals. This will be agreed through consultation with Kent County Council.

Cumulative Effects

3.7.15 Cumulative effects on landscape, townscape and visual resources arising from the project alongside other projects within the study area from other industries/activities (e.g., industrial/commercial development, coastal infrastructure) would be included in the assessment. Developments defined within the future baseline conditions described above will be included within the cumulative assessment.

3.8 Archaeology and Cultural Heritage

Background

3.8.1 The assessment team has significant experience in the wider area, including having undertaken the archaeology and cultural heritage assessment both for the consented sustainable energy plant located to the north east of the proposal site and the currently proposed NSIP project at the same site. Scoping for the current proposal has been undertaken in the light of that experience.

Currently known baseline

3.8.2 The wider area saw extensive activity from early times, with remains of ritual, settlement and agricultural origin being recorded on the mainland and on Sheppey. At least part of the higher ground of the Kemsley Ridge is known to have been used for occupation activity during the prehistoric and Roman periods, while the alluvial floodplain would have been marshland and would have been exploited for a number of purposes, including salt making and pottery manufacture as well as hunting and fishing.

Potential significant effects

3.8.3 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to lead to significant environmental effects on heritage assets.

3.8.4 At this stage it is not possible to determine whether the effects identified at stage 1 are likely to be significant and therefore on a precautionary basis they are proposed to be included within the EIA scope. The following effects will therefore be assessed in the EIA:

- Effects on buried archaeological remains during construction
- Effects on the settings of heritage assets during and post construction including lighting as relevant

3.8.5 Although previously developed, there is a possibility that archaeological remains may survive within the proposal site. In addition, there are several designated assets around the proposal site, the settings of which may be affected by the proposed development. On this basis it is proposed to undertake a baseline desk assessment in the first instance, followed by an environmental statement chapter.

Proposed assessment methodology

Study Area

3.8.6 The study area is based upon recent experience of similar developments, the site visit and consideration of the landscape study, including the zone of theoretical visibility (ZTV) that will be defined for the Landscape and Visual Effects assessment. The cultural heritage chapter, for the purpose of buried archaeology, will focus on a study area of 1km around the proposal site boundary. For the purpose of the settings of heritage assets, the cultural heritage chapter will focus on a study area of 3km around the

proposal site boundary while taking into consideration evidence from a wider area if appropriate.

3.8.7 With respect to the settings of heritage assets, only those assets which lie within the ZTV are assessed, using that the guidance prepared by Historic England in their document "The Setting of Heritage Assets"(Historic England, 2015) along with "Conservation Principles".(Historic England 2008).

Desk assessment

3.8.8 The aim of the desk based assessment is to assess the significance of heritage assets and the impact of the development proposal on that significance.

3.8.9 The Historic Environment Record (HER) would be consulted. Information on Conservation Areas and locally listed buildings will be obtained from the LPA. Information on Scheduled Ancient Monuments, Listed Buildings, Registered Parks and Gardens and Registered Battlefields will be obtained from Historic England. Relevant documentary and archival material both published and unpublished, held by the local Archive Service, will be examined. An iterative approach will determine the scope of such consultations.

3.8.10 A field visit and walkover survey will be undertaken to establish the presence of previously unrecorded heritage assets, and/ or to further assess the potential of recorded heritage assets. In addition, the field visit will assess the suitability of any further survey techniques and will also provide an indication of the likely effect of the proposed development on the settings of heritage assets.

3.8.11 A report on the results of the assessment will be prepared. This will outline the method, archaeological and historical background, assess the significance of those heritage assets within the proposed development area, the implications for development and the need for, and if appropriate outline the scope of, further work.

3.8.12 The assessment will conform to the relevant legislation and guidance, including:

- Overarching National Policy Statement (NPS) for Energy (NPS EN-1; DECC, 2011a);
- Code of Conduct Chartered Institute for Archaeologists 2014 and
- Standard And Guidance for Desk based Heritage Assessment Chartered Institute for Archaeologists 2014.

EIA chapter

3.8.13 The final version of the desk-based assessment will be presented as a Technical Appendix to the ES, as will any report on the results of an archaeological field survey. The results of the baseline data gathering will be summarised within the EIA chapter, which will include the following:

- An overview of relevant planning policy and guidance;

- A summary of the known historic and archaeological context of the proposed development sites based on the desk-based assessment and the results of any archaeological field survey undertaken;
- A description of the methodology used for the assessment of effects on archaeological and cultural heritage resources, including the assessment of effects resulting from changes within the settings of such resources;
- A assessment of the effects of the proposed developments on archaeological and cultural heritage resources;
- Proposed mitigation measures to avoid/reduce impacts on buried archaeological remains as agreed with the consultees;
- Residual effects;
- Cumulative effects;
- Tabulated summary of effects; and
- Appropriate illustrative materials

3.9 Biodiversity

Background

3.9.1 This section of the Scoping Report covers biodiversity, with particular emphasis on nitrogen pollution, noise and contamination pathways, and the negative impacts these may have on the surrounding designated sites and their respective interest features.

3.9.2 An assessment is required as part of the EIA to determine the nature of effects on biodiversity that may result from the Proposed Development in light of the effects across and adjacent to the development area.

Currently known baseline

3.9.3 The site is currently hardstanding, of very limited ecological value.

3.9.4 No part of the site has been designated for its nature conservation value (statutory or non-statutory) and no part of the site is directly bordered by a designated site of nature conservation interest. A number of statutory and non-statutory designated sites are located within 2 km of the site boundary (as illustrated in Appendix II):

- The Swale Special Protection Area (SPA) Ramsar and Site of Specific Scientific Interest (SSSI) (0.2 km east);
- The Swale Marine Conservation Zone (MCZ) (0.18 km east);
- Elmley Island National Nature Reserve (NNR) (0.4 km north east); and
- Milton Creek Local Wildlife Site (LWS) (0.2 km south east).

3.9.5 Further internationally-designated sites within 10 km of the site boundary:

- Medway Estuary and Marshes SPA, Ramsar (2.5 km north west);
- Thames Estuary and Marshes SPA, Ramsar (8.5 km north west);
- Outer Thames Estuary SPA (8.9 km north); and
- Queendown Warren Special Area of Conservation (SAC) (9.1 km south west).

Potential significant effects

3.9.6 The proposed development site lacks any on-site features of ecological value. Therefore, no direct effects on biodiversity are considered likely. Consequently, any potential significant effects are indirect and off-site.

3.9.7 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to lead to several detrimental impacts on The Swale SPA, Ramsar and SSSI and other designated sites in the area. The following sub-headings have been examined further in stage 2 of the scoping process:

- Effects of changes to air quality (i.e. NO_x and associated nutrient nitrogen) on interest features and supporting habitats within surrounding designated sites;
- Dust deposition on designated sites;
- Effects of construction noise on bird interest features of The Swale SPA/Ramsar/SSSI.

