The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

PINS Ref: EN010090

Environmental Statement

Volume 1: Main Chapters

Document 3.1

Author: DHA Environment and RPS

Planning Act 2008
The Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009
Regulation: 5(2)(a)

April 2018 - Submission Version

Infrastructure Planning (Environmental Impact Assessment) (England and Wales) Regulations 2017

ENVIRONMENTAL STATEMENT – MAIN REPORT

Client:	D S Smith Paper Ltd
Site:	The Kemsley Mill K4 CHP Generating Station DCO
Date:	April 2018
Reference:	Document 3.1
Editors:	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

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1 Introduction

1.1 Background

1.1.1 DS Smith Paper Limited ("the Applicant") proposes to seek permission to decommission an existing gas fired Combined Heat and Power ("CHP") Plant ("K1") and build a new gas-fired CHP plant ("K4") with a nominal power output of 68-73 megawatts (the "Proposed Development") on DS Smith owned land ("the Site") to be operated by DS Smith and/or other companies to supply electricity and steam to their existing Kemsley Paper Mill, in Sittingbourne, Kent ("The Mill")with any excess power being exported to the National Grid. **Figure 1.1** shows the Site location.

1.1.2 Further information regarding the Applicant, the location of the Site and the Proposed Development including relevant plans are provided in **Chapter 2**.

1.1.3 The Planning Act 2008 states that the construction or extension of an onshore generating station of more than 50MW electrical output in England or Wales is considered by Section 14(1)(a) and Section 15 of the Act to be a 'nationally significant infrastructure project' (NSIP) and as such requires an application for a Development Consent Order (DCO) to be made to the Planning Inspectorate (PINS) and approved by the Secretary of State (SoS) for Business, Energy and Industrial Strategy. Such an application has therefore been prepared by DS Smith Paper Limited.

1.1.4 Further detail regarding the planning history of the Site and need for and purpose of the Proposed Development is provided within the Planning Statement (Document 5.2) submitted with the application.

1.2 Environmental Impact Assessment

1.2.1 The Proposed Development falls within Schedule 2 paragraph 3(a) of the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (hereafter the EIA Regulations). It is considered that the location, scale and nature of the Proposed Development, notwithstanding the selection criteria in Schedule 3 of the EIA Regulations, may have the potential to give rise to significant effects on the environment 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.

1.2.2 An Environmental Impact Assessment (EIA) has been carried out in accordance with the EIA Regulations to identify and assess the potential significant environmental effects of the Proposed Development. The results of this assessment are reported in this ES submitted with the application to PINS.

1.2.3 EIA is a process for ensuring that the likely significant effects of a new development on the environment are fully understood and taken into account before development is allowed to proceed. As defined in the DCLG EIA Planning Practice Guidance[1]:

> *"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."*
>
> http://planningguidance.planningportal.gov.uk Paragraph: 002 Reference ID: 4-002-20140306

1.2.4 The purpose of an ES is to report the findings of the EIA. In accordance with good practice guidance, this ES has been produced as a separate objective assessment of the potential environmental effects of the Proposed Development, albeit is integral to the planning process.

1.2.5 To satisfy the requirements of the EIA Regulations, an ES must address the matters as listed in Schedule 4 and Regulation 14 as relevant.

1.2.6 This ES has been produced in accordance with the EIA Regulations and best practice guidance produced by the DCLG and other organisations including the Institute of Environmental Management and Assessment (IEMA). It has been prepared by DHA Environment and RPS using information gathered during a formal EIA of the Proposed Development in summer/autumn 2017.

1.2.7 The scope of the EIA has been determined by DHA in consultation with PINS and Consultees following the precautionary principle. The scoping process is discussed further in **Chapter 3**.

1.2.8 In order to keep the size of this ES to a minimum, and because of the nature of the report, it inevitably contains some technical terminology and abbreviations. A glossary of technical terms and abbreviations is included at **Chapter 14**.

1.2.9 A **Non-Technical Summary ("NTS")** (Document 3.2) has also been provided in accordance with Paragraph 9 of Schedule 4 to the EIA Regulations. This is a standalone document which provides a simplified summary of the content and scope of the ES, the technical issues considered within it and the assessment of the environmental impacts undertaken.

1.3 ES Content

1.3.1 The ES is presented in 3 volumes.

[1] Whilst it is noted that the DCLG EIA Planning Practice Guidance relates principally to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 the principle and purpose of EIA remains the same under the DCO process.

1.3.2 **Volume 1** comprises introductory chapters which set out the need for EIA; introduce the project team; set out the methodology used; describe the Site and the context for the Proposed Development; describe the Proposed Development itself; and set out the alternatives which were considered. It also includes the Technical Chapters, which are topic-specific assessments of the effects of the Proposed Development.

1.3.3 **Volume 2** includes appendices to the main text of the ES, predominantly detailed topic-specific reports which support the assessments made in the ES.

1.3.4 **Volume 3** is the NTS. In accordance with best practice guidance, the NTS has been prepared as a standalone report which is available free of charge. The NTS provides an illustrated summary of the key aspects of this ES report, designed to inform people of the environmental effects of the proposal and written in non-technical language.

1.4 Other Documentation

DCO Application Documents

1.4.1 In addition to this ES, a number of other documents have been submitted to PINS as part of the DCO application. These are listed in Table 1.1.

Documents forming DCO Application
1.1 Covering Letter
1.2 Overall Summary Document
1.3 Application Forms
1.4 Copies of Newspaper Notices
2.1 Draft Development Consent Order (DCO)
2.2 Explanatory memorandum explaining DCO
3.1 Environmental Statement
3.2 Non- Technical Summary
4.1 10392-0023-003 – Context Site Location Plan
4.2 10392-0025-004 – Site Location Plan – Aerial Photo
4.3 10392-0024-005 – The Land Plan
4.4 10392-0026-006 – Works Plans – Key Plan
4.5 10392-0029-009 – Work No.1 –Works Plan with limits of deviation for horizontal tube boiler
4.6 10392-0037-005 – Illustrative layout with horizontal tube boiler
4.7 10392-0042-003 – Illustrative Elevation cross sections – Horizontal Tube Boiler
4.8a 10392-0043-003 – Site Context – Illustrative 3d Visual - Horizontal Tube Boiler
4.8b 10392-0043-003 – Site Context – Illustrative 3d Visual - Horizontal Tube Boiler
4.9 10392-0039-007 – Work No.1 –Works Plan with limits of deviation for Vertical Tube Boiler
4.10 10392-0038-004 – Illustrative layout with Vertical Tube Boiler
4.11 10392-0028-004 – Illustrative Elevation cross sections – Vertical Tube Boiler
4.12a 10392-0031-003 – Site Context – Illustrative 3d Visual – Vertical Tube Boiler
4.12b 10392-0022-007 – Site Context – Illustrative 3d Visual – Vertical Tube Boiler
4.13 10392-0027-006 – Work No.2 Plan – Tie-ins to existing site facilities (illustrative)
4.14a 10392-0035 - Nature Conservation Plan
4.14b 10392-0040-005 - Habitats Plan
4.15 10392-0041-003 - WFD Waterbodies in a River Basin Management Plan
4.16 10392-0035 - Heritage Plan
5.1 Consultation Report
5.2 Planning Statement
5.3 Design and Access Statement
5.4 Statement of Statutory Nuisances
5.5 Regulation 6 - Grid and Gas Connection Statement
- Flood Risk Assessment (ES Appendix 9.1)

- Habitat Regulations Assessment (ES Appendix 10.1) - Carbon Assessment (ES Chapter 6) - Outline CEMP (ES Appendix 2.1)

Table 1.1: Documents submitted with the DCO application

1.5 The Consultant Team

1.5.1 The Applicant has appointed a number of specialist consultants (competent experts), the results of whose work are presented in this ES. Table 1.2 lists the consultants involved in identifying the development constraints and undertaking various aspects of the EIA.

Name & Organisation	Discipline / Area of Expertise
Tim Spicer, DHA Environment	EIA Scoping, co-ordination and compilation and NTS
David Archibald, RPS	Traffic and Transport
Fiona Prismall, RPS	Air Quality
Tom Dearing, RPS	Climate Change
Stephen Scott, RPS	Noise and Vibration
Philip Thomas, RPS	Ground Conditions
Jonathan Morley, RPS	Water Environment
Nick Betson RPS	Biodiversity
Paul Ellis, RPS	Land and Visual Impact
Dan Slatcher, RPS	Cultural Heritage

Table 1.2: Project Team

1.5.2 In accordance with Regulation 14(4)(b) of the EIA Regulations a summary of the expertise and qualifications of the competent experts involved in the production of this ES are provided in **Appendix 1.1.**

1.6 ES Availability

1.6.1 Electronic copies of the ES, NTS and other planning application documents can be viewed and downloaded free of charge on the PINS and DS Smith websites:

https://infrastructure.planninginspectorate.gov.uk/projects/south-east/kemsley-paper-mill-k4-chp-plant/

http://www.dssmith.com/paper/about/paper-mills/kemsley-uk/k4- projectpublic-consultation

1.6.2 Copies of the ES and NTS can also be inspected at the following locations until the conclusion of the examination period (anticipated February 2019), with typical opening hours shown:

The Site Office, DS Smith Kemsley Paper Mill, ME10 2TD	9am to 5pm Monday to Friday
Swale Borough Council Offices, East Street, Sittingbourne, ME10 3HT	8:45am to 5pm Monday to Thursday, 8:45am to 4:30pm Friday

1.6.3 Additional copies of the ES (paper or CD) may be obtained at a reasonable charge to reflect printing and distribution costs by contacting:

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

Tel: 01622 776226
Email: info@dhaplanning.co.uk

1.6.4 The following charges apply, to cover printing and administration costs.

(1) Full printed ES, including appendices - £500

(2) Printed ES, not including appendices - £50

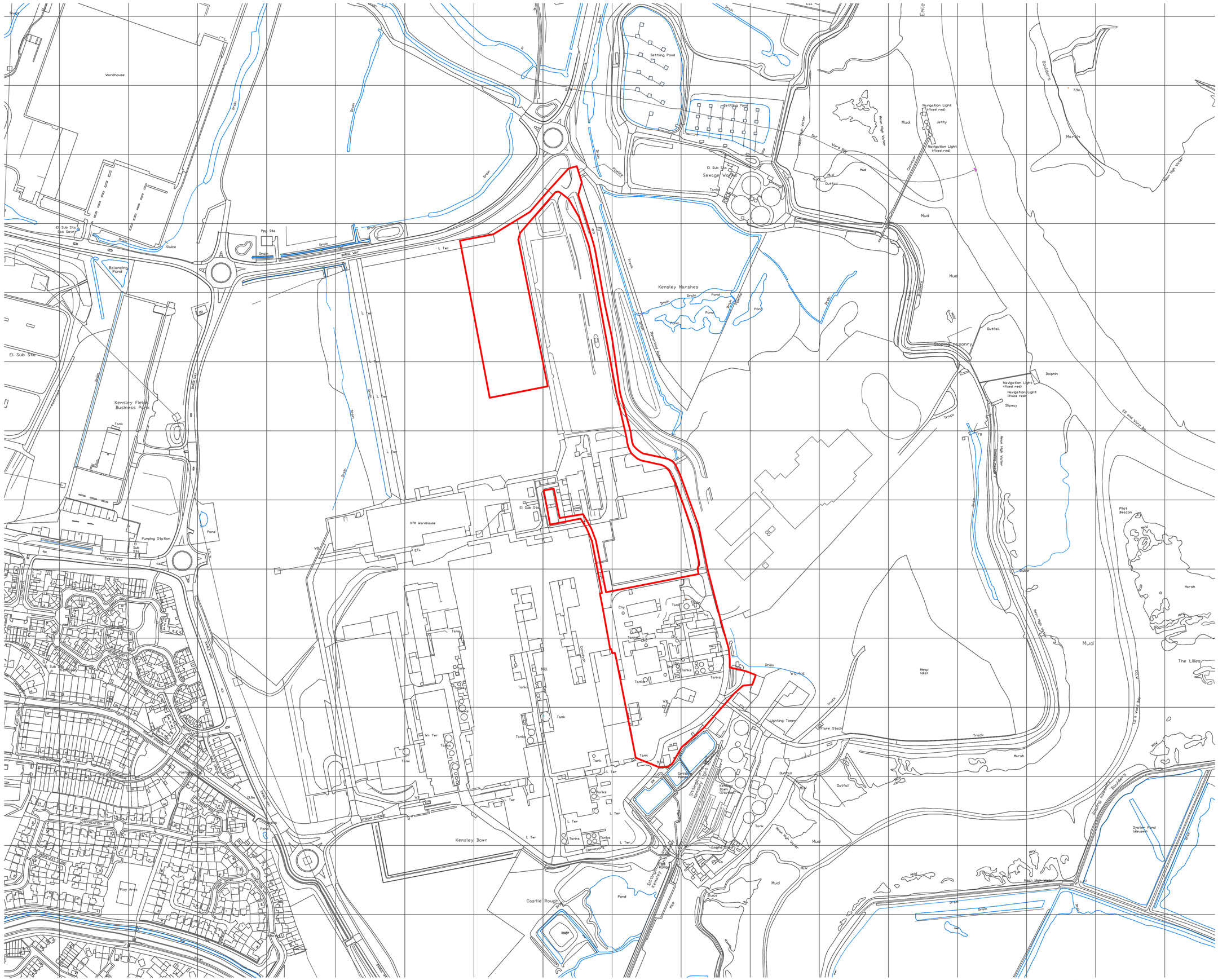
(3) Printed Non-Technical Summary, singularly or in addition to the above – free

(4) Electronic CD copy of full ES, appendices and NTS - £25

1.7 Making representations on the application

1.7.1 Following submission the Planning Inspectorate has up to a month to assess whether the DCO application is valid. The applicant is required to publicise the acceptance of a DCO application, at which point details will be provided as to how to register with PINS to be an Interested Party during the DCO examination. At that stage there is the opportunity to make an initial representation regarding the content of the DCO application. All such Relevant Representations made will be published by PINS on their website.

1.7.2 Anyone registered as an Interested Party will then be updated by PINS as the examination of the application progresses. They will have the opportunity to attend and speak at the Preliminary Meeting, which considers how the examination will proceed, and then at any Hearings which take place during the examination period itself. In addition, Interested Parties can submit a detailed Written Representation and make submissions in respond to the formal questions raised by the Inspector(s) and the submissions of the Applicant and other Interested Parties.



Notes

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 1.1

Title: Land Plan

Scale 1: 2,500 @ A1

0 50 100 150 200 Metres

Date: Mar 2018

Author: R.Massey

Doc reference

10392-0024-005

Document number

4.3

2 Site description and Proposed Development

2.1 Introduction

2.1.1 This chapter provides a description of the Site and surrounding area. It also sets out details of the Proposed Development and provides construction and post-construction information.

2.2 The Site and wider area

2.2.1 The Site lies in the south east corner of the existing Kemsley Paper Mill approximately 600m west of the Swale Estuary and north of Milton Creek in the Borough of Swale, Kent. The entire Site is within the security fence for the Paper Mill. The main part of the Site is roughly triangular in shape and consists almost entirely of existing concrete hardstanding. The Site lies within the wider Paper Mill industrial complex which comprises a number of existing large industrial buildings, flue emission stacks, concrete hardstanding and other associated development. **Figure 1.1** in Chapter 1 shows the Site location and application boundary.

2.2.2 The Site is accessed from the A249 via Swale Way and Barge Way into the Paper Mill. An internal access road provides access to the Site.

2.2.3 The Site lies immediately east of the Kemsley residential suburb of Sittingbourne with the town centre some 2.5km south of the Site. An aerial view of the Site is shown in **Figure 2.1**.

2.2.4 The nearest statutory designation with regard to ecological interest is the Swale Special Protection Area and Site of Special Scientific Interest which lies approximately 280m east of the Site at its closest point. The Site is also less than 200m from the Milton Creek Local Wildlife Site. A designated Scheduled Monument 'Castle Rough' a former Medieval moated site lies approximately 240m south west of the Site. The Site lies over 7km from the North Downs Area of Outstanding Natural Beauty. All statutory designations in proximity to the Site are shown on **Figure 2.2**.

2.3 DS Smith Paper Ltd and Kemsley Paper Mill

2.3.1 DS Smith Paper Ltd (DS Smith) is a European manufacturer of recycled corrugated case materials and speciality papers. The company operate nine paper mills across Europe, with Kemsley their only mill within the UK. DS Smith have invested heavily in modernising Kemsley, which now employs around 400 people and has an annual production capacity of up to 800,000 tonnes of recycled paper/case materials.

Existing energy sources

2.3.2 The paper production process is energy intensive and requires a substantial amount of electricity and steam. The energy and steam requirements of the Kemsley Mill are provided by a range of sources, operated by either DS Smith or partner companies.

2.3.3 The power sources are:

- K1 – a gas turbine combined heat and power (CHP) plant and 6 ancillary package boilers located within the mill site which provides electricity and steam to the mill;

- K2 – a steam generator located within the mill site which uses waste plastic and sludge as a source to provide steam to the mill;

- K3 – an energy from waste plant currently under construction to be operated by Wheelabrator to the east of the main mill complex which from 2019 will provide steam to the mill.

2.3.4 It should be noted that K3 is an entirely separate proposal from the Proposed Development.

2.3.5 The K1 plant is 22 years old and is operated under a contract by E.ON (Business Heat and Power). DS Smith have assessed the condition of K1 and is aware that it will require significant investment into the gas turbine, waste heat recovery boilers and steam turbine which would not be proportional to the length of extended life achieved. If development consent is granted, by the time K4 is fully commissioned K1 will be nearly 25 years old. Moreover, K1 is oversized for its existing use, as it was sized originally to provide energy to the now redundant Sittingbourne Mill in the centre of Sittingbourne and it is therefore inefficient.