3.9.8 All other potential effects (changes to surface water management, for example) are likely to be designed out or maintained as currently operating for K1. However cross reference will be made to other relevant assessments in the ES where appropriate to draw upon.

Changes to air quality

3.9.9 At present, emissions from K4 of interest ecologically are assumed to be nitrogen oxides (NO_x) only. Therefore, there is potential for both changes in the gaseous concentration of NO_x and resulting deposition of both nutrient nitrogen and acid to effect the interest features/supporting habitats of surrounding designated sites.

3.9.10 Given that the proposed K4 replaces the much older K1, it is anticipated that this will result in a general betterment of the situation with respect to air quality in the area. However, the effects will be assessed using data generated by the Air Quality team and background data, along with relevant site-specific critical loads, gathered from the APIS website. The emissions from K1 will already be within the current background concentrations listed on APIS. Therefore, it will be important to disaggregate these from other background emissions to ensure an accurate and robust assessment of the potential effects.

Noise impacts on bird populations

3.9.11 Noise created during the construction and decommissioning phases from piling works, HGV movements and other plant activities has the potential to disturb birds using The Swale SPA/Ramsar, nearby causing them to cease feeding or fly away from the area of influence. It is recognised that loud and 'percussive' noises have the greatest potential to cause disturbance and a threshold has been identified from the published scientific literature of 80dB L_{Amax}.

3.9.12 From experience on other nearby projects, the main intertidal areas of the Swale Ramsar/SPA used by citation birds recorded by the foreshore monitoring are over 500 m from the areas of the proposal site where significant noise events may occur. Therefore, it is considered highly unlikely that any effects due to noise disturbance would occur for intertidal species. However, suitable noise modelling of percussive noise-generating activities will be undertaken and presented within the ES to demonstrate that the issue of noise impacts can be screened out as likely to have a significant effect.

Proposed assessment methodology

3.9.13 The ecology and nature conservation assessment process will be undertaken in accordance with the Guidelines for Ecological Impact Assessment (EcIA) in the UK and Ireland – Terrestrial, Freshwater and Coastal, 2nd Edition (CIEEM, 2016). The effect of the development on European designated sites in the surrounding 10 km will be assessed following the method set out in PINS Advice Note 10: Habitats Regulations Assessment Relevant to Nationally Significant Infrastructure Projects (PINS 2016). This will be presented as a technical appendix to the Ecology Chapter within the ES, either as a No Significant Effects Report or (if Appropriate Assessment is required following screening) as a Habitats Regulations Assessment Report.

Receptor Sensitivity

3.9.14 The ecology and nature conservation assessment process will be undertaken in accordance with Guidelines for Ecological Impact Assessment in the UK and Ireland – Terrestrial, Freshwater and Coastal (CIEEM, 2016).

3.9.15 Habitats, species populations and assemblages within the ecology and nature conservation study area will be evaluated with reference to their importance in terms of 'biodiversity conservation' and the need to conserve representative areas of habitats and genetic diversity of species populations. Ecological receptors are habitats or species that are of conservation concern and that could be affected by the project. The approach to determining the nature conservation value and/or sensitivity of each receptor is outlined in Table 3.8.1 below.

Conservation value and/or sensitivity	Definition
Negligible	Including importance at local level. Commonplace feature of little or no habitat/historical significance. Loss of such a feature would not be seen as detrimental to the ecology of the area.
Low	Including importance at district level. A feature (e.g. habitat or population) that is of nature conservation value in a local context only, with insufficient value to merit a formal nature conservation designation.
Medium	A feature (e.g. habitat or population), which is either unique or sufficiently unusual to be considered as being of nature conservation value from a county to regional level. Habitats or species that form part of the cited interest of a Local Nature Reserve (LNR), or some local-level designated sites, such as a Local Wildlife Site (LWS), also referred to as a non-statutory Site of Importance for Nature Conservation (SINC) or the equivalent, e.g., Ancient Woodland designation. Presence of Local Biodiversity Action Plan (LBAP) habitats or species, where the action plan states that all areas of representative habitat or individuals of the species should be protected.
High	Habitats or species that form part of the cited interest within a nationally designated site, such as an SSSI or a (National Nature Reserve (NNR). A feature (e.g., habitat or population) which is either unique or sufficiently unusual to be considered as being one of the highest quality examples in a national context for which the site could potentially be designated as a SSSI. Presence of UKBAP habitats or species, where the action plan states that all areas of representative habitat or individuals of the species should be protected.
Very high	Habitats or species that form part of the cited interest within an internationally protected site, such as those designated under the Habitats Directive (e.g., SACs) or

	other international convention (e.g., Ramsar site). A feature (e.g. habitat or population) which is either unique or sufficiently unusual to be considered as being one of the highest quality examples in an international/national context, such that the site is likely to be designated as a site of European importance (e.g., SAC).

Table 3.8.1 Proposed Method of Defining Sensitivity

3.9.16 The criteria that will be referred to for the valuation of habitats and plant communities will include Annex III of the EC Habitats Directive, guidelines for the selection of biological SSSIs and criteria used by the local authority and Wildlife Trust for the selection of sites for local designation.

3.9.17 Individual species populations and communities will be valued on the basis of their size, recognised status (such as recognised through published lists of species of conservation concern and designation of local Biodiversity Action Plan (BAP) status) and legal protection. For example, bird populations exceeding 1% of published information on biogeographic populations are considered to be of international importance; those exceeding 1% of published data for national populations are considered to be of national importance and so on.

3.9.18 In assigning values to species populations, it is important to take into account the status of the species in terms of any legal protection. It is also important to consider other factors such as its distribution, rarity, population trends and the size of the population which would be affected. For example, whilst the Great Crested Newt is protected under European law and therefore conservation of the species is of significance at the international level, this does not mean that every population of Great Crested Newt is internationally important. It is appropriate to consider the particular population in its local context. Therefore, in assigning values to species the geographic scale at which they are important has been considered. The assessment of value will rely on the professional opinion and judgement of experienced ecologists.

3.9.19 As part of the ecological impact assessment (EcIA) process due regard will also be paid to the legal protection afforded to species during the development of mitigation and compensation measures to be implemented during the project. For European protected species there is a requirement that the project should not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

3.9.20 Plant communities will be assessed both in terms of their intrinsic value and as habitat for protected species whose habitat is also specifically protected and for species of nature conservation concern which are particularly associated with them.

Magnitude of Impact

3.9.21 The likely impacts of the project are determined through understanding how each receptor would be affected by the elements of the project. The categorisation of the impact magnitude may take into account the following four factors:

- Extent;
- Duration;

- Frequency; and
- Reversibility.

3.9.22 Impacts will be defined as either adverse or beneficial. Depending on discipline, they may also be described as:

- Direct: Arise from activities associated with the project. These tend to be either spatially or temporally concurrent;
- Indirect: Impacts on the environment which are not a direct result of the project, often produced away from the project site or as a result of a complex pathway.

Significance of effect

3.9.23 The significance of predicted effects will be evaluated. Taking into account the assessment methodology, an impact of high negative magnitude on a feature of less than district level importance would result in an effect of minor ecological and nature conservation significance, which would not be significant in EIA terms. Therefore, for the purpose of this impact assessment, receptor sites, habitats and species are considered further if they are of at least a district level of importance or sensitivity.

3.9.24 Levels of significance that will be used in the assessment include, in descending order:

- Substantial;
- Major;
- Moderate;
- Minor;
- Neutral.

3.9.25 Where an effect is described as 'neutral' this means that there is either no effect or that the significance of any effect is considered to be negligible. All other levels of significance will apply to both adverse and beneficial effects.

Cumulative Effects

3.9.26 Cumulative effects on ecology and nature conservation receptors arising from the project alongside other projects within the area from other industries/activities (e.g., industrial/commercial development, coastal infrastructure) would be included in the assessment.

3.9.27 The scope for impacts to interact to potentially create a more significant effect on ecology and nature conservation will be assessed in the EIA (i.e. project lifetime effects). Inter-relationships between impacts on ecology and nature conservation considered in isolation (e.g. impacts on individual species etc.) will also be considered together as part of the EIA process (i.e. receptor led effects).

Transboundary Effects

3.9.28 Given the site and its location, the potential for transboundary effects can be scoped out.

3.10 Water Environment

Background

3.10.1 This section of the Scoping Report identifies the hydrology and flood risk conditions of relevance to the project and considers the likely significant impacts and effects from the construction, operation and maintenance, and decommissioning of the project on hydrology and flood risk receptors.

Currently known baseline

3.10.2 The project site lies entirely within Flood Zones 1 and is therefore identified as land having a less than 1 in 1,000 annual probability of river or sea flooding. Fluvial flooding is not considered a risk at this site.

3.10.3 Existing flood defences along the eastern extent of the proposed development are made up of raised walls and embankments. These flood defences provide a 1 in 1000 year standard of protection.

3.10.4 Surface water flood risk to the application areas is defined as 'very low' with less than a 1 in 1000 (0.1%) a chance of flooding each year. A localised area along the northern boundary of the application site is defined as being at low risk (between 1 in 1000 (0.1%) of surface water flooding.

3.10.5 Records supplied by the EA indicate that the site has not been subject to historical flooding. However, the area surrounding the site was subject to flooding in 1953 associated with tidal defence overtopping as well as breaches in defences at Sheerness and all along the western side of the Isle of Sheppey, either side of the Swale near Sittingbourne at Warden and around the Isle of Harty.

3.10.6 Notwithstanding the above the proposed development is located c.200m, at its closest orientation, to The Swale Estuary which is designated a Ramsar site, Sites of Special Scientific Interest (SSSI), Special Protection Area and Marine Conservation Zone (as illustrated in Appendix II).

Potential significant effects

3.10.7 Following the methodology identified in stage 1 of the scoping process the proposed development has the potential to lead to environmental effects on the water environment. At this stage it is not possible to determine whether the effects identified at stage 1 are likely to be significant particularly given the site proximity to designated sites and therefore on a precautionary basis they are proposed to be included within the EIA scope, the following sub-headings have been examined further in stage 2 of the scoping process:

- Potential effects on surface water quality during and post construction
- Potential effects on surface water run-off and flood risk;
- Potential effects on coastal water quality during construction and operation;

- Potential effects on groundwater quality during construction; and
- Potential effects on groundwater resources during operation.

3.10.8 The effects of climate change related sea and river level rise and peak rainfall intensities over the lifespan of the development will be included in the flood risk assessment on a precautionary basis to assess the vulnerability and resilience of the development to climate change over its 20 year lifespan, in line with EA guidance climate change, February 2016 (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances).

Proposed assessment methodology

3.10.9 An initial desk based review of literature and data sources will be undertaken to support the assessment and will likely include:

- British Geological Survey (BGS) 1:50,000 geological mapping;
- BGS Geoindex Onshore (Online);
- BGS Aquifer Designation Maps;
- Environment Agency (EA) Flood Hazard Mapping;
- EA website (2016) (www.environment-agency.gov.uk);
- EA North Kent Rivers Catchment Flood Management Plan (2009);
- Kent County Council (KCC): Strategic Flood Risk Assessment (2013);
- Medway Estuary and Swale Shoreline Management Plans (2008);
- Met Office: Climate data (2016) (www.metoffice.gov.uk);
- Ordnance Survey (OS) Landranger 1:50,000 Sheet 178: Thames Estuary;
- River Basin Management Plan Thames River Basin District (2009); and
- The Centre for Ecology and Hydrology (CEH) (2012) (www.ceh.ac.uk

3.10.10 Site-specific hydrological data will be obtained via consultation with the EA, Lead Local Flood Authority, Drainage Board, from commercial data suppliers, and site reconnaissance.

3.10.11 The baseline characterisation set out above enables the identification of the nature and likely significance of effects. The assessment considers the potential impacts to environmental receptors and the pathways by which the receptors may be affected. The following terms have the following meanings in this section.

- Source: waterbody, potential contaminant sources, ground/channel disturbance;

- Pathway: the mechanism by which the source may affect a receptor; and
- Receptor: identified features that may be affected, based on the sensitivity of the site.

3.10.12 This includes consideration of the probability of harm occurring, taking into account potential sources of flooding and receptors that may be affected.

3.10.13 The significance of predicted impacts likely to occur during each phase of the project will be determined by consideration of the sensitivity of the key attributes of the hydrological environment and flood risk that may be affected and the magnitude of the predicted impact.

3.10.14 In addition, to support the application a development specific Flood Risk Assessment (FRA) will be undertaken. This will include a review of current national and local polices, as well as relevant guidance and good practice.

Sensitivity of Receptor

3.10.15 The sensitivity or value of a hydrological receptor or attribute is largely determined by its quality, rarity and scale.

3.10.16 The determination of value or sensitivity takes into account the scale at which the attribute is important. This can be defined as being at a local level, district level, county level, regional level; national or international level (e.g. Europe).