2.3.6 DS Smith therefore intends to replace the existing K1 plant with a new CHP plant to be constructed on available land adjacent to K1.

2.3.7 **Figure 2.3** shows the location of the K1-3 facilities.

2.4 The Proposed Development

2.4.1 DS Smith is seeking permission to decommission the existing gas-fired CHP Plant (K1) and build a new gas-fired CHP plant (K4) with a nominal power output of 68-73 Megawatts to be operated by DS Smith and/or other companies to supply steam and power to their existing Kemsley Paper Mill.

2.4.2 The Proposed Development will comprise a combined cycle plant fuelled by a gas turbine of 52-57 MW nominal power output, waste heat recovery boilers providing 105 MWth steam and steam turbine technology of around 16 MW nominal power output. A full list of proposed plant items is provided below:

Main plant items:

a) local equipment room and control including battery enclosure
b) a generator;
c) a gas turbine;
d) a heat recovery steam generator;
e) a 70m high heat recovery steam generator stack;
f) a turbine hall (including steam turbine);

g) a CHP pipe bridge, including pipes and cables for steam and electricity, connecting the plant with the paper mills and the existing electricity substation.
h) a dump condenser;
i) a fin fan cooler; and
j) a 35m high package boiler stack;

Ancillary plant items

k) a start transformer;
l) a fire extinguisher cabinet;
m) switchgear;
n) a block transformer;
o) a transformer;
p) a package boiler;
q) a fuel gas skid;
r) condensate pumps;
s) heat recovery steam generator chemical dosing equipment;
t) an effluent sump;
u) a condensate tank;
v) boiler water feed pumps;
w) K2 and low pressure package boiler feed pumps

2.5 Parameters

2.5.1 Whilst the final detailed design of the CHP plant is not expected to be materially different from that described in this ES, the detailed design, construction and commissioning of the CHP plant will be carried out by an experienced contractor after development consent has been granted and contracts placed with the equipment suppliers.

2.5.2 To reflect this and in accordance with the Rochdale Envelope principles a series of maximum parameters that provide the strategic framework for the Proposed Development have been designed. These parameters are the framework on which the EIA has been undertaken and in which the Proposed Development is required to come forward within.

2.5.3 At this stage the exact location of the heat recovery steam generator (HRSG) stack is not determined and could be located either at the end or in the centre of the HRSG dependent on the final technological solution i.e. whether a vertical or horizontal tubed boiler is installed in the HRSG.

2.5.4 Two site layout parameter plans have therefore been produced which reflect the potential variation in stack location and pipe bridge (but are identical in all other matters). These are provided as **Figures 2.4a&b**. The two potential stack locations have

been assessed independently in the ES as appropriate. In addition to the potential variation in stack location the layout parameter plans provide an 'envelope' in which each of the major plant items are to be located. These envelopes are larger than the maximum dimensions of the plant to allow flexibility at the final design stage as to where exactly these plant items are required to be located. This essentially consists of a 5m buffer around each major plant item.

2.5.5 The maximum dimensions of the plant (minimum with regard to stack heights) are provided in Table 2.1 and can be described as a credible "worst case" for EIA assessment purposes.

Building or structure	Maximum length (metres)	Maximum width (metres)	Maximum height (metres) (above existing ground levels)	Minimum height (metres) above existing ground levels
a) Local equipment room (including battery enclosure)	23.1	13.75	9.9	-
b) Generator	5.5	4.4	6.6	-
c) Gas turbine	16.5	8.8	9.9	-
d) Heat recovery steam generator	30.8	16.5	35.2	-
e) 70m high heat recovery steam generator stack	-	4 diameter	-	75m
f) Turbine hall (including steam turbine)	25.3	19.8	16.5	-
g) CHP pipe bridge	40.7	4.4	12	-
h) Dump condenser	16.5	13.2	8.8	-

i)	Fin fan cooler	11.55	7.15	7.7	-
j)	35m package boiler stack	-	0.6 diameter	-	35m
(k – w) All other ancillary plant		-	-	7.5	-

Table 2.1: maximum dimensions of the proposed K4 plant.

2.5.6 In addition to the above, during the construction of the Proposed Development and decommissioning of K1 the following facilities and equipment will be provided on Site:

(1) temporary construction site offices;

(2) canteen, welfare, and related support facilities;

(3) parking of construction vehicles plant and machinery or for the vehicles of construction workers (the existing main Paper Mill car park will also be utilised as required);

(4) open and covered storage of construction materials and equipment;

(5) workshops for pre-fabrication, assembly and testing of equipment

2.5.7 The construction laydown area is shown on **Figure 2.5** and consists of a rectangular area of existing hardstanding north of the proposed location of K4 (it should be noted that the laydown area shown has increased in size in comparison to that shown at the time of the S47 consultation. This increase was reflected in the plans produced as part of the S42/48 and consultation undertaken on this basis. This enlarged area simply extends further west over existing concrete hardstanding that exists in this location).

2.5.8 Two illustrative plans of the Proposed Development showing how the layout of the site is likely to look (which includes the potential variation in stack location) are provided as **Figures 2.6a&b**.

2.5.9 **Figures 2.7 -2.10** provide illustrative 3D CGI's of how K4 is likely to look (using the maximum dimensions in Table 2.1) in the context of the existing Paper Mill.

Operation of K4

2.5.10 The Proposed Development would operate by taking in clean, filtered ambient air into the compressor stage of the gas turbine. The air is compressed and passed into the combustion chamber (gas turbine) where fuel (natural gas) is mixed with the air and ignited producing hot high-pressure gases. The expanding hot gases are fed through the rotor blades of the gas turbine and converted to mechanical energy. The gas turbine in turn drives an electrical generator to produce electricity

2.5.11 With exhaust gas temperatures between 500-550°C, the exhaust from the gas turbine still contains recyclable energy in the form of heat. This energy is used to generate pressurised steam from de-mineralized water in the heat recovery steam generator (HRSG). Dependant on the load requirements further heat can be added at this point by burning additional gas in the inlet duct to the HRSG. After passing through the HRSG, the final exhaust gases are discharged through a stack into the atmosphere in accordance with emission limits of the Large Combustion Plant Directive (LCPD).

2.5.12 The steam produced in the HRSG is expanded through the steam turbine which converts thermal and pressure energy into mechanical energy and low pressure steam. The mechanical energy is in turn used to drive an electrical generator to increase the electrical output of the plant. Any power that is generated over and above that required by the Paper Mill is exported back to the National Grid via the existing substation (see Section 2.6).

2.5.13 The low pressure steam is transferred to the Paper Mill for use within the paper production process, improving overall thermal efficiency.

2.5.14 In the event the paper production process is interrupted and the steam demand is reduced, the steam is diverted to the air cooling condensers which convert the steam back to water for re-use in the thermal cycle. **Figure 2.11** provides a simplified infographic demonstrating the key CHP process.

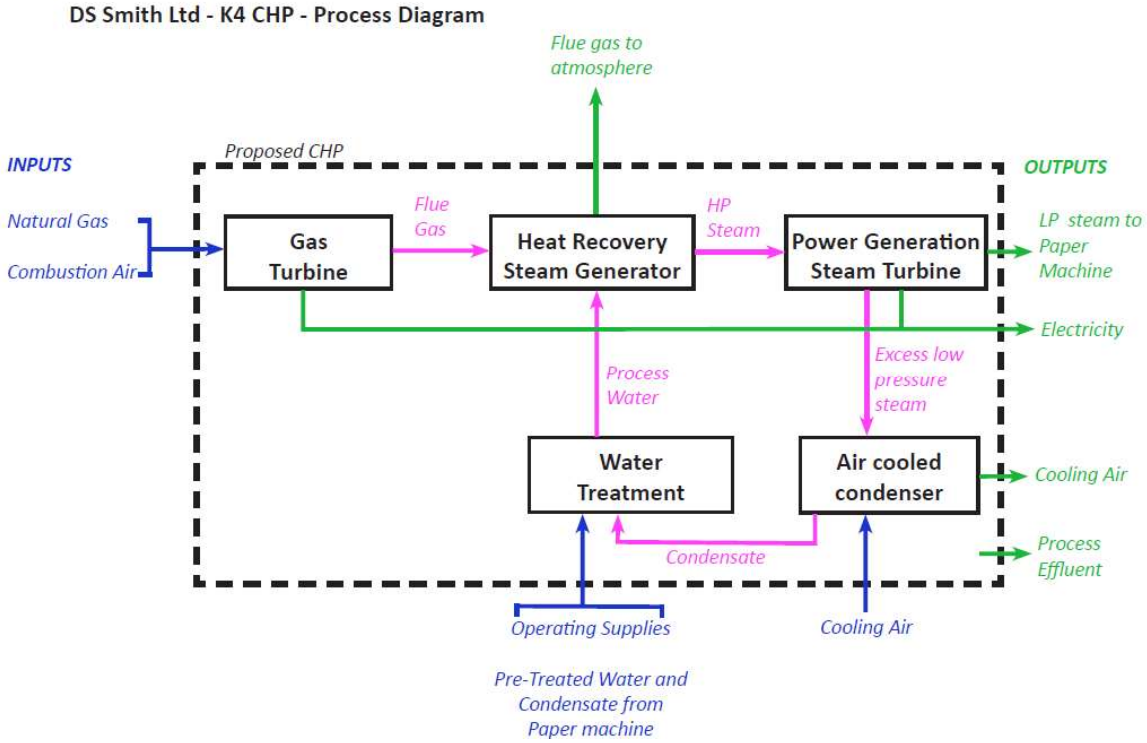

Figure 2.11: infographic showing the key stages of the CHP process.

2.5.15 In order to control corrosion in the plant the pH of the water is increased by the addition of chemical additives (a list of process chemicals currently used for K1 is provided in Table

2.2 in section 2.8.9 below). In order to safeguard the quality of all water discharged from K4 all process drains along with any waste water are collected via a dedicated drains network and flow into a dedicated sump for neutralisation by the addition of acid (if required). From here any excess water will be conveyed to the Mills existing waste water treatment facility (WWTF) and discharged under DS Smith's existing discharge permit (permit no. EPR BJ7468IC-V009) into the Swale as currently occurs for K1. The volume of water discharged from K4, by virtue of being a smaller more efficient plant than K1, will be less and will not therefore exceed the existing WWTF permit limit. The permit for the WWTF contains discharge limits for both water pH and temperature which will remain in place for K4 and subject to periodic monitoring. Both water quality and temperature from K4 is therefore safeguarded before being discharged into the Swale.

2.5.16 The planned operational mode once the Proposed Development is fully commissioned would be: K2 supplying steam, K3 supplying steam, K4 supplying the balance of the Mill steam requirements and electrical power to run the Mill operations. Any surplus electricity generated would be supplied to the national grid (see section 2.6).

2.5.17 Six package boilers from the K1 plant will be retained with a new medium package boiler proposed as part of K4.

2.5.18 In the event of a planned or unplanned shut down of any of the above steam raising plant, the package boilers will be used to supplement the Mills steam supply and support any deficit. It is expected that a minimum of 2 package boilers would be kept in 'hot standby' mode at all times to cater for any unforeseen events ensuring that steam is always available to the Mill in emergency and unplanned scenarios. Five of these low pressure boilers would be kept available to run at any given time allowing the remaining to be released for inspections and maintenance. This regime is designed to allow two paper machines to be in production if all other steam sources fail.

2.5.19 The anticipated uptime (i.e. the time in which K4 will be fully operational) for K4 alone is circa 96%.

2.6 Decommissioning of K1

2.6.1 DS Smith's intention is to decommission the K1 plant after the successful commissioning of the Proposed Development.

2.6.2 There will be a period whereby K1 and K4 will operate simultaneously during the commissioning of K4 albeit this will be intermittent and will not involve both plants operating at full capacity. Notwithstanding this, a worst case scenario has been assessed in the ES for robustness assuming that there will be a period whereby K1 and K4 will simultaneously operate at full capacity for a period of one year.

2.6.3 Post full commission of K4 it will then be necessary to fully decommission K1. In practical terms this would entail the removal of sections of the natural gas feed pipework to the redundant K1 equipment. The gas feed pipework would then be sealed by installing permanently fixed blanking devices. In addition to this, sections of the exhaust gas ducts to the Flue stack of the K1 Waste Heat Recovery Boilers would be removed and sealed. These actions effectively render the redundant K1 equipment inoperable, as they will be fully isolated from their associated fuel sources and exhaust gas paths.

2.6.4 In terms of dismantling, the decommissioned components of K1 would be separately evaluated at a future date once K4 is fully operational. It is envisaged that some major components could be sold (e.g. Gas Turbine and Steam Turbine). It is likely that the remaining components would be demolished, recycled or scrapped.

2.6.5 It should be noted that the decommissioning will not involve the 6 existing package boilers (see section 2.6) which will be retained and used in the event of planned or unplanned shutdown of K2, K3 or K4 to supplement the Mills steam supply and support any deficit.

2.7 Ancillary facilities and services tie-ins

2.7.1 K4 is largely a replacement of the existing K1 and therefore requires the same tie-ins to ancillary facilities and services as K1. It is proposed that K4 will tie-in to the existing services and facilities such that no off-site infrastructure is required. **Figure 2.12** shows the location of the required ancillary facilities and services within the Paper Mill which K4 will connect into. No ancillary construction activities are required to facilitate the tie-ins required and all physical tie-ins will take place within the red line boundary of the Site. Further details are provided below:

Gas Supply

2.7.2 K4 will be connected to the existing gas station (e) as shown on **Figure 2.12**. K4 will include its own gas conditioning equipment.

Electricity

2.7.3 K4 will be connected to the existing DNO 132KV grid connection (i) as shown on **Figure 2.12** for both the import of power (in the event of planned or unplanned shutdown) and export of electricity via the LP and MP manifolds (h).

Process water

2.7.4 Process water for the Paper Mill is extracted off site and piped to the site via the Sonora pipeline whereby it is stored in open lagoons located immediately south of K4**.** From here the water is abstracted by the process water pumping station (g) and transposed to the water treatment plant (f) whereby it will be used for the operation of K4. Process water for the site is regulated under EA permit 9/40/02/0021/GR. As a smaller more efficient plant K4 will use less water than K1 and thereby remain within the existing permit limits.

Water treatment plant

2.7.5 The existing K1 water treatment plant (WTP) will be replaced (c) as illustrated on **Figure 2.12**). Feed water from the new WTP (f) (a new water treatment plant is currently under construction; planning not required but under building regulations) will be used for K4 to supply demineralised water. The pH of the water is increased by the addition of alkaline chemicals in order to control corrosion in the plant.

Process water drainage

2.7.6 Any excess water from the K4 process will be collected via a dedicated drains network and flow into a dedicated sump for neutralisation where necessary. From here any excess water will be conveyed using existing drainage facilities to the Mills existing waste water treatment facilities (WWTF) (j) as shown on **Figure 2.12** and discharged under DS Smith's existing discharge permit (permit no. EPR BJ7468IC-V009) into the Swale as currently occurs for K1. The volume of water discharged from K4, by virtue of being a smaller more efficient plant than K1, will be less and will not therefore exceed the existing WWTF permit limit.

Surface water outfall

2.7.7 There will be no increase in impermeable area as a result of the Proposed Development. All surface water run-off will continue to be conveyed into the existing surface water drainage network and discharge at an existing outfall (k) as shown on **Figure 2.12.**

Facility control room

2.7.8 K4 will be connected to and controlled from the existing K1 control room (l) identified in **Figure 2.11**. This will continue to use the existing foul sewer mains connection. Potable water will be taken from the existing site distribution system as shown on **Figure 2.12**.

Package boilers

2.7.9 The 6 existing package boilers (b) as shown on **Figure 2.12** will be retained and used in the event of planned or unplanned shutdown of K2, K3 or K4 to supplement the Mills steam supply and support any deficit.

2.8 Construction of the Proposed Development

Building materials

2.8.1 The construction materials required will be those normally associated with a development of this nature, including:

- Concrete
- Concrete reinforcement including high yield ribbed, hot-rolled bars complying with BS 4449 Strength Grade B500C and mild steel plain, hot-rolled bars complying with BS 4482 Strength Grade 250;
- Cement
- Bricks
- Bitumen
- Exposed structural steelwork grade: S355 JO/S355 J2

- Galvanised steel corrugated panels & galvanised steel sheets;

2.8.2 Building materials will need to be imported to the Site. Any spoil that is generated from the Proposed Development will be re-used on-site. Any contaminated spoil will be removed to an appropriately licensed landfill for disposal, albeit the likelihood of contamination being present on the site is considered low. This has been confirmed in the contamination report submitted in support of the application (see Chapter 8).

2.8.3 Construction materials delivered to the Site will be controlled through a specific construction method statement and incorporated in the CEMP (Appendix 2.1). Areas for storage of materials will be allocated and appropriate storage facilities (containers and bunds) will be utilised.

Employment

2.8.4 It is anticipated that the construction of K4 will employ between 150-200 people during its peak construction period (an estimated 6 month period). Employment during the rest of the construction and commissioning/decommissioning period is anticipated to average 100 construction related staff.

Working hours

2.8.5 Construction activities will be undertaken during normal construction working hours of 07:00 and 19:00 on weekdays and 07:00 to 16:00 on Saturdays and Sundays. No continuous 24-hour activities are envisaged at this stage. Chapter 5 (Air quality) and Chapter 7 (Noise) demonstrate that Sunday working on the Site will not result in significant detriment to local residents in noise amenity terms or the capacity of the local road network.

Waste

2.8.6 For all phases of the Proposed Development there will be a Principal Contractor who will be charged with responsibility for management and co-ordination of all waste streams during decommissioning and construction. This will involve responsibility for the waste segregation, storage and collection of waste on-site.

2.8.7 Section 33 of the Environmental Protection Act (EPA) 1990 deals with the treatment, storage and disposal of waste. Section 34 of the EPA deals with "Duty of Care" and covers all those who produce or handle wastes from demolition, earthworks and construction activities, who are obligated to ensure its safekeeping, best practice management, transport and subsequent recovery or disposal.

2.8.8 The Waste (England and Wales) Regulations 2011 (amended in 2012 and 2014) clarify the requirements for waste prevention programmes and Waste Management Plans, and provide further detail on the "Duty of Care" as mentioned in the EPA 1990.

2.8.9 All waste generated during construction and/or demolition with be dealt with in accordance with these legislative requirements.

Accident and disaster mitigation

2.8.10 The construction of the Proposed Development will be undertaken by Costain Group Plc a well-established engineering company and well experienced in general health, safety and disaster mitigation during the construction of complex developments. This will be overseen by E.ON who have successfully implemented a number of similar CHP plants across the UK and Europe.

2.8.11 By way of example an extensive suite of legislative requirements and codes of practice and guidance are in place to avoid accidents and disasters during construction. This includes but is not limited to the those listed below:

- Construction (Design and Management) Regulations 2015;
- Control of Pollution Act 1974;
- Control of Substances Hazardous to Health Regulations 2002;
- Environmental Protection Act 1990;
- Health and Safety at Work Act 1974;
- Environment Agency – Pollution Prevention Guidance notes; and
- HSE – Codes of Practice and Guidance Notes.

2.8.12 In light of the above it is considered that the risk of accidents during the construction of the Proposed Development will be comprehensively controlled and mitigated as far as is reasonably possible in accordance with UK legislation.

2.8.13 It is therefore considered that the risk of a major accident or disaster is as low as reasonably practical. Compliance with this legislation and guidance will form part of any contract made by DS Smith with the appointed construction contractor. These Regulations and their requirements are furthermore included in the draft Construction Environmental Management Plan provided as **Appendix 2.1.**

Construction Environmental Management Plan (CEMP)

2.8.14 The draft DCO requirements include the production of a Construction Environmental Management Plan (CEMP) (**Appendix 2.1**). The CEMP would include the following items amongst others:

- A table showing the objectives, expected results, activities, and responsibilities required;
- The broad plan of the phasing of the work and its context within the whole project;
- Baseline levels for noise, vibration and dust monitoring;

- Threshold and action levels for noise, vibration and dust to warn of activities that may require particular care and control;
- Details of prohibited or restricted operations (for example locations, hours of operation etc.);
- Arrangements for the implementation of the CEMP and environmental monitoring, including responsibilities, the role of environmental authorities, and participation of stakeholders;
- A monitoring and supervision plan;
- A response plan in the event of accidents or otherwise unexpected events and potential risk register;
- Details regarding delivery / removal of materials and plant;
- Locations and protocol with regard to material storage and compounds;
- Reference to ground conditions and remedial measures and/or mitigation associated with ground contamination if necessary;
- Contact details during normal working hours and emergency contact details outside these hours;
- The provision for reporting, public liaison, and prior notification for particular construction related activities;
- A mechanism for the general public to register complaints and the procedures for responding to such complaints;
- Reference to management of material resources and waste.

Construction traffic

2.8.15 It is assumed that many of the construction staff vehicle movements will take place at the beginning and end of each day. The HGV deliveries are assumed to be spread across the day and will be timed, where possible, to avoid the peak traffic flow periods (i.e. from 08:00 to 09:00 and 17:00 to 18:00). During construction, it is estimated there will be an average of 100 staff on site with a peak of up to 200 staff on site during the early groundworks and foundation works period.

2.8.16 It is estimated that construction of K4 will generate an average of 25 to 30 HGV deliveries per day (average of 50 to 60 HGV movements per day) throughout the 20 month construction period. During the early groundworks and foundation works period, this could peak at up to 40 HGV deliveries per day (up to 80 HGV movements per day).

2.8.17 Construction workers will be provided with allocated parking areas within the Site and the use of public transport and car sharing will be encouraged.

2.8.18 Construction traffic will also be managed through a Construction Traffic Management Plan, which will include:

- A routing strategy for construction HGVs to ensure they approach the Application Site via the strategic road network
- Wheel washing facilities
- Peak time restrictions for HGVs where possible
- Controls governing the movement of large loads

2.9 Post construction

Site operating hours

2.9.1 At this stage it is anticipated that K4 will become fully operation in the summer/autumn of 2021 with the commissioning/decommissioning period of K4/K1 anticipated to commence approximately 6 months before this date.

2.9.2 Once fully commissioned during regular operation the plant will be operated / manned 24 hours a day 365 days per year. The operational shift pattern will be mornings, afternoons & night shifts with approximately 4 staff on each shift.

Lighting

2.9.3 The final detailed design of the CHP plant is not yet completed and as such, at this stage there is no detail available to identify either where luminaires will be installed (exactly) or the exact typology of luminaire (including size, spacing, etc.).

2.9.4 Lighting will however be minimal and implemented using British Standard EN12464-2:2014 Lighting - Lighting of Work Places, Outdoor Works. Adherence to this BS will ensure that any nuisance or disturbance associated with operational lighting installations will be minimised as far as is practicable. Contemporary lighting schemes minimise light spill and reduce lateral and vertical light spill from the source. Therefore, disturbance / nuisance to visual receptors are not considered likely to result in a significant adverse effect particularly in the context of the Mill and the existing external lighting.

Maintenance of the plant

2.9.5 The information below outlines the maintenance requirements that will be applicable to the main plant items associated with K4 once operational. In general, major maintenance involves replacing a small number of wearing components of the main plant items for new or refurbished components however, wholesale or major replacement of plant items is not carried out during planned maintenance. K4 also has a number of auxiliary plant items however, due to the relatively simple nature and short duration of maintenance interventions of such plant, it is not considered necessary to provide details of such activities.

Gas Turbine

2.9.6 In general each year there will be a planned gas turbine outage either for minor or major maintenance. The yearly minor maintenance is followed by a major maintenance every 3 - 4 years depending on the operating hours per year. The length of the outages varies between 2 - 3 days for the minor maintenance up to 3 - 4 weeks for the major maintenance. Maintenance of the gas turbine will be carried out on-site by an appointed contractor with a small number of wearing components being removed from site for repair or refurbishment. Major maintenance will typically involve up to 10 – 15 technicians being based at the site for the duration of the maintenance period.

HRSG

2.9.7 The HRSG will be inspected and maintained on a yearly basis and typically takes 2 - 7 day in parallel to the planned gas turbine outages. Maintenance of the HRSG will be carried out by an appointed contractor and typically involves up to 10 technicians being based at the site for the duration of the maintenance period.

Steam Turbine

2.9.8 The steam turbine has typical inspection interval of 5 years for minor inspection and 10 years for major inspection. The length of the outages varies between 1 week for the minor maintenance up to 2 - 3 weeks for the major maintenance. Maintenance of the steam turbine will be carried out on-site by an appointed contractor with a small number of wearing components being removed from site for repair or refurbishment. Major maintenance will typically involve up to 10 – 15 technicians being based at the site for the duration of the maintenance period.

Auxiliary Boilers and Medium Pressure Boiler

2.9.9 The auxiliary boilers and medium pressure boiler will be inspected on a yearly basis and typically takes 5 days. Inspection and resulting maintenance of the auxiliary boilers and medium pressure boiler will be carried out by an appointed contractor and typically involves up to 5 technicians being based at the site for the duration of the maintenance period.

2.9.10 The gas turbine and steam turbine minor and major inspections along with maintenance of other plant items such as transformers, circuit breakers and auxiliary plant will be carried out in parallel to the respective equipment by appointed contractors.

2.9.11 The above maintenance activities will normally be planned on a long-term basis by the operations and maintenance team and will take place to coincide with gas turbine maintenance activities and typically conducted in the summer months and/or in the yearly planned shutdown of the customer plant which is typically during Christmas time. Typically for a consolidated major maintenance outage including the gas turbine, steam turbine, HRSG, auxiliary boilers / medium pressure boiler & auxiliary plant there will be a maximum of 45 – 50 technicians based on the site in addition to the regular operations and maintenance team.

2.9.12 The scope and nature of the proposed maintenance activities related to K4 over its operational lifetime has been considered by each technical author of the ES assessments and scoped out on the basis that it is unlikely to result in significant environmental effects.

Management of risk and disasters

2.9.13 The risk of major accidents related to the operation of gas turbines is well understood and low when proper management and operational procedures are employed.

2.9.14 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/disasters. As a replacement of K1, K4 will be required to operate under the same regulatory regime.

2.9.15 For reference a list of relevant legislation that an operational CHP power plant is required to satisfy is outlined below:

- Health and Safety At Work Act 1974 - lays down wide-ranging duties on employers to ensure the 'health, safety and welfare' at work of all their employees, as well as others on their premises, including temps, casual workers, the self-employed, clients, visitors and the general public.

- 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 - 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 Atmospheres Regulations 2016 - This Regulation covers both electrical and nonelectrical equipment and requires the operator to ensure that all equipment used in DSEAR zoned areas is ATEX rated

- The Regulatory Reform (Fire Safety) Order 2005 - 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 2016 – 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.

- European Commission Council Recommendation of 12 July 1999 on the limitation of exposure of the general public to electromagnetic fields - Design specifications for all electrical equipment to be utilised in the completed CHP installation shall be compliant with Council Recommendation 1999/519/EC or harmonised EMF standards.

- Control of Electromagnetic Fields at Work Regulations 2016 –The management of Electro Magnetic Fields during installation, commissioning and ongoing maintenance shall conform to these regulations. The CEMFAW Regulations contain a schedule which introduces limits, explains the effects of EMFs and provides details of safety conditions which must be met.

- Ionising Radiations Regulations 2017 (IRR17) – these regulations impose duties on employers to protect employees and other persons against ionising radiation arising from work with radioactive substances and other sources of ionising radiation. Certain duties are also imposed on employees.

2.9.16 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) and does not fall within the consultation zones of any major accident hazard site with Hazardous Substance Consent.

2.9.17 Compliance with this legislation and guidance identified will form part of any contract made by DS Smith with the appointed operator of K4.

2.9.18 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.

2.9.19 It is therefore considered that the risk of a major accident or disaster is as low as reasonably practical.

Anticipated annual resource consumption

2.9.20 At this stage the exact annual resource consumption of K4 is unknown however as a smaller more efficient plant its resource consumption will be less than that of K1 and therefore less than that shown in Table 2.2 below.

Resources consumed	Quantity
Natural gas	Total Gas Consumed (MWh ncv) 2017 = 1,587,831
Process water	2017 = 982,826 M^3
Process chemicals	Sulphuric acid = 652.90 tonnes in 2016 Caustic soda = 616.78 tonnes in 2016 Sodium bisulphate = 11.79 tonnes in 2016 Optisperse HP3100 = 1.65 tonnes in 2016 Steamate NA0840 = 4.8 tonnes in 2016 Cortrol OS6501= 2.05 tonnes in 2016

Table 2.2: annual resource consumption of K1.

Environmental Permit

The Environmental Permitting (England and Wales) Regulations 2016

2.9.21 In accordance with Schedule 1 of the EPR 2016, an Environmental Permit will be required to operate an installation in which combustion activities of over 50 megawatts thermal rated capacity are carried out. This is required in addition to a DCO granted by the SoS. The Proposed Development cannot legally operate without the relevant permit.

2.9.22 The Environmental Permitting Regulations (EPR) aims to prevent or minimise pollution from new and existing installations which come under the regime through an integrated permitting system. An Environmental Permit (EP) sets conditions and requirements in order to prevent or reduce emissions to air, water and land and limit waste and noise generated. Conditions on the prevention of accidents, efficient use of energy / resources and decommissioning of plant are also set.

2.9.23 Under the regime the operator has to demonstrate that the design and choice of technology is Best Available Technology (BAT) which minimises impacts to the environment.

2.9.24 The Environment Agency (EA) is the competent authority for environmental permitting in England. Prior to issuing an Environmental Permit the EA must be satisfied that the installation will not cause adverse effects on the environment. Monitoring and auditing ongoing compliance with the terms of the Environmental Permit issued is undertaken and enforced by the Environment Agency.

2.9.25 DS Smith has an existing Environmental Permit for the operation of K1 (permit no. EPR/BJ7395IG) and has entered into formal discussions with the EA regarding the Environmental Permit for the Proposed Development. It is currently envisaged the existing K1 environmental permit will be varied (Major Variation) to include the new K4 CHP plant however, ongoing discussions with the EA are required to confirm this.

2.10 Decommissioning K4

2.10.1 The operational lifetime of K4 from the commencement of operation in 2021 is unknown at this stage however the CHP plant will be decommissioned at the end of its useful life.

2.10.2 In order to facilitate decommissioning, many of the structures and equipment for the development will be made of materials suitable for recycling as far as is practicable.

2.10.3 An investigation will be undertaken into ground conditions and the water environment at the time of decommissioning to ensure that conditions remain as assessed in this ES prior to construction of the Proposed Development. Plant equipment, where possible, will be dismantled and, if necessary, decontaminated on site, followed by inspection and if necessary further decontamination once the equipment has been removed from position and before it has been removed from site . Buildings and facilities which cannot be re-used will be demolished with all materials recycled or disposed of following Duty of Care.

2.10.4 Infrastructure dedicated to the facility will be removed or taken out of use if no further immediate use is required for it on the Site. Disconnection of site services, whether partial or complete will be considered before dismantling work commences on Site.

2.10.5 Despatch of equipment from Site whether as a saleable asset, e.g. as spare parts to other power generation facilities, or as scrap, will be accompanied by a Certificate of Decontamination.

2.10.6 Dismantling of equipment shall be subject to the same conditions and control of works as required by relevant HS&E legislation. Work will be conducted under permits to work and also certificates of safety, if deemed necessary by the working environment.

2.10.7 The Site will be left in a safe manner. Trenches, pits and excavations shall be made safe by suitable back-fill, or access denied by suitable fencing and notices coupled with adequate regular site inspections.

2.10.8 Buildings and facilities which are to remain in place for other commercial or industrial purposes will be cleaned thoroughly internally and externally to avoid any potential risk of pollution. If these buildings or facilities are to continue for activities for which the Environmental Permit is no-longer required a suitable programme of reconstruction and timescale for completion will be agreed with the Environment Agency to achieve the best environmental outcome and to minimise waste.

2.10.9 In the event of a definitive cessation of all activities a full site closure plan will accompany the surrender of the site licences to the relevant regulatory bodies and consultees. Details of the decommissioning will be included in the Site Closure Plan which is included in part of the application for the amended Environmental Permit.

2.11 Alternatives and Primary Mitigation

Alternatives

2.11.1 The K1 plant is 22 years old and will require significant investment into the gas turbine, waste heat recovery boilers and steam turbine both to extend its operational life but also require modification to meet the Industrial Emissions Directive (IED). The IED comes into force in 2020 and sets stricter emission limits for industry. Moreover, K1 is oversized for its existing use, having been sized originally to also provide energy to the now redundant Sittingbourne Mill in the centre of Sittingbourne, and it is therefore inefficient.

2.11.2 In light of this DS Smith began investigating other long term energy solutions for the Paper Mill including a benchmarking exercise with Aschaffenburg Mill in Germany who has recently commissioned a new CHP plant.

2.11.3 Initial investigations were undertaken by Parsons Brinckerhoff on behalf of DS Smith who assessed a number of potential options for the mill. Various technological solutions for the Site were considered but primarily focused around either investing in and modifying the existing K1 facility or constructing a new CHP plant. CHP technology was considered to be the most feasible option both in terms of reliability, flexibility, cost and emissions.

2.11.4 In light of the significant cost involved in modifying and upgrading K1, and given it is oversized for its need and therefore inefficient, the construction of a new CHP plant was the preferred option and moreover the more financially viable.

2.11.5 Notwithstanding this, in the absence of securing permission for K4, DS Smith would be forced to invest in and modify K1. Gas fired CHP has a significant benefit on electricity costs for the mill and the paper industry in general and imported electricity from the grid would not be an option due to the significant cost differential. The future baseline in the absence of the Proposed Development is therefore a modified K1 (see section 3.8 Chapter 3).

2.11.6 Having decided on the best solution for the Paper Mill DS Smith then went out to tender and received an expression of interest from five energy companies.

2.11.7 The other key alternative considered by DS Smith as part of the Proposed Development was the location of the new CHP plant (K4).

2.11.8 DS Smith in the early stages of the K4 project considered the following key factors for location of the new K4 facility:

- Location of the steam and other key tie ins to the Mill operations
- Location of tie-ins required for a new CHP plant
- Aesthetics in terms of location

2.11.9 The location for K4 was limited to the land within and around the Paper Mill owned by DS Smith. Locations around the Paper Mill for K4 including the northern and western sides of the mill were considered.

2.11.10 These were disregarded due to landscape and visual impact in terms of visibility and existing character. Locating K4 in these locations would introduce stacks in locations where there are no existing stacks and moreover would act to extend the existing line of built development of the mill. Furthermore, these locations would require greater infrastructure works to connect both K4 to its required tie-ins but also K4 to the Mill.