3.10.17 The definitions set out in Table 3.9.1 below will be followed in the consideration of sensitivity for this project. This table takes into account guidance provided in Table 2.1 A4.3 of the Design Manual for Roads and Bridges (DMRB) (Highways Agency et al., 2009) and the author's professional judgement. The table also takes due consideration of the Water Framework Directive (Directive 2000/60/EC of the European Parliament and of the Council of 23, October 2000) and PINS Advice Note 18: The Water Framework Directive.

Sensitivity	Definition
Negligible	Receptor is of negligible value with no contribution to local, regional or national economy. Receptor is not vulnerable to impacts that may arise from the project and/or has high recoverability. Surface water: WFD Current Overall Status of Bad. Flood risk: Area outside flood plain or flood plain with very low probability of flooding industrial properties.
Low	Receptor is of low value with little contribution to local, regional or national economy. Receptor is not generally vulnerable to impacts that may arise from the project and/or has high recoverability. Surface water: WFD Current Overall Status of Poor. Flood risk: Flood plain with limited constraints and a low probability of flooding of residential and industrial properties.

Medium	Receptor is of minor value with small levels of contribution to local, regional or national economy. Receptor is somewhat vulnerable to impacts that may arise from the project and has moderate to high levels of recoverability. Surface water: WFD Current Overall Status of Moderate. Flood risk: Flood plain with limited constraints and a low probability of flooding of residential and industrial properties.
High	Receptor is of moderate value with reasonable contribution to local, regional or national economy. Receptor is generally vulnerable to impacts that may arise from the project and recoverability is slow and/or costly. Surface water: WFD Current Overall Status of Good. Flood risk: Flood plain or defence protecting between one and one hundred residential properties or industrial premises from flooding.
Very high	Receptor is high value or critical importance to local, regional or national economy. Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long term or not possible. Surface water: WFD Current Overall Status of High. Flood risk: Flood plain or defence protecting more than one hundred residential properties from flooding.

Table 3.9.1: Definition of terms relating to the sensitivity of receptors.

Magnitude of Impacts

3.10.18 The magnitude of any predicted impact is dependent on its size, duration, timing (e.g., seasonality) and frequency (permanent, seasonal etc.). A qualitative appraisal of the likely magnitude of the predicted impact will be provided within this assessment, taking into account the measures proposed to be adopted as part of the project to control such impacts. The magnitude of the predicted impact will be described using the criteria outlined in Table 3.9.2 below. This table takes into account guidance provided in Table 2.1, A4.4 of DMRB (Highways Agency et al., 2009) and the author's professional judgement.

Sensitivity	Definition
No change	No change from baseline conditions.
Negligible	Very slight change from baseline condition. Physical extent of impact is negligible and of short term duration (i.e., less than two years).
Low	Minor shift away from baseline, leading to a reduction in level of activity that may be undertaken. Impact is of limited temporal or physical extent and of short term duration (i.e., less than two years).
Medium	Loss or alteration to significant portions of key components of current activity. Impact is of moderate temporal or physical extent and of medium term duration (i.e., less than 20 years).
High	Total loss of ability to carry on activities. Impact is of extended temporal or physical extent and of long term duration (i.e., approximately 50 years duration).

Table 3.9.2: Definition of terms relating to the magnitude of an impact upon receptors.

3.10.19 Impact magnitude must take into account the impact duration. The following definitions will been used in inform the assessment:

- Short term: A period of months, up to one year;
- Medium term: A period of more than one year, up to five years;
- Long term: A period of greater than five years.

Significance of Effects

3.10.20 The significance of predicted effects has been determined using publically available environmental data to take into account the sensitivity of the receptor and the magnitude of each impact. Table 3.9.3 below is used to inform the evaluation of the significance of effects. This table is based on guidance provided for linear schemes within the DMRB (Highways Agency et al., 2008).

Sensitivity	Definition				
Negligible	Negligible	Negligible	Negligible or minor	Negligible or minor	Minor
Low	Negligible	Negligible or minor	Negligible or minor	Minor	Minor or moderate
Medium	Negligible	Negligible or minor	Minor	Moderate	Moderate or major
High	Negligible	Minor	Minor or moderate	Moderate or major	Major or substantial
Very high	Negligible	Minor	Moderate or major	Major or substantial	Substantial

Table 3.9.3: Matrix used for assessment of significance showing the combinations of receptor sensitivity and the magnitude of effect

For the purposes of this assessment any effect that is moderate, major or substantial is considered to be significant in EIA terms. Any effect that is minor or below is not significant in the context of the EIA Regulations.

Cumulative Effects

3.10.21 Cumulative effects on hydrology and flood risk receptors arising from the project alongside other projects within the area from other industries/activities (e.g., industrial/commercial development, coastal infrastructure) would be included in the assessment.

3.10.22 The scope for impacts to interact to potentially create a more significant effect on ecology and nature conservation receptors or hydrogeological resources as a result of hydrology and flood risk effects will be assessed in the EIA.

Transboundary Effects

3.10.23 It is not considered that there is any potential for transboundary effects on hydrology or flood risk receptors to occur as a result of the project.

3.11 Risk of accidents and disasters

Background

3.11.1 Typically, disaster events refer to natural occurrences, and are not defined to include events caused by humans. On this basis the EIA Regulations are interpreted to refer to manmade events 'accidents' and naturally caused events 'disasters'.

3.11.2 On this basis environmental hazards can broadly be subdivided into the following categories[1]:

Natural hazards
Geological – earthquakes, volcanic eruptions, landslides, avalanches
Atmospheric – tropical cyclones, tornadoes
Hydrological – river floods, storm surges, coastal flooding
Biologic – epidemic diseases, wildfire
Technological hazards (major accidents)
Transport accidents – air accidents, train crashes, ship wrecks
Industrial failures – explosions, fires, release of toxic or radioactive materials
Unsafe public buildings and facilities – Structural collapse, fire
Hazardous materials – storage, transport and misuse of materials

3.11.3 It is noted that the assessment of major accidents and disasters is a new requirement of Directive 2014/52/EU transposed in UK law on the 16th of May 2017 in the EIA Regulations. To date no formal guidance has been issued from either the Government or relevant parties as to the scope or nature of such assessment.

3.11.4 The Secretary of State and consultees are invited to comment on the intended scope of and to highlight any likely significant environmental issues that they consider should be included in the assessment.

Proposed assessment methodology

3.11.5 Given the location of the site the development is not considered to be vulnerable to the natural hazards identified with the exception of river/estuarine flooding.

3.11.6 As noted in section 3.9 existing flood defences along the eastern extent of the proposed development are made up of raised walls and embankments. These flood defences provide a 1 in 1000 year standard of protection. Further in the unlikely event of a breach of these defences the inundation of the proposed development with flood water is not considered to result in significant environmental effects in the absence of dangerous or toxic substances required as part of K4 except by way of financial cost on the operator.

3.11.7 The effects of climate change related sea and river level rise and peak rainfall intensities over the lifespan of the development will be included in the flood risk assessment on a precautionary basis to assess the vulnerability and resilience of the development to climate change over its 20 year lifespan, in line with EA guidance climate change,

[1] Environmental Hazards: Assessing Risk and Reducing Disaster, Keith Smith, 2009

February 2016 (https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances).

3.11.8 Gas turbines within acoustic enclosures can present fire and explosion hazards. Such instances can have significant environmental effects particularly on human health and safety.

3.11.9 Notwithstanding this the risk of major accidents related to gas turbines are well understood.

3.11.10 The operation of the existing K1 facility is governed by a number of legislative instruments intended to minimise as far as is reasonably possible the risk of accidents. As a replacement of K1, K4 will be required to operate under the same regulatory regime. For reference a list of relevant legislation by which operation of the turbine is required to satisfy is outlined below:

- Health and Safety At Work Act 1974
- Confined Spaces Regulations 1997 – sets a requirement to manage access to areas which are substantially enclosed (though not always entirely), and where serious injury can occur from hazardous substances or conditions within the space or nearby (e.g. lack of oxygen).
- Dangerous Substances and Explosive Atmospheres Regulations 2002 (as am mended 2015)- Requires an operator to identify DSEAR areas and implement a process for the equipment and working within those areas.
- Equipment and Protective Systems Intended for Use in Potentially Explosive Atmosphere Regulations 2001 - This Regulation covers both electrical and non-electrical equipment and requires the operator to ensure that all equipment used in DSEAR zoned areas is ATEX rated
- Fire: The Regulatory Reform (Fire Safety) Order 2005 (as amended 2015) - Requires the operator to carry out a fire safety risk assessment and implement and maintain a fire management plan.
- Gas Safety (Management) Regulations 1996 – Requires an operator to control the potential hazards from gas mains failures and mitigate the risks from major pipeline incidents.
- Pressure Equipment Regulations 1999 (amendment 2015) – prohibits the use of pressure equipment until it has been demonstrated that it has undergone a declaration of conformity, it is safe and designed & manufactured to sound engineering practices. Covers the requirement to demonstrate that written schemes of examination, the safe operating limits of pressure systems, and that the systems are safe under those conditions. Requires operators to maintain and keep records of the examination of pressure systems.

- Supply Of Machinery (Safety) Regulations 2008 – Requires operators to ensure all equipment complies with the relevant standards and risk assessments when supplied to site.

3.11.11 It is noted that the proposed development does not fall within the scope of EU legislation 2012/18/EU (control of major-accident hazards involving dangerous substances) or Council Directive 2009/71/Euratom (Community framework for the nuclear safety of nuclear installations).

3.11.12 In light of the above it is considered that the risk of accidents from the proposed development will be comprehensively controlled and mitigated as far as is reasonably possible in accordance with UK legislation in existence at the time of operation.

3.11.13 It is therefore considered that the mitigated risk of a major accident or disaster subject to ongoing to compliance with relevant legislation is as low as reasonably practical and there the risk is not significant in the context of the EIA Regulations.

3.11.14 It is therefore not proposed that a standalone risk assessment is undertaken which would replicate the purpose of the legal instruments identified but that a list of the relevant legislation in place is provided setting out what risk/accidents it is intended to address and demonstrate how the development will comply with the legislation in the introductory chapters of the ES.

3.12 Cumulative effects

3.12.1 The effects of the proposed development in combination with other schemes that are operational / constructed, consented or for which planning permissions are currently being sought, will be assessed within the EIA where appropriate.

3.12.2 Cumulative effects will be considered on an issue-by-issue basis and the scope of the EIA will be expanded, if necessary, to include any cumulative issues that arise in the future. The cumulative effects of other developments will be considered only when sufficient information is available, i.e. when a project is within the planning domain and there is adequate information publicly available.

3.12.3 Consultees are requested to suggest projects that should be covered in the cumulative effects assessment. DHA Environment is currently aware of the following projects for inclusion in the assessment of cumulative effects:

- SW/10/444 Development of a sustainable energy plant to serve Kemsley Paper Mill, comprising pre-treated waste fuel reception, moving grate technology, power generation and export facility, air cooled condenser, 2 no. stacks (90 metres high), transformer, bottom ash facility, steam pipe connection, office accommodation, vehicle parking, landscaping, drainage and access. Land to the East of Kemsley Paper Mill, Kemsley, Sittingbourne, Kent, ME10 2TD. Permitted April 2011.

- 16/501228/FULL Construction of a new baling plant building within an existing waste paper storage yard. Kemsley Mill Ridham Avenue Sittingbourne Kent ME10 2TD. Permitted May 2016.

- 16/507687/COUNTY County matters application for the construction and operation of an Incinerator Bottom Ash (IBA) Recycling Facility on land adjacent to the Kemsley Sustainable Energy Plant. Kemsley Mill Ridham Avenue Sittingbourne Kent ME10 2TD. Permitted February 2017.

- 16/501484/COUNTY County matter - The construction and operation of a gypsum recycling building with plant and machinery to recycle plasterboard and the re-configuration of the existing lorry park to include office/welfare facilities and ancillary supporting activities, including rain water harvesting tanks, container storage, new weighbridges, fuel tanks, hardstanding, safe lorry sheeting access platform and automated lorry wash. Countrystyle Recycling Storage Land Ridham Dock Road Sittingbourne Kent ME9 8SR. Permitted April 2016.

- SW/11/1291 Anaerobic digester and associated ground profiling and landscaping. Land To The North Of The DS Smith Paper Mill, Kemsley, Sittingbourne, Kent, ME9 8SR. Permitted July 2012.

- 14/500327/OUT Outline (Access not reserved) - Up to 8000m2 of Class B1 and B2 floor space and all necessary supporting infrastructure including roads, parking, open space, amenity landscaping, biodiversity enhancement and buffer to proposed extension to Milton Creek Country Park. Detailed approval for Phase 1 including (i) vehicular and pedestrian access to Swale Way; (ii) 30 space (approximately) informal car park to serve extension to Milton Creek Country Park;

Change of use of approximately 13.31 ha of Kemsley Marshes as an extension to Milton Creek Country Park with footpath connections to the proposed informal car park. Land South Of Kemsley Mill, Swale Way Sittingbourne. Permitted July 2016.

- SW/12/0816 Relocation of Nicholls Transport depot from Lydbrook Close, Sittingbourne to land north of Swale Way (accommodating a notional 15% increase in the size of the company) with access to Swale Way; strategic landscaping buffer to A249; ancillary offices/amenity block; vehicle workshop; ancillary warehouse; vehicle wash-down and refuelling facillities; tractor and trailer parking area; surface water attenuation ponds and biodiversity enhancement; strategic footpath/cycleway link; staff parking; safeguarding of land fronting Swale Way and all necessary infrastructure. Sittingbourne Logistics Park, Swale Way, Sittingbourne. Permitted April 2013.