2.11.11 The proposed location of K4 next to K1 was therefore chosen on the basis that it would result in the least construction work in terms of ancillary infrastructure but moreover it would relate best to the layout of the mill, located in an area where stacks are already a characteristic feature. Additionally development in this location would be almost entirely

on existing hardstanding and result in the least obtrusive extension to the mill in landscape and visual terms.

Primary Mitigation

2.11.12 EIA is an iterative process, and the findings of the current EIA have helped to inform the design of the Proposed Development in order to minimise impacts on the environment.

2.11.13 The design of the Proposed Development has therefore taken into account measures to avoid significant adverse effects where possible. Details of the 'primary' mitigation measures embedded in the design of the Proposed Development are summarised in Table 2.1 below:

Topic	Issue	Design Amendment resulting from ES
Air Quality	Ambient concentrations of nitrogen dioxide and carbon monoxide and effects on sensitive receptors	Pollutants from the combustion of gas need to emit at sufficient height to ensure that pollutant concentrations are acceptable by the time they reach ground level. The stack also needs to be high enough to ensure that releases are not within the aerodynamic influence of nearby buildings, or else wake effects can quickly bring the undiluted plume down to the ground. An HRSG stack height of 70m is proposed following a series of atmospheric dispersion modelling simulations to predict the ground-level concentrations with the stack at different heights. A 75m stack will mitigate any significant effect on sensitive receptors from the developments emissions. Atmospheric modelling demonstrated that the 35m package boiler stack would be sufficient to ensure ground level concentrations would be within statutory limits.

2.11.14 Where additional 'secondary' mitigation measures are required to further mitigate the impact of the Proposed Development on the environment these are discussed and documented in each relevant topic chapter, which clarify the extent to which the potential significance of each adverse effect will be offset by the mitigation measures proposed.

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DS Smith

N

Legend

Application boundary

Aerial Photo taken in 2015

Notes

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.1

Title: Site Location Plan - Aerial Photo

Scale 1: 2,000 @ A1

0 40 80 120 160 Metres

Date: Mar 2018

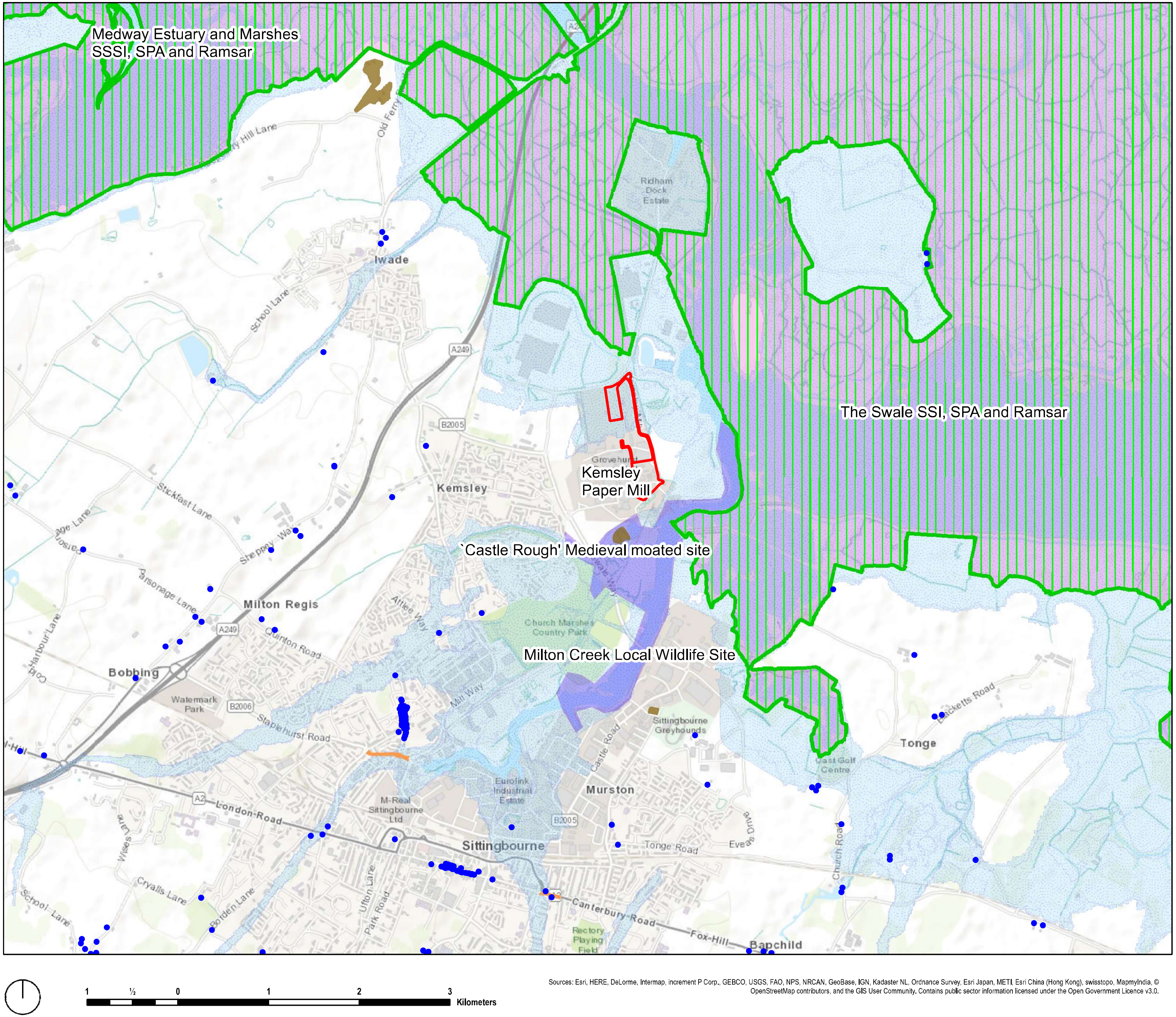
Author: R.Massey

Doc reference

10392-0025-004

Document number

4.2



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Legend

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

TITLE

ES Figure 2.2 Environmental Designations

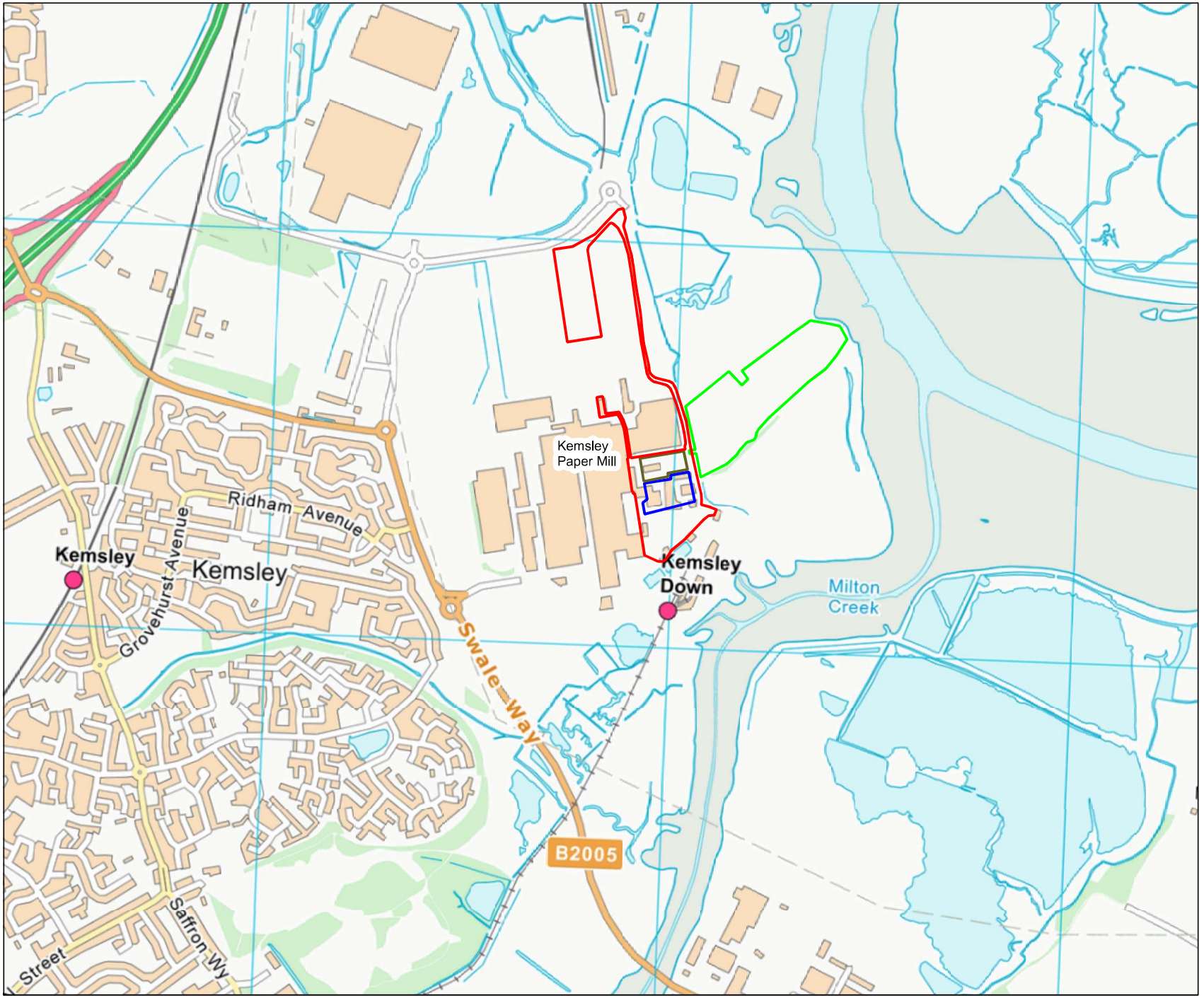
CLIENT
DS SMITH PAPER LIMITED

PROJECT
K4 DCO PROJECT, KEMSLEY MILL, SITTINGBOURNE.

SCALE AT A3	DATE	JOB NO.
1:40,000	April 2018	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



Legend

- Application Boundary
- Existing K1 Facility
- Existing K2 Facility
- Permitted Wheelabrator Facility (currently under construction)

500 250 0 500 1,000 1,500 Meters

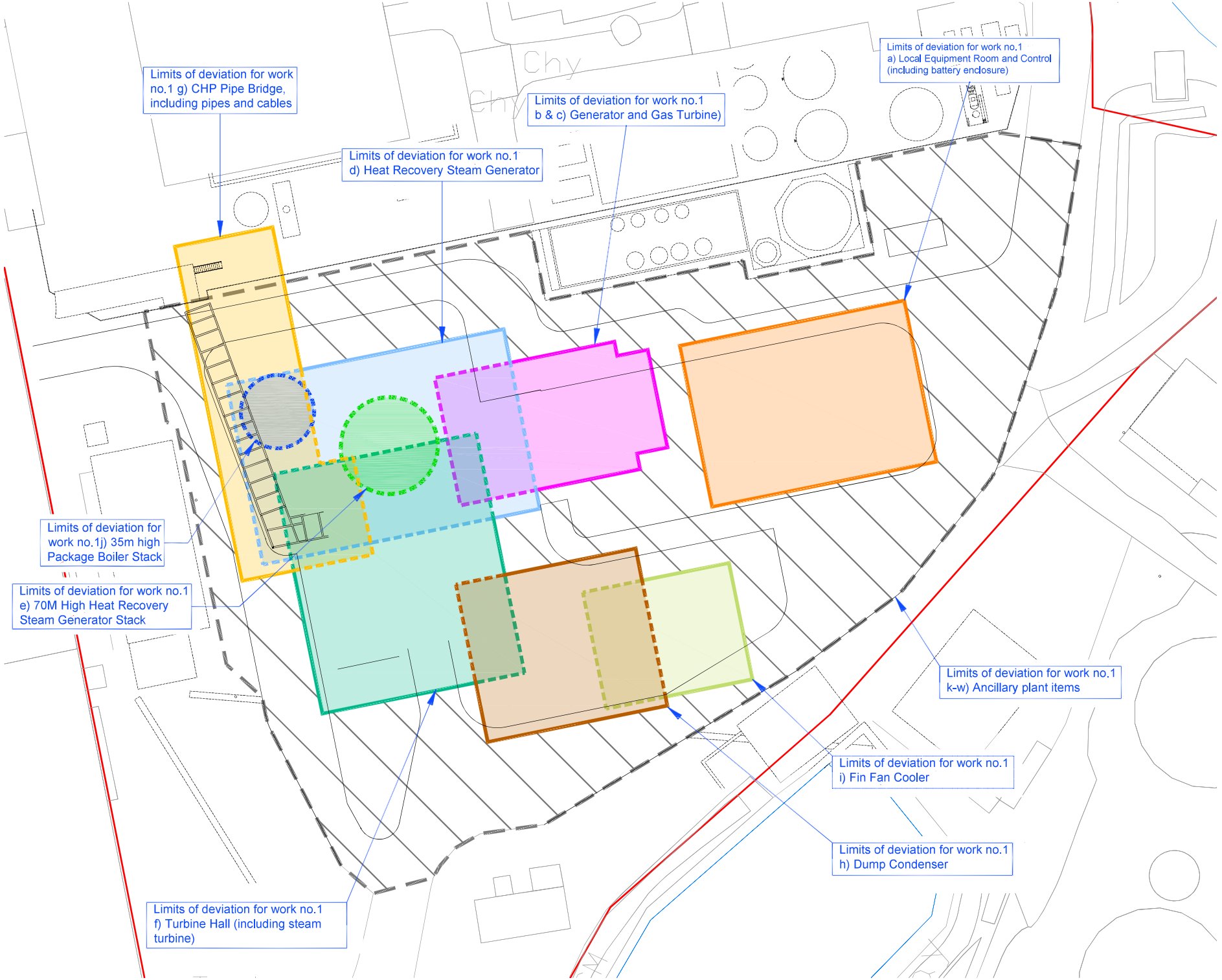
TITLE
ES Figure 2.3

CLIENT
DS SMITH PAPER LIMITED

PROJECT
K4 DCO PROJECT, KEMSLEY MILL, SITTINGBOURNE.

SCALE AT A3 1:15,000 | DATE April 2018 | 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



DS Smith

N

Legend

- Application boundary
- Limits of deviation for work no.1 a) Local Equipment Room and Control (including battery enclosure)
- Limits of deviation for work no.1 b & c) Generator and Gas Turbine
- Limits of deviation for work no.1 d) Heat Recovery Steam Generator
- Limits of deviation for work no.1 e) 70M High Heat Recovery Steam Generator Stack
- Limits of deviation for work no.1 f) Turbine Hall (including steam turbine)
- Limits of deviation for work no.1 g) CHP Pipe Bridge, including pipes and cables
- Limits of deviation for work no.1 h) Dump Condenser
- Limits of deviation for work no.1 i) Fin Fan Cooler
- Limits of deviation for work no.1 j) 35m high Package Boiler Stack
- Limits of deviation for work no.1 k-w) Ancillary plant items

Notes

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.4a

Title: Work No.1 - works plan with limits of deviation for vertical tube boiler

Scale 1: 250 @ A1

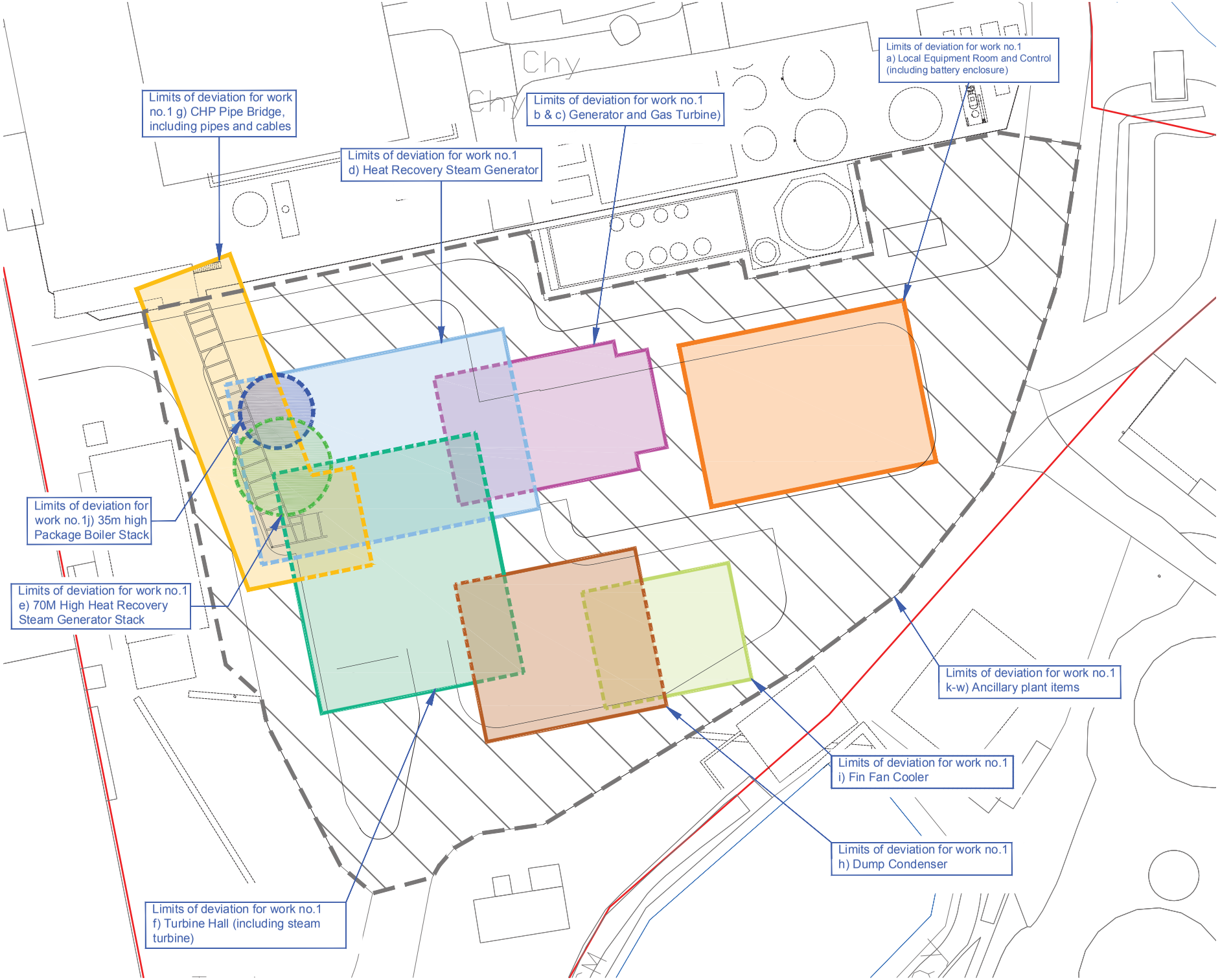
0 5 10 15 20 Metres

Date: Mar 2018

Author: R.Massey

Doc reference 10392-0031-007

Document number 4.9



DS Smith

N

Legend

- Application boundary
- Limits of deviation for work no.1 a) Local Equipment Room and Control (including battery enclosure)
- Limits of deviation for work no.1 b & c) Generator and Gas Turbine
- Limits of deviation for work no.1 d) Heat Recovery Steam Generator
- Limits of deviation for work no.1 e) 70M High Heat Recovery Steam Generator Stack
- Limits of deviation for work no.1 f) Turbine Hall (including steam turbine)
- Limits of deviation for work no.1 g) CHP Pipe Bridge, including pipes and cables
- Limits of deviation for work no.1 h) Dump Condenser
- Limits of deviation for work no.1 i) Fin Fan Cooler
- Limits of deviation for work no.1 j) 35m high Package Boiler Stack
- Limits of deviation for work no.1 k-w) Ancillary plant items

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.4b

Title: Work No.1 - works plan with limits of deviation for horizontal tube boiler

Scale 1: 250 @ A1

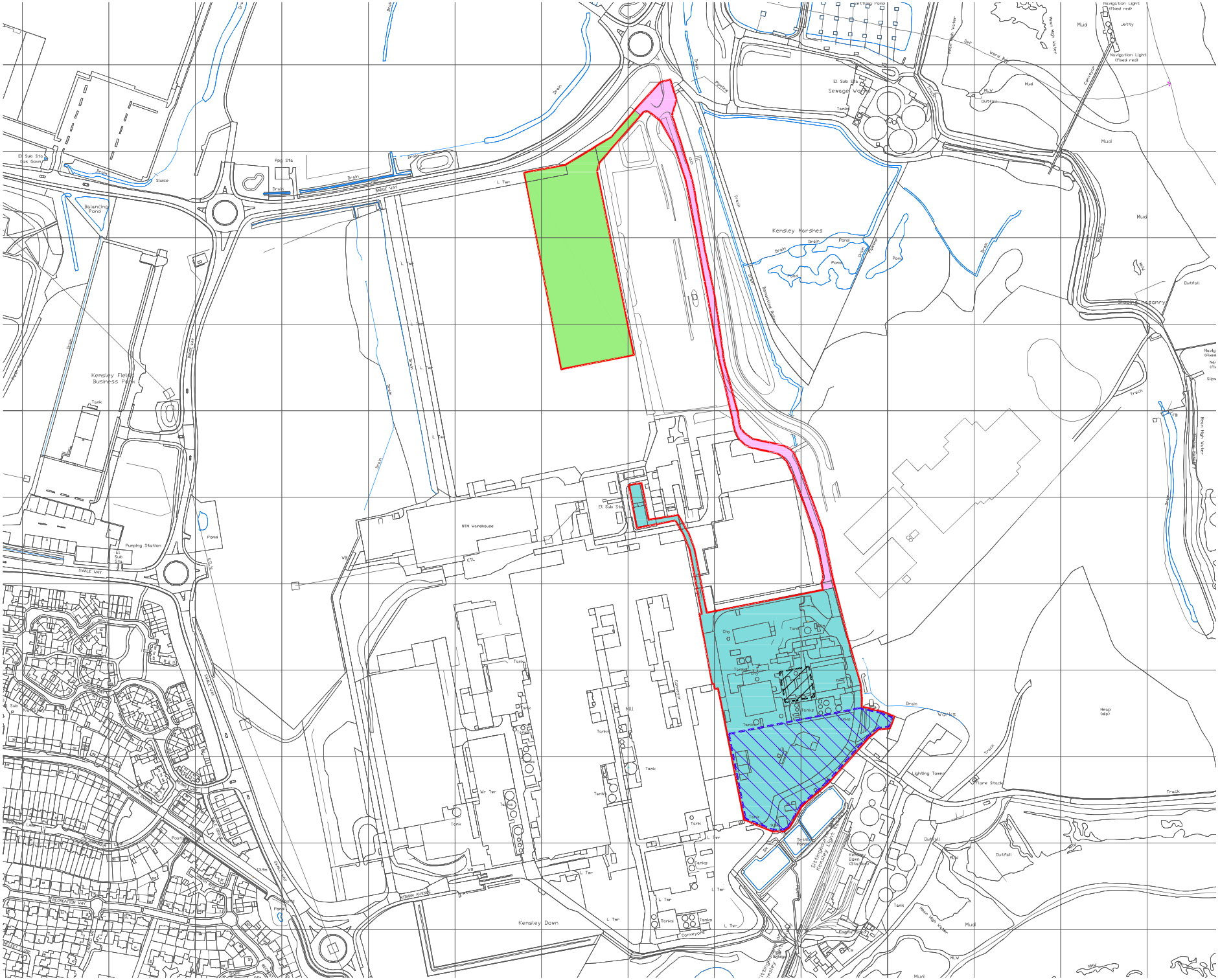
0 5 10 15 20 Metres

Date: Mar 2018

Author: R.Massey

Doc reference 10392-0029-010

Document number 4.5



N

Legend

- Application boundary
- Work No.1: Combined gas generating station
- Work No.2: Tie-ins
- Work No.3: Construction laydown area
- Work No.4: Construction access
- Work No.5: Decommissioning of K1

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.5

Title: Works Plans - Key Plan

Scale 1: 2,000 @ A1

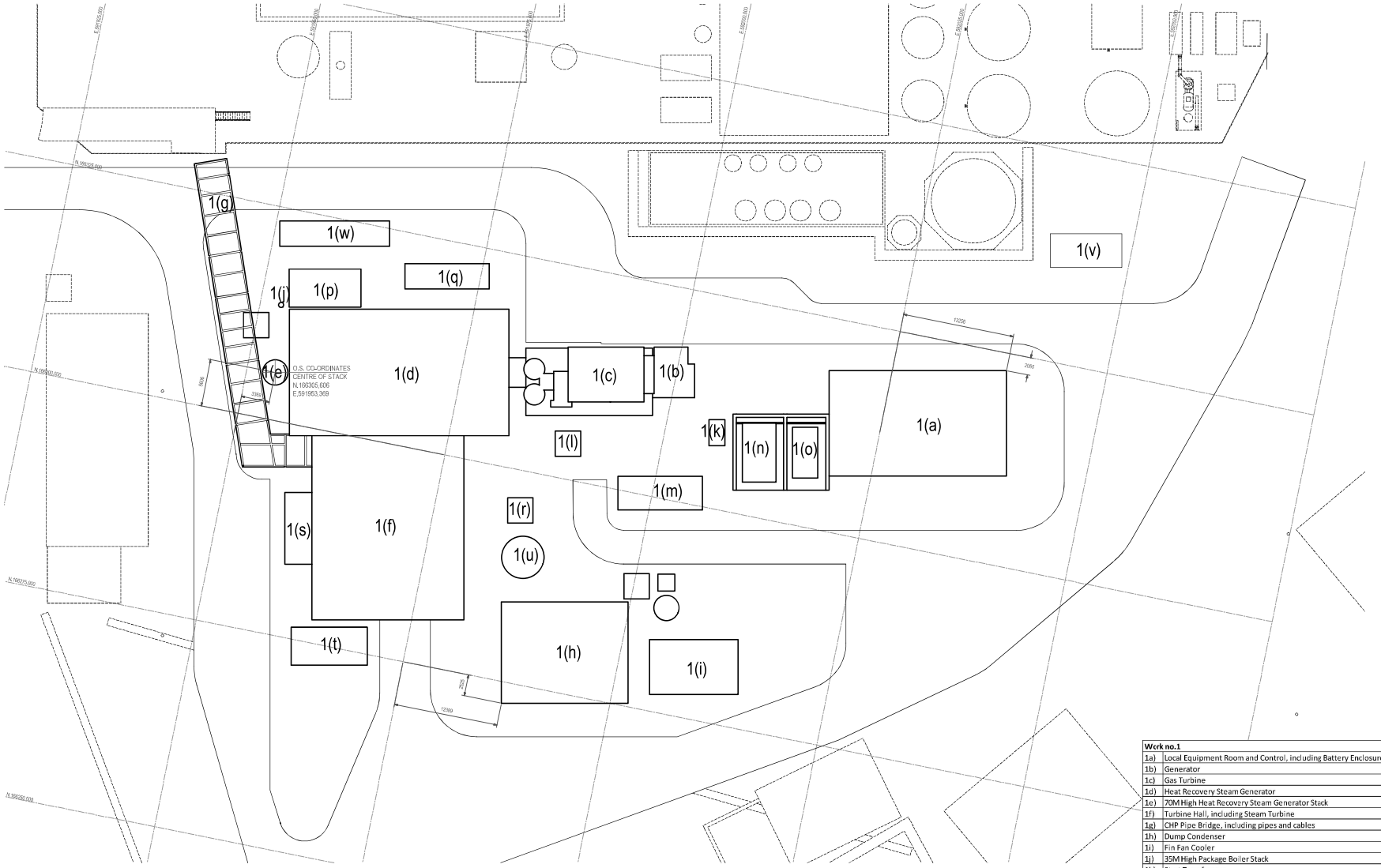
0 40 80 120 160 Metres

Date: Mar 2018

Author: R.Massey

Doc reference 10392-0026-006

Document number 4.4



Work no.1	
1a)	Local Equipment Room and Control, including Battery Enclosure
1b)	Generator
1c)	Gas Turbine
1d)	Heat Recovery Steam Generator
1e)	70M High Heat Recovery Steam Generator Stack
1f)	Turbine Hall, including Steam Turbine
1g)	CHP Pipe Bridge, including pipes and cables
1h)	Dump Condenser
1i)	Fin Fan Cooler
1j)	35M High Package Boiler Stack
1k)	Start Transformer
1l)	Fire Extinguisher Cabinet
1m)	Switchgear
1n)	Block Transformer
1o)	Transformer
1p)	Package Boiler
1q)	Fuel Gas Skid
1r)	Condensate Pumps
1s)	Heat Recovery Steam Generator Chemical Dosing Equipment
1t)	Effluent Sump
1u)	Condensate Tank
1v)	Boiler Water Feed Pumps
1w)	K2 & Low Pressure Package Boiler Feed Pumps

DS Smith

N

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.6a

Title: Illustrative layout with horizontal tube boiler

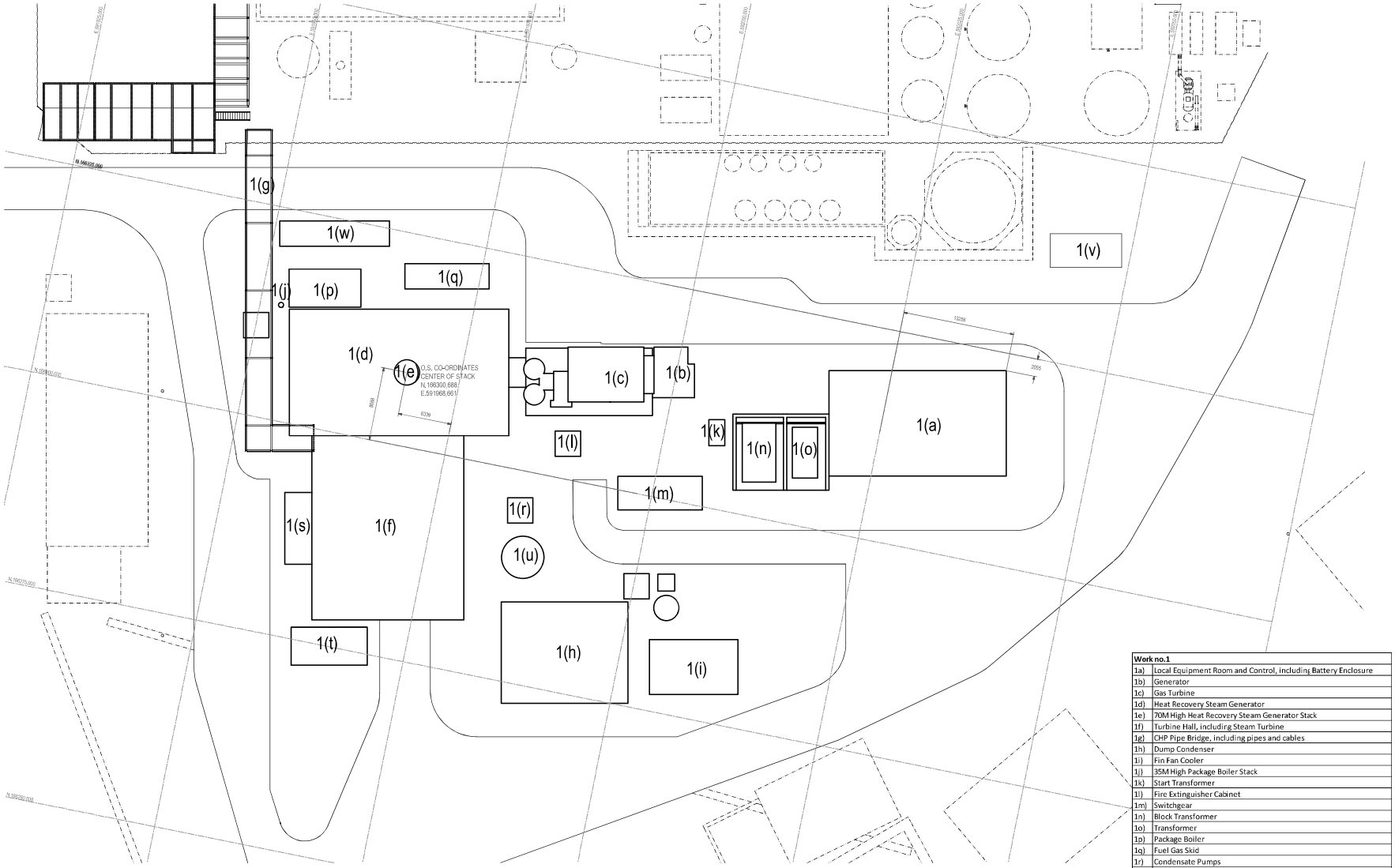
Scale 1: 250 @ A1

0 5 10 15 20 Metres

Date: Mar 2018
Author: R.Massey

Doc reference
10392-0037-005

Document number
4.6



Work no.1	
1a)	Local Equipment Room and Control, including Battery Enclosure
1b)	Generator
1c)	Gas Turbine
1d)	Heat Recovery Steam Generator
1e)	70M High Heat Recovery Steam Generator Stack
1f)	Turbine Hall, including Steam Turbine
1g)	CHP Pipe Bridge, including pipes and cables
1h)	Dump Condenser
1i)	Fin Fan Cooler
1j)	35M High Package Boiler Stack
1k)	Start Transformer
1l)	Fire Extinguisher Cabinet
1m)	Switchgear
1n)	Block Transformer
1o)	Transformer
1p)	Package Boiler
1q)	Fuel Gas Skid
1r)	Condensate Pumps
1s)	Heat Recovery Steam Generator Chemical Dosing Equipment
1t)	Effluent Sump
1u)	Condensate Tank
1v)	Boiler Water Feed Pumps
1w)	K2 & Low Pressure Package Boiler Feed Pumps