- SW/12/1211 Construction and operation of a Materials Recycling Facility (MRF) and Waste Transfer Station (WTS) for Commercial and Industrial and Municipal Solid Waste and ancillary staff and fleet vehicle parking, vehicle workshop, 2 x weighbridges, fuel tank, sprinkler tank, pump house, substation, fencing and improved access and office and welfare facility. Land Within Ridham Dock, Iwade, Sittingbourne, Kent, ME9 8SR. Permitted July 2013.

- 15/510589/OUT Outline application for access matters reserved for construction of Business Park (Use Classes B1(B), B1(C), B2 and B8) (research and development, light industrial, general industrial and storage or distribution) (up to a maximum of 46,600sqm), including associated accesses (including alterations to existing northern relief road), parking and servicing areas, landscaping, bunds, surface water storage areas, and related development. | Eurolink V. Land North Of Swale Way Sittingbourne Kent ME9 9AR. Permitted November 2016.

- SW/14/0224 Solar farm, comprising the erection of solar arrays of photovoltaic panels, inverter and transformer sheds, fencing, site storage cabin, combined DNO and EPC switchgear housing, internal gravel access road, and associated equipment. | Land North & West Of Tonge Corner Farm, Sittingbourne. Permitted August 2015.

- 14/502737/EIASCO Request for Scoping Opinion to determine the extent of an application for a combined heat and power plant at Ridham Docks. Ridham Docks, 3 Kemsley Fields Business Park, Ridham Dock Road, Sittingbourne. July 2014.

- 16/506935/COUNTY County Matters application for steam pipeline connecting the Ridham Dock Biomass Facility to the DS Smith Paper Mill14/501181/COUNTY KCC Regulation 13 - Scoping opinion as to the scope of an environmental impact assessment for a proposed combined heat and power plant at Ridham B. Ridham Dock, Sittingbourne, Kent. July 2014. Ridham Docks, Sittingbourne. Permitted October 2016.

- EN010083 Proposed application by K3 CHP Ltd., for an Order Granting Development Consent for the Wheelabrator Kemsley Power Upgrade Project. Scoping Opinion submitted December 2016.

3.12.4 A map of the site identifying the spatial relationship to the cumulative developments identified is provided in Appendix III.

3.12.5 The potential for cumulative effects to arise through the interaction of two or more impacts on the same receptor will also be examined where applicable.

3.13 Alternatives

3.13.1 The ES will include details of alternatives considered by D S Smith Plc (e.g. Site layout, access arrangements, technologies etc.) and will set out the reasons for the final selection. This will include comparison of the associated environmental effects where relevant in accordance with Schedule 4 of the Regulations. The results of public consultation and its subsequent influence on the design and nature of the proposals will also be covered.

4 Summary

4.1.1 From this scoping exercise, it has been possible to reach a preliminary view on the environmental features that are potentially likely to be significantly affected by the proposed development and should be included within the EIA. All of the identified effects that are potentially significant are listed in Table 4.1.

Feature	Potentially significant impacts
Traffic and transport	Increase volume of vehicles associated with construction staff, HGVs and Abnormal Indivisible Loads on the adjacent road network during construction and consequential impacts on driver delay, severance of routes, pedestrian delay, pedestrian amenity and accidents and road safety
Air Quality	Emissions associated with the operation of the Gas Turbine including effects on human health and ecological receptors
	Dust emissions during construction and decommissioning
Climate change	Change in flood risk to the development and due to the development – assessed through Water Environment scope (see below)
	Greenhouse gas emissions released directly and caused indirectly by construction and operation of the development
Noise & Vibration	Noise generated by construction plant located at the site
	Vibration generated by construction plant, located at the site
	Operational noise, including noise from both fixed and mobile plant
Ground conditions	Potential presence of ground contamination and associated impacts on human health including construction workers, operational staff and the general public.
	Potential presence of ground contamination and resultant effects on surface water and groundwater bodies
	Potential presence of ground gas and human health including construction workers, operational staff and the general public
Landscape and visual effects	Impacts on landscape/townscape character during and post construction including lighting as relevant
	Impacts on sensitive views during and post construction including lighting as relevant
Cultural Heritage	Impacts on buried archaeological remains during construction
	Impacts on the setting of heritage assets during and post construction including lighting as relevant

Biodiversity	Impact on air quality from the operation of the gas turbine and resultant effects on the interest features and supporting habitats within surrounding designated sites
	Impact of dust from the construction/decommissioning of the gas turbine and resultant effects on the interest features and supporting habitats within surrounding designated sites
	Impacts on the noise environment during construction, operation and decommissioning of the gas turbine on bird interest features of the Swale SPA/Ramsar/SSSI
Water environment	Potential impacts on surface water quality during and post construction
	Potential impacts on surface water run-off and flood risk (including climate change)
	Potential impacts on coastal water quality during construction and operation
	Potential impacts on groundwater quality during construction
	Potential impacts on groundwater resources during operation
Table 4.1: Potentially significant impacts	

4.1.2 Although the environmental features are described here under separate headings, the EIA will pay close attention to the interrelationships between the various factors in order to assemble a holistic picture of the likely significant effects and mitigation measures.

4.1.3 It should be noted that EIA is an iterative process, enabling matters not recognised at a preliminary stage to be addressed subsequently.

4.1.4 Based on the preliminary scope determined within this report, the provisional ES chapters are envisaged to be as follows:

Non-technical summary

1. Introduction
2. Site description and proposed development (including alternatives considered)
3. Environmental issues and methodology
4. Traffic and transport
5. Air quality (including health effects)
6. Greenhouse gas emissions and climate change
7. Noise (including health effects)

8. Ground conditions (including health effects)
9. Landscape and visual effects
10. Cultural Heritage
11. Biodiversity
12. Water environment (including climate change)
13. Summary tables
14. Glossary

4.1.5 Each ES environmental chapter will follow a similar format, including sections on guidance and legislation, methodologies, reporting the baseline conditions, discussion of the future baseline, impact assessment during and post- construction, mitigation, residual effects and cumulative effects (where relevant).

4.1.6 The consideration of the potential significant effects in this scoping report is preliminary. The Secretary of State and consultees are invited to comment on the intended scope of the EIA and to highlight any likely significant environmental issues that they consider should be included in the EIA.

Appendix I - Schedule 4 of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017: information for inclusion in an ES

1. A description of the development, including in particular—

(a) a description of the location of the development;
(b) a description of the physical characteristics of the whole development, including, where relevant, requisite demolition works, and the land-use requirements during the construction and operational phases;
(c) a description of the main characteristics of the operational phase of the development (in particular any production process), for instance, energy demand and energy used, nature and quantity of the materials and natural resources (including water, land, soil and biodiversity) used;
(d) an estimate, by type and quantity, of expected residues and emissions (such as water, air, soil and subsoil pollution, noise, vibration, light, heat, radiation and quantities and types of waste produced during the construction and operation phases.

2. A description of the reasonable alternatives (for example in terms of development design, technology, location, size and scale) studied by the developer, which are relevant to the proposed project and its specific characteristics, and an indication of the main reasons for selecting the chosen option, including a comparison of the environmental effects.

3. A description of the relevant aspects of the current state of the environment (baseline scenario) and an outline of the likely evolution thereof without implementation of the development
as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge.

4. A description of the factors specified in regulation 5(2) likely to be significantly affected by the development: population, human health, biodiversity (for example fauna and flora), land (for example land take), soil (for example organic matter, erosion, compaction, sealing), water (for example hydro-morphological changes, quantity and quality), air, climate (for example greenhouse gas emissions, impacts relevant to adaptation), material assets, cultural heritage, including architectural and archaeological aspects, and landscape.

5. A description of the likely significant effects of the development on the environment resulting from, inter alia—

(a) the construction and existence of the development, including, where relevant, demolition works;

(b) the use of natural resources, in particular land, soil, water and biodiversity, considering as far as possible the sustainable availability of these resources;

(c) the emission of pollutants, noise, vibration, light, heat and radiation, the creation of nuisances, and the disposal and recovery of waste;

(d) the risks to human health, cultural heritage or the environment (for example due to accidents or disasters);

(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources;

(f) the impact of the project on climate (for example the nature and magnitude of greenhouse gas emissions) and the vulnerability of the project to climate change;

(g) the technologies and the substances used.

The description of the likely significant effects on the factors specified in regulation 5(2) should cover the direct effects and any indirect, secondary, cumulative, transboundary, short-term, medium-term and long-term, permanent and temporary, positive and negative effects of the development. This description should take into account the environmental protection objectives established at Union or Member State level which are relevant to the project, including in particular those established under Council Directive 92/43/EEC(a) and Directive 2009/147/EC(b).

6. A description of the forecasting methods or evidence, used to identify and assess the significant effects on the environment, including details of difficulties (for example technical deficiencies or lack of knowledge) encountered compiling the required information and the main uncertainties involved.

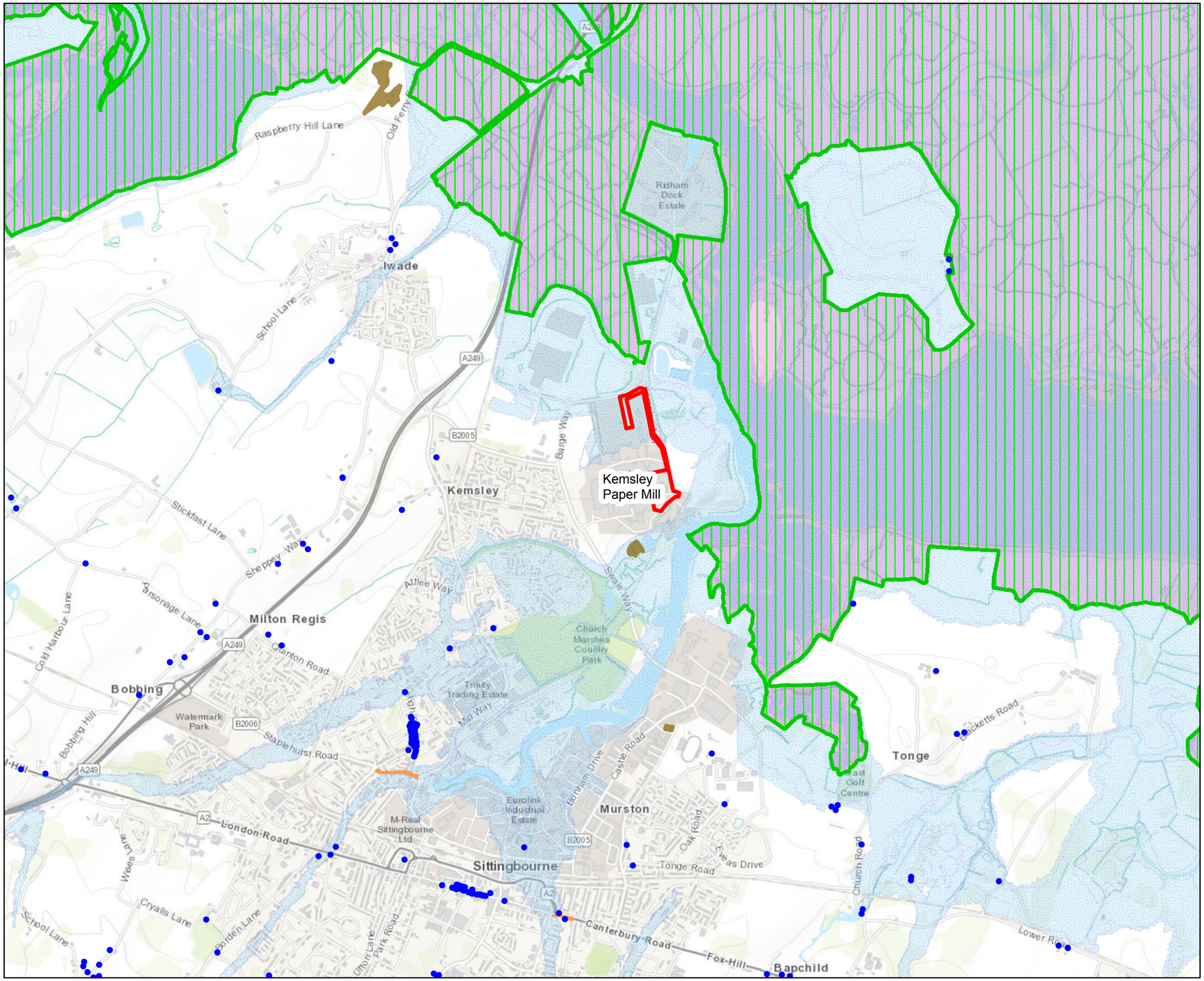
7. A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases.

8. A description of the expected significant adverse effects of the development on the environment deriving from the vulnerability of the development to risks of major accidents and/or disasters which are relevant to the project concerned. Relevant information available and obtained through risk assessments pursuant to EU legislation such as Directive 2012/18/EU of the European Parliament and of the Council(c) or Council Directive 2009/71/Euratom(d) or UK environmental assessments may be used for this purpose provided that the requirements of this Directive are met. Where appropriate, this description should include measures envisaged to prevent or mitigate the significant adverse effects of such events on the environment and details of the preparedness for and proposed response to such emergencies.