DS Smith

N

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.6b

Title: Illustrative layout with vertical tube boiler

Scale 1: 250 @ A1

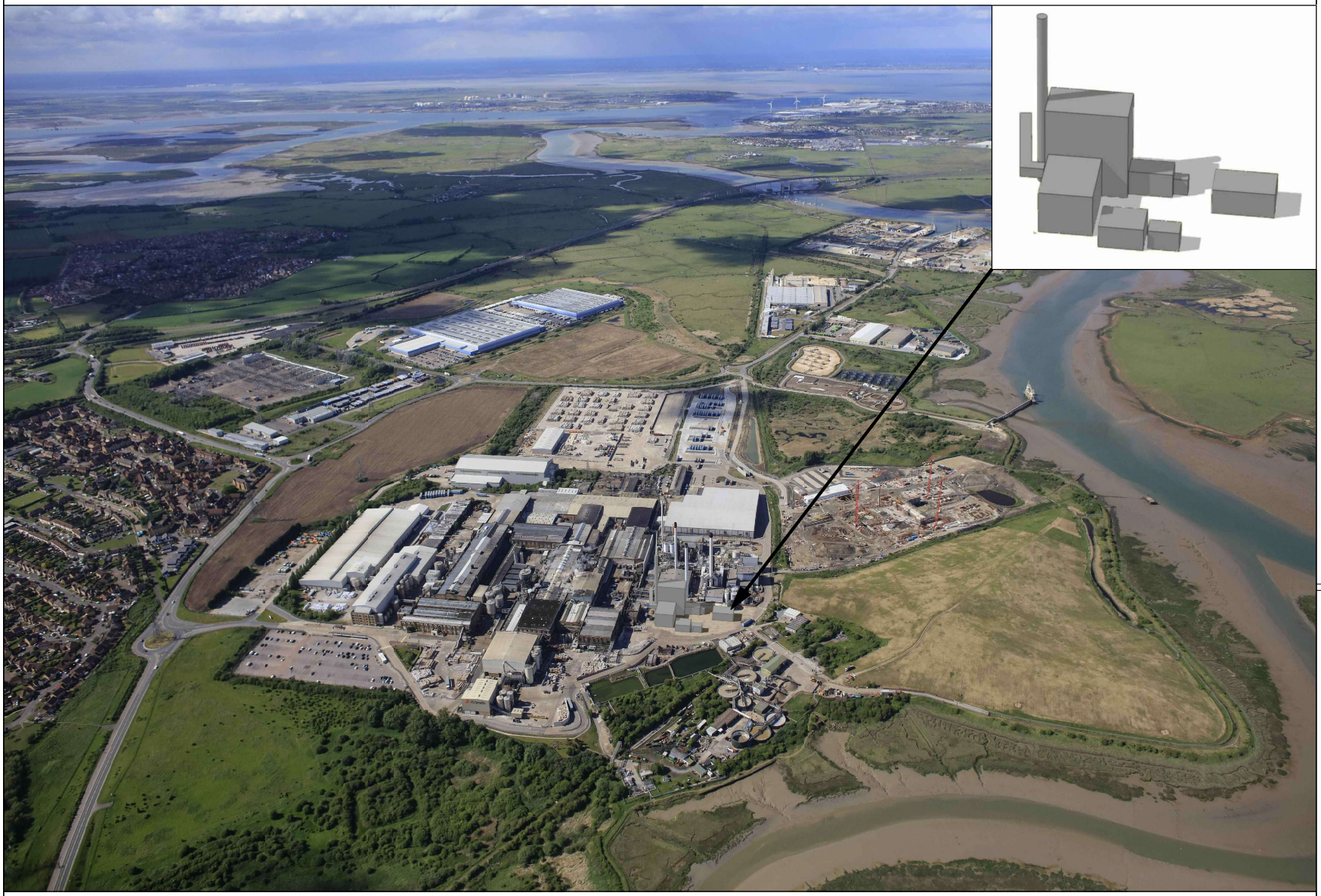
0 5 10 15 20 Metres

Date: Mar 2018
Author: R.Massey

Doc reference
10392-0038-005

Document number
4.10

10392-0038-005



DS Smith

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.7

Title: Site Context - Illustrative 3d Visual - Horizontal Tube Boiler

Photo taken May 2017

Scale: NTS @ A3

Date: Mar 2018

Author: R.Massey

Doc reference

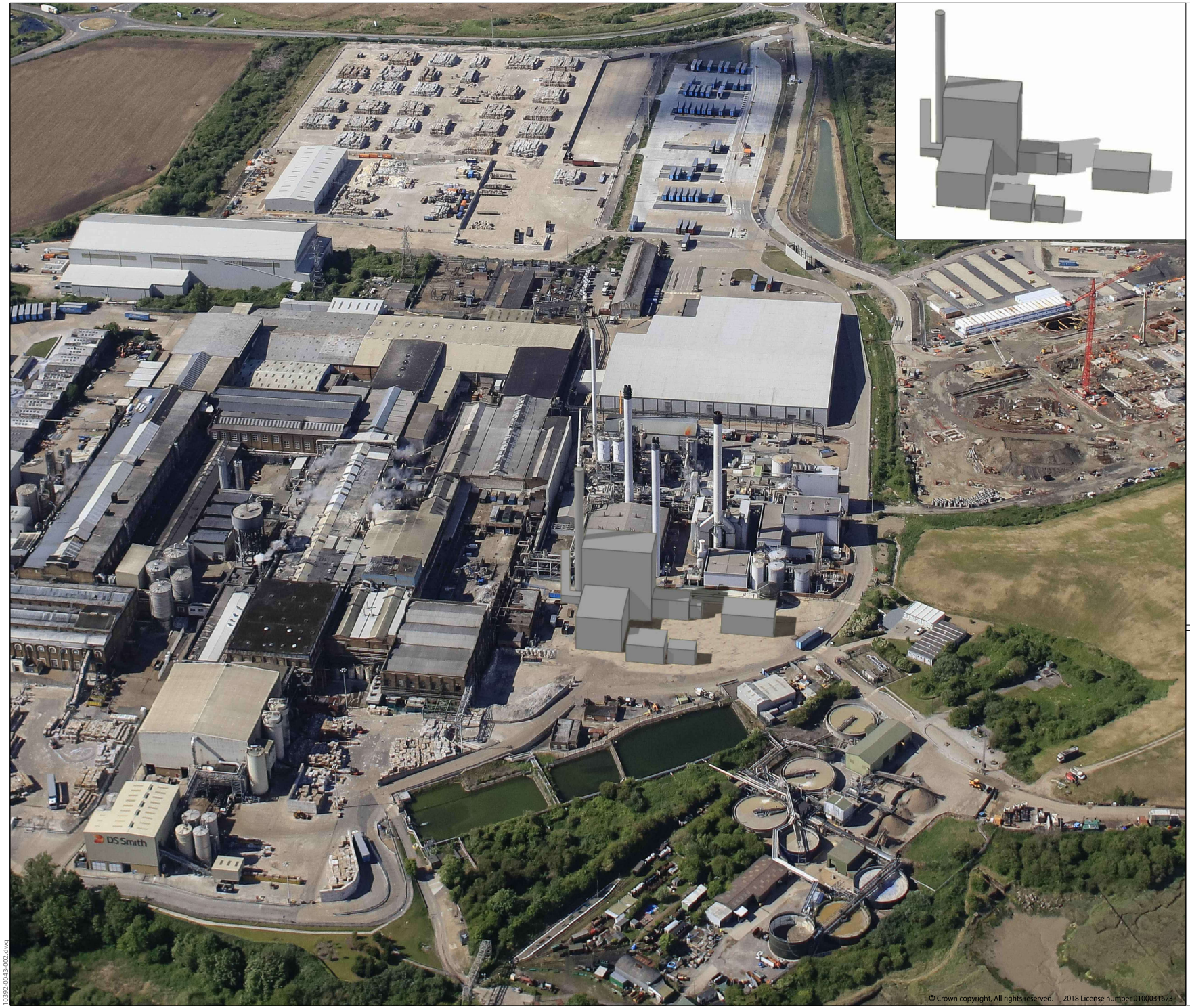
10392-0043-003

Document number

4.8a

10392-0043-003.dwg

10392-0043-003.dwg



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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.8

Title: Site Context - 3d Visual - Horizontal Tube Boiler (Illustrative)

Photo taken May 2017

Scale: NTS @ A3

Date: Mar 2018

Author: R.Massey

Doc reference

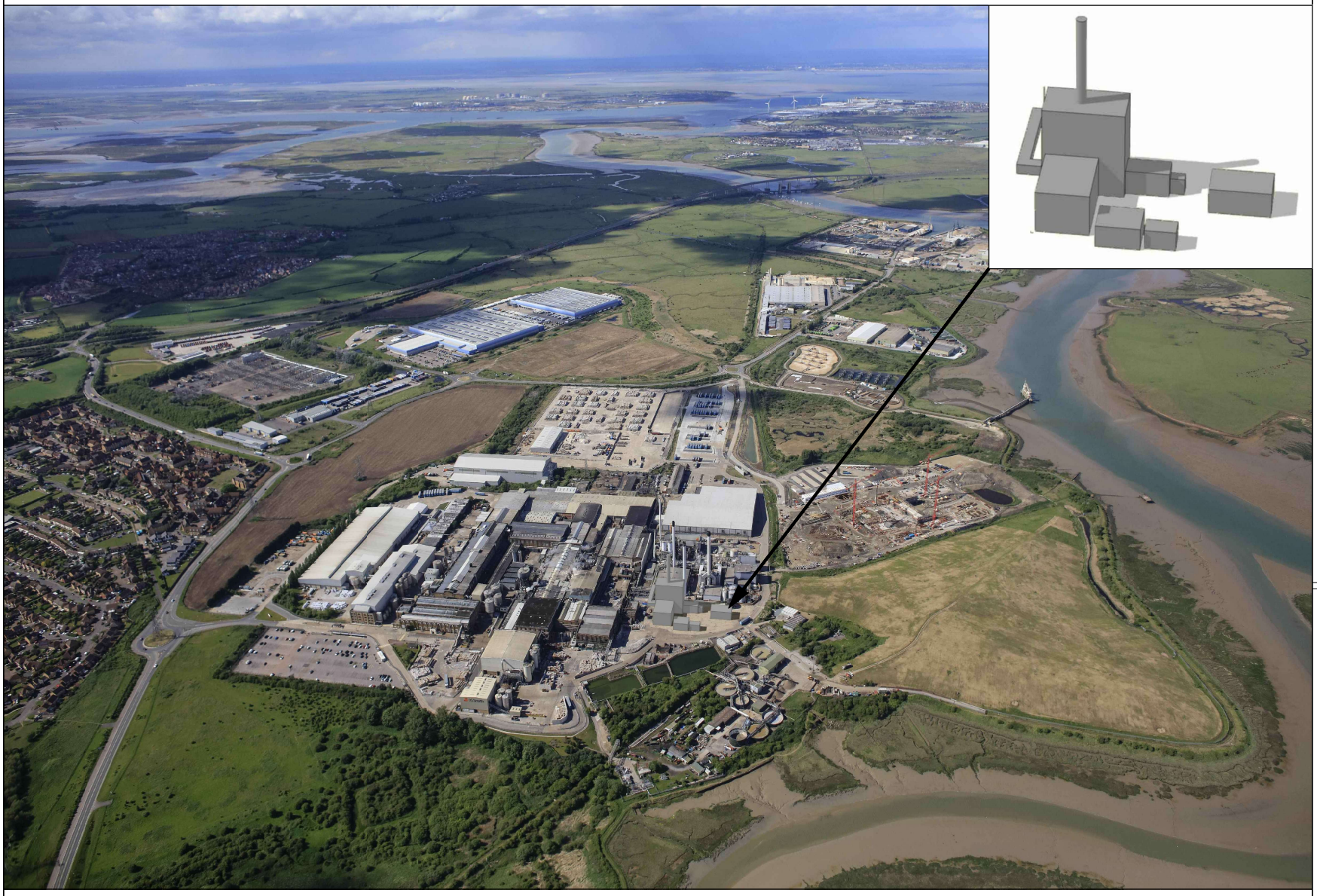
10392-0043-002

Document number

4.8b

10392-0043-002.dwg

10392-0043-002.dwg



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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.9

Title: Site Context - Illustrative 3d Visual - Vertical Tube Boiler

Photo taken May 2017

Scale: NTS @ A3

Date: Mar 2018

Author: R.Massey

Doc reference

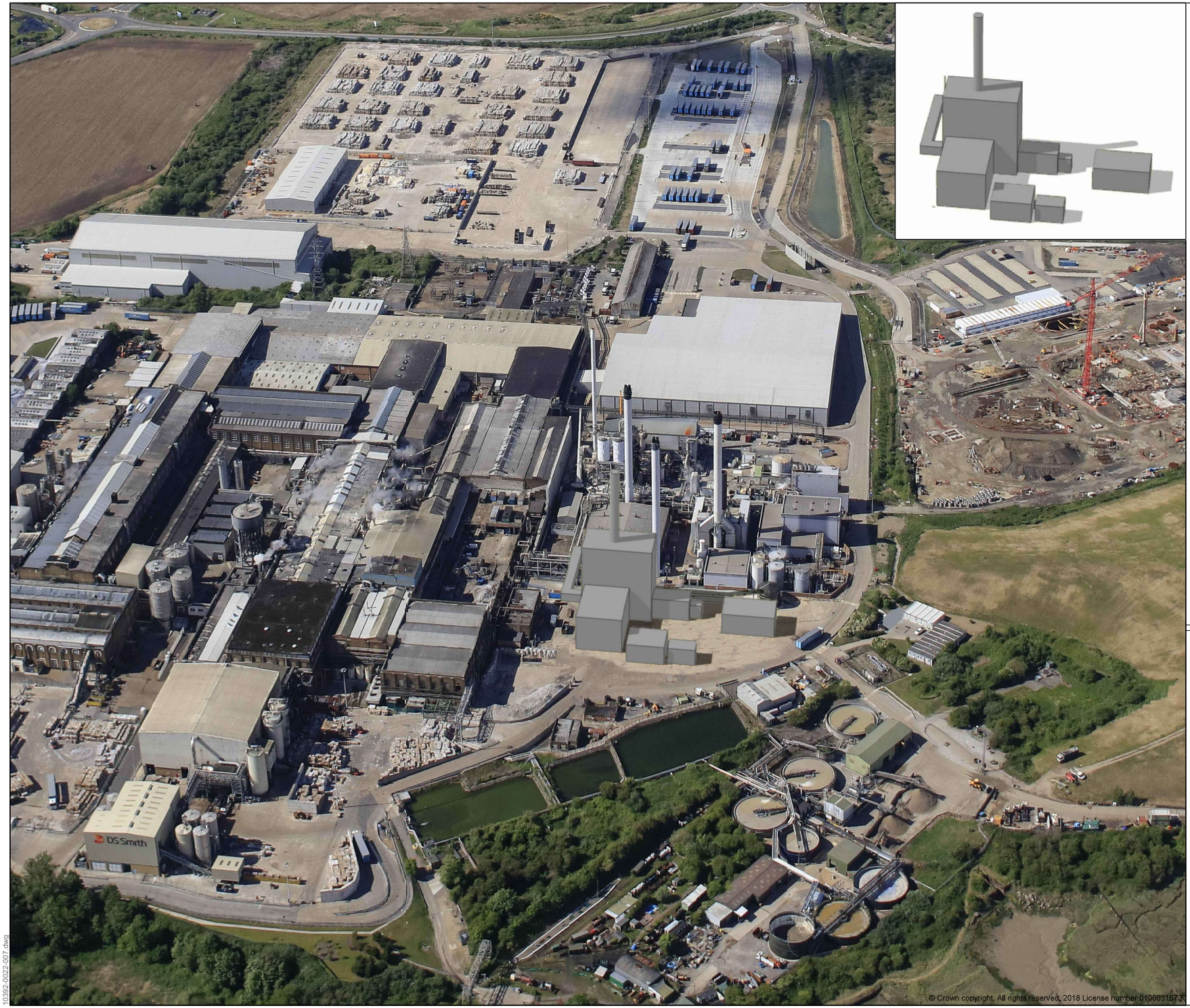
10392-0022-007

Document number

4.12a

10392-0022-007.dwg

10392-0022-007.dwg



DS Smith

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.10

Title: Site Context - Illustrative 3d Visual - Vertical Tube Boiler

Photo taken May 2017

Scale: NTS @ A3

Date: Mar 2018

Author: R.Massey

Doc reference

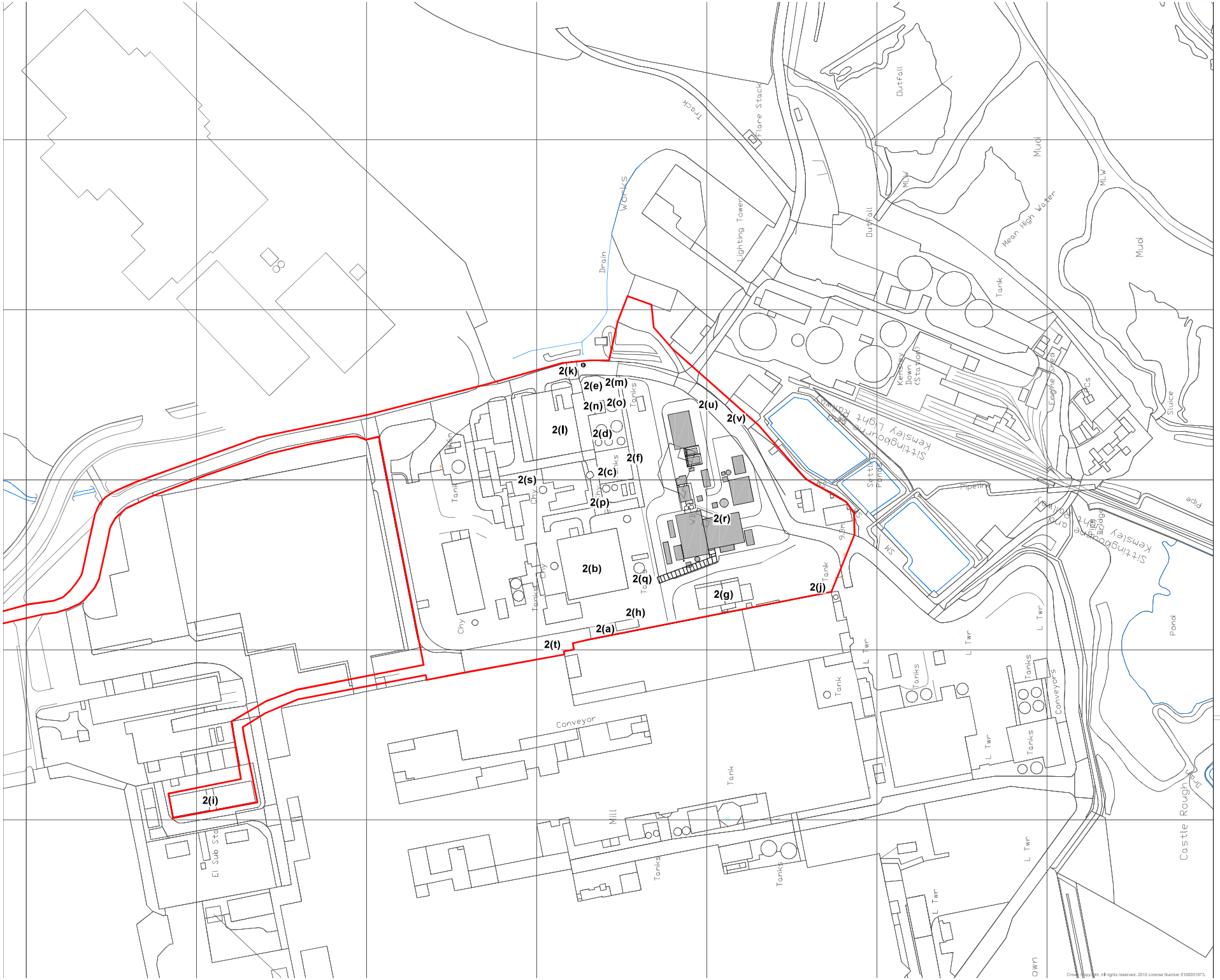
10392-0022-007

Document number

4.12b

10392-0022-007.dwg

10392-0022-007.dwg



DS Smith

N

Legend

- Application boundary
- Proposed buildings (Illustrative)