9. A non-technical summary of the information provided under paragraphs 1 to 8.

10. A reference list detailing the sources used for the descriptions and assessments included in the environmental statement.

Appendix II – Site Constraints Plan



1 ½ 0 1 2 3 Kilometers

Legend

- Application Boundary
- Listed Buildings
- Scheduled Monument
- Air Quality Management Area
- Special Protection Areas and Ramsar Sites
- Site of Special Scientific Interest (SSSI)
- Flood Zone 2 and 3

TITLE
Environmental Designations

CLIENT
DS SMITH PAPER LIMITED

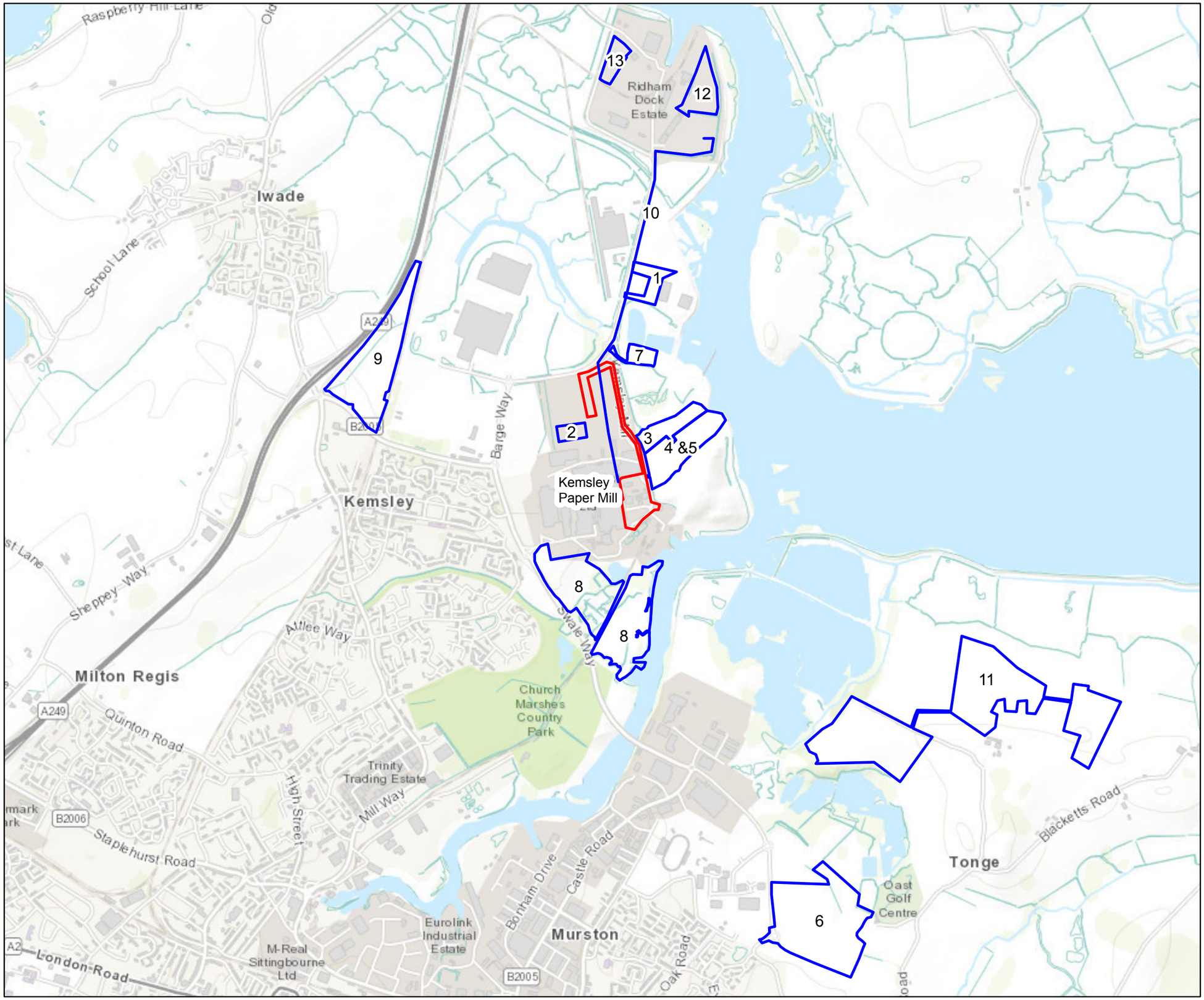
PROJECT
K4 DCO PROJECT, KEMSLEY MILL, SITTINGBOURNE.

SCALE AT A3	DATE	JOB NO.
1:40,000	July 2017	12321

dha environment
Eclipse House, Eclipse Park, Sittingbourne Road
Maidstone, Kent ME14 3EN

t: 01622 776226
e: info@dhaplanning.co.uk
w: www.dhaplanning.co.uk

Appendix III – Cumulative Development Sites



Legend

- Application Boundary
- Cumulative Sites

ID Name

1. 16/501484/COUNTY - The construction and operation of a gypsum recycling building
2. 16/501228/FULL - Construction of new baling plant building
3. 16/507687 - The construction and operation of an Incinerator Bottom Ash (IBA) recycling facility
4. SW/10/444 - Development of a sustainable energy plant
5. END10085 - DCD scoping opinon for power upgrade project
6. 15/510/589/OUT - Construction of Business Park
7. SW/11/1291 - Anaerobic digester and associated ground profiling and landscaping
8. 14/500327/OUT - Up to 8000m2 of class B1 and B2 floor space and country park
9. SW/12/0816 - Relocation of Nicholls Transport depot from Lydbrook Close
10. 16/506935/COUNTY - Application for steam pipeline connecting the Ridham Dock Biomass Facility to the DS Smith Paper Mill
11. SW/14/0224 - Application for solar farm.
12. 14/502737/EIA - Scoping opinon for combined heat and power plant.
13. SW/12/1211 - Construction of materials recycling facilities and waste transfer station

TITLE
Cumulative Sites

CLIENT
DS SMITH PAPER LIMITED

PROJECT
K4 DCO PROJECT, KEMSLEY MILL, SITTINGBOURNE.

SCALE AT A3 1:30,000 | DATE July 2017 | JOB NO. 12321

dha environment
Eclipse House, Eclipse Park, Sittingbourne Road
Maidstone, Kent ME14 3EN
t: 01622 776226
e: info@dhaplanning.co.uk
w: www.dhaplanning.co.uk

1 ½ 0 1 2 3 Kilometers