Work No.2

- 2(a) Potable water
- 2(b) K1 Package Boilers (6 off)
- 2(c) Old water treatment plant (WTP)
- 2(d) Feed water tanks
- 2(e) Gas stations
- 2(f) New WTP
- 2(g) Pumping station (Process water)
- 2(h) Low & medium pressure steam manifolds
- 2(i) DNO 132kV electricity grid connection
- 2(j) Waste water treatment plant connection
- 2(k) Surface water outfall
- 2(l) Control room
- 2(m) Gas pipeline to grid connection point
- 2(n) Diesel & electric fire water pumps
- 2(o) Fire water tank
- 2(p) Fire water ring main
- 2(q) Condensate return system including storage tank
- 2(r) Steam recovery system
- 2(s) Three air compressors
- 2(t) Cable tray for electrical connection to 33kV switch yard to grid connection point
- 2(u) Process effluent piping system including monitoring devices
- 2(v) Roadways and walkways including lighting

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The Kemsley Mill K4 Combined Heat and Power Generating Station Development Consent Order

ES Figure 2.12

Title: Work No.2 - Tie-ins to existing site facilities (Illustrative)

Scale 1: 1,000 @ A1

0 20 40 60 80 Metres

Date: Mar 2018
Author: R.Massey

Doc reference
10392-0027-007

Document number
4.13

3 Methodology

3.1 Introduction

3.1.1 This Chapter explains the process taken to identify the environmental issues considered by this ES and outlines the overall approach taken to the EIA. Specific methodologies for each of the specialist studies are given in the relevant topic chapters.

3.2 The scope of the EIA

3.2.1 Scoping is the identification of the range of potentially significant issues likely to arise as a result of a proposed development. The advice given in the DCLG EIA guidance[1] (under the heading "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."*
>
> http://planningguidance.planningportal.gov.uk/ Paragraph: 033 Reference ID: 4-035-20170728

3.2.2 This approach is reinforced by case law. Judgments 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* judgment 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] The *Tew* judgment noted that the underlying objective of EIA is that decisions be taken "in full knowledge" of a project's likely significant effects and stated: [3]

> *"…that is not to suggest that full knowledge requires an environmental statement to contain every conceivable scrap of environmental information about a particular project. The directive and the Assessment Regulations require likely significant effects to be assessed. It will be for the local planning authority to decide whether a particular effect is significant".*

3.2.3 The purpose of scoping is therefore 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

[1] Whilst it is noted that the DCLG EIA Planning Practice Guidance relates principally to the Town and Country Planning (Environmental Impact Assessment) Regulations 2017 the principle and purpose of EIA under the DCO process remains the same.
[2] R v Rochdale MBC ex parte Milne [2001] 81 PCR 27
[3] R v Rochdale MBC ex parte Tew [1999] 3 PLR 74

to suggest that there will be no associated effects; rather that these are not considered to be among the potentially significant effects.

3.2.4 DHA Environment, working with RPS, undertook a scoping exercise and produced an EIA scoping report in July 2017. This document provided a summary of the Proposed Development, identified the main environmental effects to be assessed within the EIA and scoped out issues that did not require consideration but were to be kept under review throughout the EIA process ensuring that any new potentially significant effects identified were included.

3.2.5 In accordance with the Infrastructure Planning (EIA) Regulations 2017 (the "EIA Regulations") the following factors influenced the breadth of the scoping exercise and so the EIA:

- The specific characteristics of the Proposed Development
- The environmental features likely to be affected by the Proposed Development
- The extent of any likely impact
- The trans frontier nature of the impact
- The magnitude and complexity of the impact
- The probability of the impact
- The duration, frequency and reversibility of the impact.

3.2.6 A formal request for a scoping opinion was made to PINS in July 2017. PINS, in accordance with the EIA Regulations consulted a number of statutory and non-statutory bodies on the proposed scope of the EIA. **Table 3.1** provides a list of the statutory and non-statutory bodies consulted by PINS.

Health and Safety Executive*
NHS England
NHS Swale Clinical Commissioning Group
Natural England*
Historic England *
Kent Fire and Rescue Service
Kent Police and Crime Commissioner
The Environment Agency*
Maritime & Coastguard Agency
Marine Management Organisation (MMO)*
Civil Aviation Authority
Kent County Council Highways Authority
Highways England *
Highways England Historical Railways Estate*
Public Health England*
The Crown Estate

The Secretary of State for Defence Ministry of Defence *
NHS Swale Clinical Commissioning Group
NHS England
South East Coast Ambulance Service
Railways Estate
NATS En-Route Safeguarding*
Royal Mail Group*
Homes and Communities Agency Homes and Communities Agency
Southern Water*
Trinity House*
Cadent Gas Limited
Energetics Gas Limited
Energy Assets Pipelines Limited
ES Pipelines Ltd*
ESP Connections Ltd
ESP Networks Ltd
ESP Pipelines Ltd
Fulcrum Pipelines Limited
GTC Pipelines Limited
Independent Pipelines Limited
Indigo Pipelines Limited
Quadrant Pipelines Limited
National Grid Gas Plc *
Scotland Gas Networks Plc
Southern Gas Networks Plc
Wales and West Utilities Ltd
Energetics Electricity Limited
ESP Electricity Limited
G2 Energy IDNO Limited
Harlaxton Energy Networks Limited
Independent Power Networks Limited
Peel Electricity Networks Limited
The Electricity Network Company Limited
UK Power Distribution Limited
Utility Assets Limited
Utility Distribution Networks Limited
UK Power Networks Limited
Swale Borough Council*
Canterbury City Council*
Maidstone District Council
Ashford District Council
Medway Council
Kent County Council
Thurrock Council*
London Borough of Bexley*
London Borough of Bromley*
Surrey County Council

East Sussex County
***consultation bodies who replied.**

Table 3.1: Organisations consulted by PINS on the scope of the EIA

3.2.7 The PINS scoping opinion (provided pursuant to Regulation 10 of the EIA Regulations) represents its formal opinion on the information that needs to be presented in the ES.

3.2.8 A copy of the EIA Scoping Report issued to PINS can be found in **Appendix 3.1** and a copy of PINS formal Scoping Opinion pursuant to this including statutory consultee's response is provided as **Appendix 3.2.**

3.2.9 In addition to the above individual topic authors have approached consultees directly to agree methodology and scope of assessment where necessary and this is reported in topic chapters as relevant.

3.3 Key issues identified in scoping

3.3.1 Responses were received from nineteen of the organisations consulted (as identified in Table 3.1)

3.3.2 The Scope of the ES has been amended to take note of the issues raised during the scoping process. **Appendix 3.3** provides a summary table identifying where each of the issues identified during scoping are addressed within the ES or provides justification as to why these issues can subsequently be scoped out of the ES.

3.3.3 Where a particular environmental feature, or component of it, has not been included within the ES, this is not to suggest that there will be no associated effects; rather that these are not considered to be among the potentially significant effects.

3.4 Section 42 Consultation and Section 48 Publicity

3.4.1 The approach taken by the applicant to pre-application consultation and publicity is explained in full in the Consultation Report [Document 5.1] which forms part of the DCO application.

3.4.2 Section 42 of the Planning Act 2008 requires the applicant to consult various prescribed bodies, directly affected and adjoining local authorities, the Greater London Authority where relevant and any parties identified under S44, such as owner, lessees, tenants or occupiers and others.

3.4.3 Section 48 of the same Act requires the applicant to publicise the proposed application in the prescribed manner.

3.4.4 Section 42 consultation packs were sent to the required parties on 24th January 2018. A further Section 42 consultation in respect of additional Section 44 parties was undertaken on the 5th March 2018. A draft ES was produced pursuant to the EIA Scoping process and formed the basis on which the S42 Consultation was undertaken. A copy of the consultation letter with a link to the relevant documents on DS Smith's website is provided in **Technical Appendix 3.4** (a CD containing all consultation documents was

also sent to all consultees) as well as any consultation responses received. In accordance with the EIA Regulations a copy of the Section 48 notice was included within the S42 consultation packs.

3.4.5 Statutory notices under Section 48 were placed in locally circulating newspapers on the 24th and 31st January 2018, the London Gazette on the 31st January 2018 and the Daily Telegraph on the 30th January 2018.

3.4.6 Responses were received from 22 of the organisations consulted under Section 42 (as identified in Table 3.2). No responses were received as a result of the Section 48 notices.

3.4.7 The Scope of the ES has been amended to take note of the issues raised during the S42consultation process. **Technical Appendix 3.5** provides a summary table identifying where each of the issues identified during the S42 consultation are addressed within the ES or provides justification as to why these issues can subsequently be scoped out of the ES.

Health and Safety Executive*
National Health Service Commissioning Board
The relevant clinical commissioning group
Natural England*
Historic England*
Relevant Fire and Rescue Authority
Relevant Police and Crime Commissioner
Bapchild Parish Council
Bobbing Parish Council
Borden Parish Council
Iwade Parish Council
Minster-on-Sea Parish Council
Rodmersham Parish Council
Tonge Parish Council
Tunstall Parish Council
Environment Agency*
The Equality and Human Rights Commission*
Homes and Communities Agency (Homes England as of January 2018)
Maritime and Coastguard Agency*
Marine Management Organisation*
Civil Aviation Authority
KCC Highways*
Highways England
Gas and Electricity Markets Authority
Water Services Regulation Authority
Relevant Internal Drainage Board
Trinity House
Public Health England, an executive agency of the Dept of Health
Relevant Local Resilience Forum
Relevant Statutory Undertakers
Crown Estate Commissioners

Secretary of State for Defence
The relevant NHS Foundation trust
Railways
Licence Holder (Chapter 1 of Part 1 of Transport Act 2000)
Royal Mail*
The Relevant water and sewage undertaker
Public Gas Transporters
Energetics Gas Limited
Energy Assets Pipelines Limited*
ES Pipelines Ltd*
ESP Connections Ltd*
ESP Networks Ltd*
ESP Pipelines Ltd*
Fulcrum Pipelines Ltd
GTC Pipelines Ltd
Independent Pipelines Ltd
Indigo Pipelines Ltd
Quadrant Pipelines Limited
National Grid Gas Plc*
Scotland Gas Networks Plc
Southern Gas Networks Plc*
Wales and West Utilities Ltd
Energetics Electricity Limited
ESP Electricity Limited
G2 Energy IDNO Limited
Harlaxton Energy Networks Limited
Independent Power Networks Limited
Peel Electricity Networks Limited
The Electricity Network Company Limited
UK Power Distribution Limited
Utility Assets Limited
Utility Distribution Networks Limited
UK Power Networks Limited*
Canterbury City Council*
Ashford Borough Council
Maidstone Borough Council
Swale Borough Council*
Kent County Council*
Medway Council*
Thurrock Council
London Borough of Bexley*
London Borough of Bromley*
Surrey County Council
East Sussex County Council
***consultation bodies who replied.**

Table 3.1: Organisations consulted as part of S42 Consultation on the scope of the EIA

3.5 EIA assessment methodology – general approach

3.5.1 An environmental effect is an alteration, positive or negative, to some aspect of the environment (sensitive receptors[4]) that occur as a result of a proposed development.

3.5.2 The project team has considered the likely positive and negative significant environmental effects of the Proposed Development, both during the construction process (including decommissioning of K1 as required), once the development is operational and during its final decommissioning in the future. These effects are reported in this ES, taking into account current knowledge of the Site and its surroundings (baseline), and drawing upon the findings of a variety of studies which have all contributed to the EIA process.

3.5.3 It is important that the assessment methodology distinguishes between the sensitivity of the receptor and the type and size of change that will affect the receptor, either directly or indirectly. Where significant effects have been identified, the relevant Technical Chapter also proposes mitigation measures (i.e. ways of avoiding, limiting or offsetting potentially significant effects) where possible.

3.5.4 This ES has been produced following published guidance, information on best practice and PINS advice notes 7, 9 and 17. The methodologies used for the specific topics are discussed in the relevant chapters of the ES.

3.6 Baseline and future baseline scenarios

3.6.1 The Industrial Emissions Directive (IED) comes into force in 2020 and sets stricter emission limits for industry. The K1 plant is 22 years old and will require significant investment into the gas turbine, waste heat recovery boilers and steam turbine both to extend its operational life and to meet the requirements of the IED.

3.6.2 In light of the significant cost involved in modifying K1, and given it is oversized to serve the requirements of the Kemsley paper mill and therefore inefficient, the construction of a new CHP plant (K4) is the preferred and most viable option. Further information relating to this is set out in the Planning Statement (Document reference 5.2) submitted in support of the application.

3.6.3 However, in the absence of securing permission for K4, DS Smith has stated that they would be forced to invest in and modify K1. Gas fired CHP has a significant benefit on electricity costs for the mill and the paper industry in general and imported electricity from the grid would not be an option due to the significant cost differential.

3.6.4 The existing baseline scenario is K1 operating as present. However by 2021 K1 would require modification in order to meet the requirements of the IED. The future baseline in the absence of the Proposed Development would therefore be a modified K1 operating in accordance with IED requirements. It should be noted however that K1 as modified and K4 are mutually exclusive i.e. in the event that consent for K4 cannot be obtained K1 would be modified and in the event that K4 gets permission K1 would be

[4] A receptor is a part of the natural or man-made environment, such as a river, woodland, protected species, a person or a building, that is affected by an impact.

decommissioned and cease operation once K4 becomes operational (see section 2.5 of Chapter 2). An assessment of K4 operating in combination with a modified K1 has not been undertaken on this basis because this is not a feasible scenario.

3.6.5 For all assessments with the exception of Climate Change (Chapter 6) K4 has been assessed against the existing baseline scenario. This is either because it provides a worst case assessment (for example a modified K1 is likely to be less polluting) or because K1 modified will make no material difference to the assessment (e.g. landscape, ground conditions, heritage).

3.6.6 For climate change, the worst case assessment is provided by comparing the emissions from K4 against the emissions from a modified K1, because a modified K1 is likely to have lower CO2 emissions than the existing K1. An assessment between the existing K1 and its replacement K4 would over emphasise the beneficial effects of the development. For the purposes of Chapter 6 it was possible to make some simple assumptions about the CO2 emissions from a modified k1, allowing a comparison of the net change in CO_2 emissions.

3.6.7 In a wider context there are a number of cumulative developments within the zone of influence of the Proposed Development, a significant number of which have planning permission (see section 3.9).

3.6.8 In accordance with IEMA guidance[5] and on a precautionary basis only developments that are already under construction or under control of the Applicant (other than those identified at 3.9.1 below) are considered to form part of the future baseline scenario in which the Proposed Development would exist. Where deemed material by the respective technical assessment authors this future baseline scenario is considered in the assessment of K4.

3.6.9 Any development irrespective of the planning status that is not under construction or in control of the Applicant is assessed as part of the cumulative impact assessment in each respective technical assessment.

3.6.10 Where a different approach has been taken to that set out above this is expressly stated and justified within the relevant topic chapters.

3.7 Determining the significance of effects in the ES

3.7.1 The purpose of the ES is to identify the positive and negative environmental effects of a scheme, including an assessment of the degree to which such effects are significant. The evaluation of the significance of an effect is fundamental to the EIA process. The degree of an effect i.e. significant or not-significant determines the resources that should be deployed in avoiding or mitigating an adverse effect. Conversely it identifies the degree of value of a beneficial effect.

3.7.2 The degree of an effect is determined by the interaction of two factors: (i) the magnitude, scale, severity or probability of an impact or change, and (ii) the value, importance or sensitivity of the resource being affected. This is then used to determine whether an

[5] Section 10 of the Institute of Environmental Management and Assessment Guidelines for Environmental Impact Assessment 2004.

effect is significant or not. **Figure 3.1** shows the general matrix[6] used to determine the degree of each effect identified and whether an effect is significant. Typically if the effect is moderate or above then the effect is considered to be significant i.e. it is likely to be a material factor in the decision whether to grant consent. Slight or negligible effects are not considered to be significant. Where any topic specific methodologies differ from this approach these are explained in the relevant topic chapters.

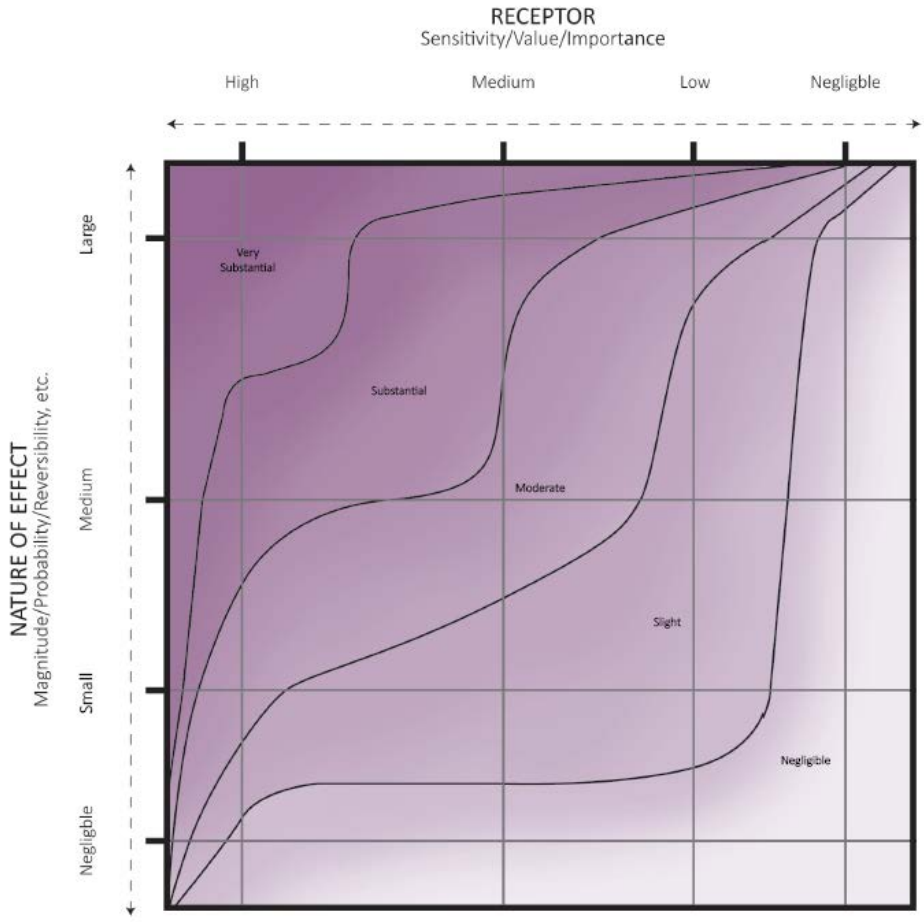


Figure 3.1: Significance matrix

3.7.3 As a general rule significance is determined taking into account a variety of factors. These include:

- the value of the resource (e.g. whether it is of international, national, regional and local level importance);
- the magnitude of the impact;
- the duration involved;

[6] Adapted from figure 6.3 of the Institute of Environmental Assessment and Management's State of Environmental Impact Assessment Practice in the UK 2011.

- the reversibility of the effect; and
- the number and sensitivity of receptors.

3.7.4 As far as possible, standard words have been used to define degrees of effect (i.e. "very substantial", "substantial", "moderate", "slight" and "negligible"), but not so rigorously as to remove the flexibility of professional judgement. It is noted that a number of topics e.g. air quality and ecology have their own individual requirements and professional body guidance with regard to impact classification and degree of significance. Therefore in accordance with best practice guidance, significance has been determined on the basis of expert judgement and industry specific guidelines. Where possible to ensure that the manner in which significance has been attributed is transparent and repeatable, the aforementioned standard words are used where feasible to define the degrees of effect.

3.7.5 Although the environmental effects described in the ES are under discrete headings, the EIA has paid close attention to the interrelationships between the topic areas in order to assemble a holistic picture of the likely significant effects and mitigation measures.

3.7.6 Table 3.2 below shows the topic areas that are likely to impact upon other topic areas and result in intra-project effects that could be significant. To this regard topic authors have co-ordinated their assessments where relevant to address potential intra-project effects e.g. the effects of construction noise on ecological receptors.

Impacted on \ Affected By	Traffic and Transport	Air Quality	Climate Change	Noise and Vibration	Ground Conditions	Water Environment	Biodiversity	Landscape and visual impacts	Cultural heritage
Traffic and transport									
Air Quality	X								
Climate Change	X	X							
Noise and Vibration	X								
Ground conditions									
Water Environment			X		X				
Biodiversity		X	X	X	X	X			
Landscape and visual impacts		X[7]							X
Cultural heritage				X				X	

Table 3.2: A summary of the key topic areas that may impact upon other topic areas that have been considered in the ES.

[7] Achieving sufficient emission dispersal and consequently acceptable emission levels is a determining factor in stipulating stack height which in turn affects visual impact.

3.8 Identification of mitigation measures and significant residual effects

3.8.1 Where appropriate, the identification of significant effects has helped to guide the mitigation measures proposed. The effects of the Proposed Development with the proposed mitigation in place are then reassessed to determine the significance of effect post mitigation. At the end of each environmental assessment, where relevant, there is a residual effects table, which summarises the significant environmental effects remaining after mitigation. Any significant effects remaining after mitigation or which cannot be mitigated are reported appropriately within the Technical Chapter and a summary of all significant residual effects provided in Chapter 13.

3.9 Cumulative effects

3.9.1 For the purpose of assessing the effects of the Proposed Development with other schemes that are under construction, consented or for which planning permissions are currently being sought (which includes those for which planning applications have been submitted or have been subject to EIA screening and scoping requests), the following were identified by way of a desk based assessment utilising Swale Borough Councils online planning portal for inclusion in the ES (see **Figure 3.2)**. The cumulative sites proposed for inclusion in the ES have been subject to consultation as part of the formal scoping process and S42 consultation and additional sites added where requested (see sections 3.2-4 above):

- SW/10/444 Development of a sustainable energy plant to serve Kemsley Paper Mill (K3), 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 and under construction.

- 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. A DS Smith application 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. A DS Smith application permitted July 2012 and under construction.

- 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.

- 15/500348/COUNTY | Install advance thermal conversion and energy facility at Kemsley Fields Business Park to produce energy and heat, including construction of new buildings to house thermal conversion and energy generation plant and equipment; construction of associated offices; erection of external plant including storage tanks; and erection of discharge stack (KCC planning application KCC/SW/0010/2015 refers). | Land off Kemsley Fields Business Park Barge Way Sittingbourne Kent

- 18/500393/FULL Erection of a natural gas fuelled reserve power plant with a maximum export capacity of up to 12MW.

- 16/506014/EIASCO EIA Scoping Opinion - A sustainable urban extension comprising up to 1,100 new dwellings (of a range of sizes, types and tenures, including affordable housing), a site of 10.50 ha for a secondary and primary school, and public open and amenity space , together with associated landscaping, access, highways (including footpaths and cycle ways), parking , drainage (including a foul water pumping station), utilities and service infrastructure works

- 17/505073/FULL Erection of a tile factory including service yard, storage yard and car parking area.

- 16/506193/ENVSCR EIA Screening Opinion - Outline application for proposed residential development of 275 dwellings including affordable housing with open spaces, appropriate landscaping and minor alterations to the surrounding highway network (access)

- 17/503713/ENVSCR | EIA Screening Opinion | Land East Of Iwade Woodpecker Drive Iwade Kent ME9 8ST

- 18/500257/EIFUL Proposed development of 155 dwellings (9 x 2 bed flats, 13 x 2 bed houses, 66 x 3 bed houses, and 67 x 4 bed houses) together with associated new access road, car parking, linear park with acoustic barrier to the A249, dedicated LEAP, allotments, areas of surface water drainage attenuation and ecological enhancement, and new planting, including an area planted in the style of an orchard.

- Forthcoming planning application for the construction of a new southern boundary road at Kemsley Paper Mill including the breaking out of existing concrete hardstanding and associated engineering and landscaping works. DS Smith

planning application anticipated to be submitted to Swale Borough Council in May 2018.

3.9.2 The above listed of cumulative developments within the zone of influence of the Proposed Development includes details for a forthcoming planning application by DS Smith to create a new southern boundary road at Kemsley Paper Mill. The red line boundary of this application will overlap that of the Proposed Development at the point of proposed location of the K4 CHP plant.

3.9.3 This simply reflects the fact that the concrete is this area is in a significant state of disrepair with heavy fracturing and cracks. In light of the fact that this concrete will need replacing in the future irrespective of K4 DS Smith propose to break out this concrete, crush it and use it as a substrate for the proposed new boundary road. DS Smith would carry out this work irrespective of whether or not consent is granted for K4 (refer to Planning Statement Document 5.2 section 3.3 for further detail).

3.9.4 The proposed new boundary road is not therefore dependent on the Proposed Development or vice versa and is intended to enhance the movement and logistics of HGV and personnel movements around the Mill for efficiency only.

3.9.5 On the basis that this application is yet to be submitted at the time of submission of this DCO application and by virtue of the fact that it does not have permission and therefore no certainty can be attributed to it, it has been assessed as being a potential cumulative development. As and when this situation changes DS Smith will inform the Inspector accordingly.

3.9.6 It is intended that subject to securing the permission for the new boundary road construction would begin in September 2018 and be completed by Spring 2019 such that there would be no overlap in the construction timescales between the proposed development and 'K4' if permitted.

3.10 General format of the topic chapters

3.10.1 The ES topic chapters herein address each of the environmental issues identified during the scoping process. Each of the topic chapters is structured in general as follows:

- Introduction
- Legislation and policy (brief summary only)
- Methodology (including standards, guidance and criteria used in the assessment, and any problems experienced)
- Baseline conditions (including identification of sensitive receptors and future baseline without the proposals)
- Effects of the proposals during construction
- Effects of the proposals post-construction
- Mitigation measures

- Residual effects
- Cumulative effects
- Summary

3.11 Assumptions and Limitations

3.11.1 It has been necessary in some instances to make some assumptions in assessing the environmental impact of the Proposed Development. In accordance with best practice, the key assumptions are set out below, together with any limitations identified in undertaking this EIA:

- A variety of sources, including historical data, have been used to establish baseline conditions for the purposes of producing technical reports and chapters. These represent a snapshot in time, but aspects of the environment are dynamic and may change before, during and after the construction and operation of the Proposed Development. Potential changes have been identified within specific chapters where relevant and possible.
- The design, construction and completed stages of the development will satisfy minimum environmental standards, consistent with contemporary legislation, practice and knowledge.
- Requirements will be attached to any DCO which control impacts during construction works in the form of a Construction Environmental Management Plan and will secure any mitigation measures detailed in the ES.
- At this stage the detailed design and construction methods of K4 are not finalised and therefore the EIA assessments have been undertaken on a worst case basis using maximum parameters. It is assumed that the development will come forward within the parameters set out.
- There will be a period whereby K1 and K4 will operate simultaneously during the commissioning of K4 albeit this will be intermittent and will not involve both plant operating at full capacity. Notwithstanding this, a worst case scenario has been assessed in the ES for robustness assuming that there will be a period whereby K1 and K4 will simultaneously operate at full capacity for a period of one year.
- It is assumed that post full commission of K4, K1 will be fully decommissioned. In practical terms this would entail the removal of sections of the natural gas feed pipework to the redundant K1 equipment. The gas feed pipework would then be sealed by installing permanently fixed blanking devices. In addition to this, sections of the exhaust gas ducts to the Flue stack of the K1 Waste Heat Recovery Boilers would be removed and sealed. These actions effectively render the redundant K1 equipment inoperable, as they will be fully isolated from their associated fuel sources and exhaust gas paths.

- It is assumed that the decommissioning of K1 does not include and demolition/dismantling and would be separately evaluated at a future date once K4 is fully operational.

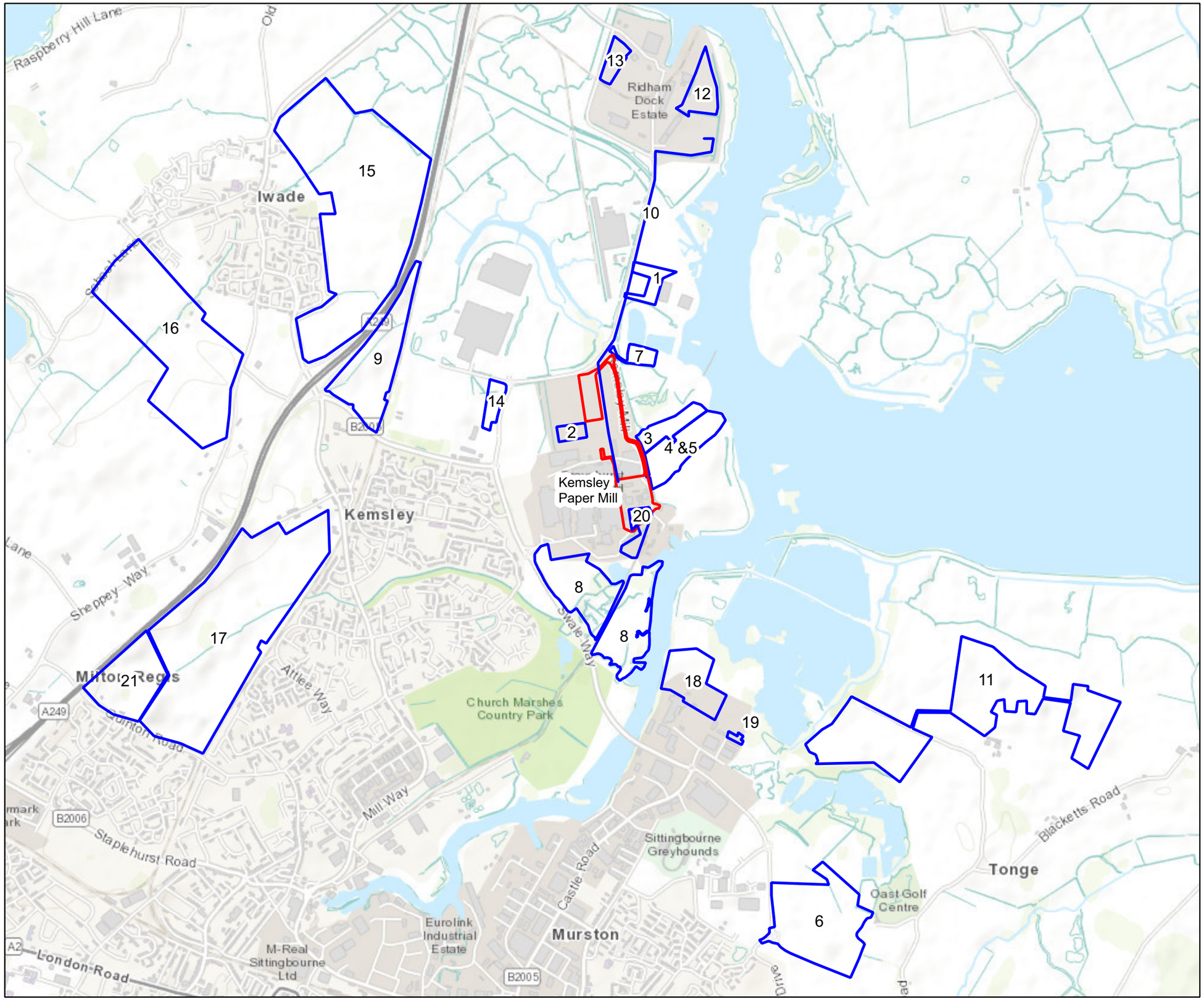
- At this stage the exact location of the Heat recovery steam generator (HRSG) stack is not fixed and could be located in two places subject to the final design of the Proposed Development and whether a vertical or horizontal boiler is installed. An assessment pertaining to both options has therefore been undertaken.

- It is assumed that the technical data provided by the engineering contractor appointed by DS Smith is a robust and worst case data set reflective of the proposed development.

- It is anticipated that subject to securing DCO consent for the Proposed Development construction would begin in 2019 and it would be completed and fully operational by 2021.

- The Proposed Development will be operated in accordance with any IPPC permit issued by the Environment Agency (existing and new) and all contemporary relevant legislation including that as specified in section 2.8 of Chapter 2 with regard to health and safety and preventing major accidents and disasters.

3.11.2 Any assumptions relevant to specific topics are set out in the Technical Chapters.



Legend

- Red Line
- 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
14. 15/500348/COUNTY - Install advance thermal conversion and energy facility at Kemsley Fields Business Park
15. 17/503713/ENVSCR - EIA Screening Opinion for large residential development
16. 16/506193/ENVSCR - EIA Screening Opinion - Outline application for proposed residential development of 275 dwellings
17. 16/506014 - EIA Scoping Opinion - A sustainable urban extension comprising up to 1,100 new dwellings
18. 17/505073/FULL - Erection of a tile factory including service yard, storage yard and parking area
19. 18/500393/FULL - Erection of a natural gas fuelled reserve power plant with a maximum export capacity of up to 12MW
20. Forthcoming application by D S. Smith for a new southern boundary road for Kemsley Paper Mill
21. 18/500257 - Proposed Development of 153 Dwellings

1 ½ 0 1 2 3 Kilometers

TITLE

Figure 3.2 - Cumulative Sites Considered in the EIA

CLIENT
DS SMITH PAPER LIMITED

PROJECT
K4 DCO PROJECT, KEMSLEY MILL, SITTINGBOURNE.

SCALE AT A3 1:30,000 | DATE March 2018 | 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