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Palm Paper Limited **Environmental Permit Variation Application**

Habitats Risk Assessment

June 2026

UK0040997.6005



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Prepared for

Palm Paper Limited

Saddlebow Industrial Estate, Poplar Avenue, Kings Lynn, Norfolk,
PE34 3AL

Submitted to

Environment Agency on behalf of Palm Paper Limited

Prepared by

WSP UK Ltd
The Mailbox, Level 2, 100 Wharfside Street, Birmingham,
B1 1RT
T +1 555-555-5555

Quality control	Name	Date	Signature
Prepared by:	Claudia Lee	20/05/2026	
Reviewed by:	Matt Derbyshire	26/05/2026	
Approved by:	Sam Brown	02/06/2026	

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1. Introduction

1.1 Background

Palm Paper Limited (hereinafter ‘Palm Paper’) are proposing to introduce a new process to their effluent treatment carried out on site, via the installation of four Anaerobic Reactors (for treatment of organic waste in the effluent stream), a biogas treatment system (BGTS) and coarse Biological Sulphur Removal (BSR). The proposed project will also involve the use and utilisation of biomethane, extracted from Anaerobic Reactors, for energy production.

Such changes are the subject of an environmental permit variation application (ref. EPR/FP3132UE/V013), received by the Environment Agency (EA) on 23/02/2026.

In order to support the application, a Habitats Risk Assessment (HRA) has been developed to review the potential impacts of the emissions to air and water, as a result of these changes to the site. This HRA has been developed in line with relevant EA guidance¹.

It should be considered that no new significant emissions are to be introduced as part of these proposed changes, and so impact on nearby habitats, compared to current operation, will not change. It is proposed that the plant will continue to operate within the current emission limit values for both air and water, therefore the potential for environmental impact has already been assessed through previous submissions which has been reviewed and accepted by the Environment Agency.

1.2 Site Details

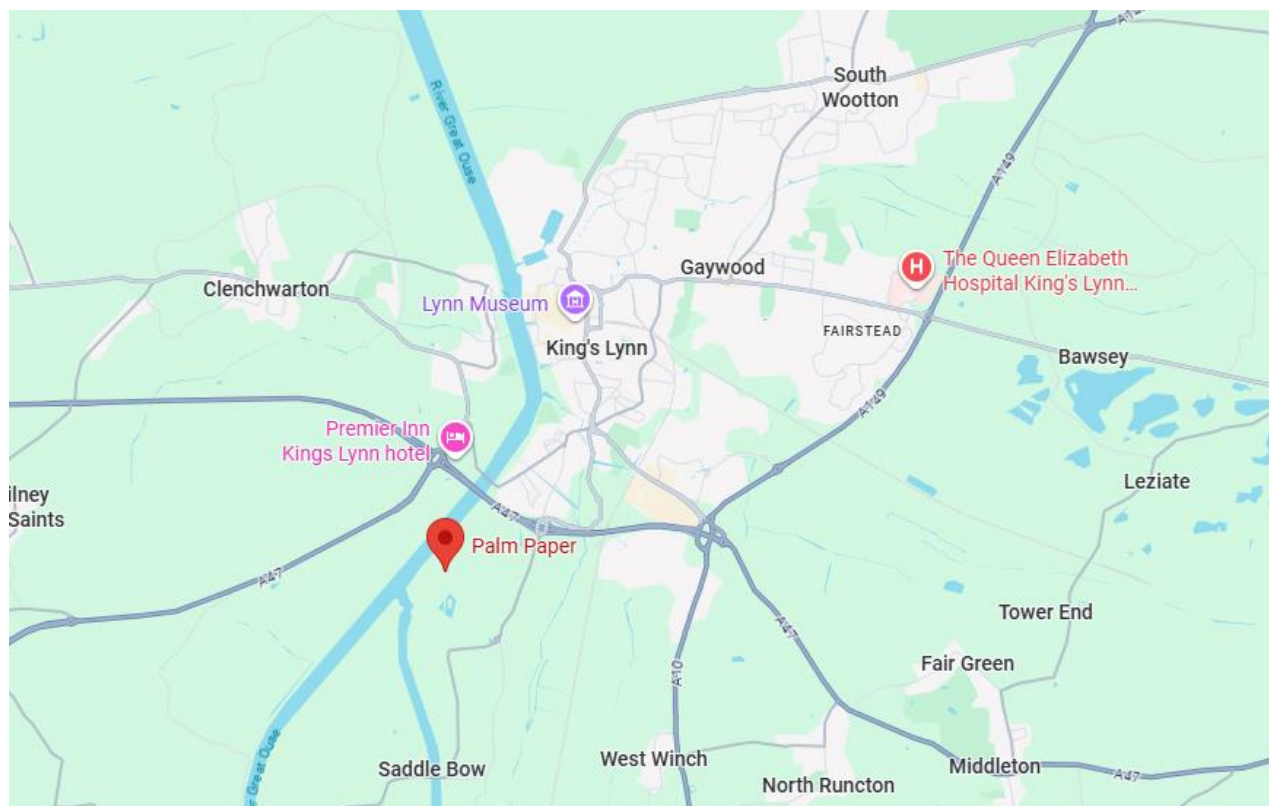
As stated in the main Supporting Report, the site address is as follows:

*Saddlebow Paper Mill,
Saddlebow Industrial Estate,
Poplar Avenue,
Kings Lynn,
Norfolk,
PE34 3AL.*

A figure depicting the site location can be found in the main supporting report (Figure 2-1), however, this has been included below in Figure 1, too, for completeness.

¹ [Habitats regulations assessments: protecting a European site - GOV.UK](https://www.gov.uk/guidance/habitats-regulations-assessments-protecting-a-european-site)

Figure 1 - Site Location



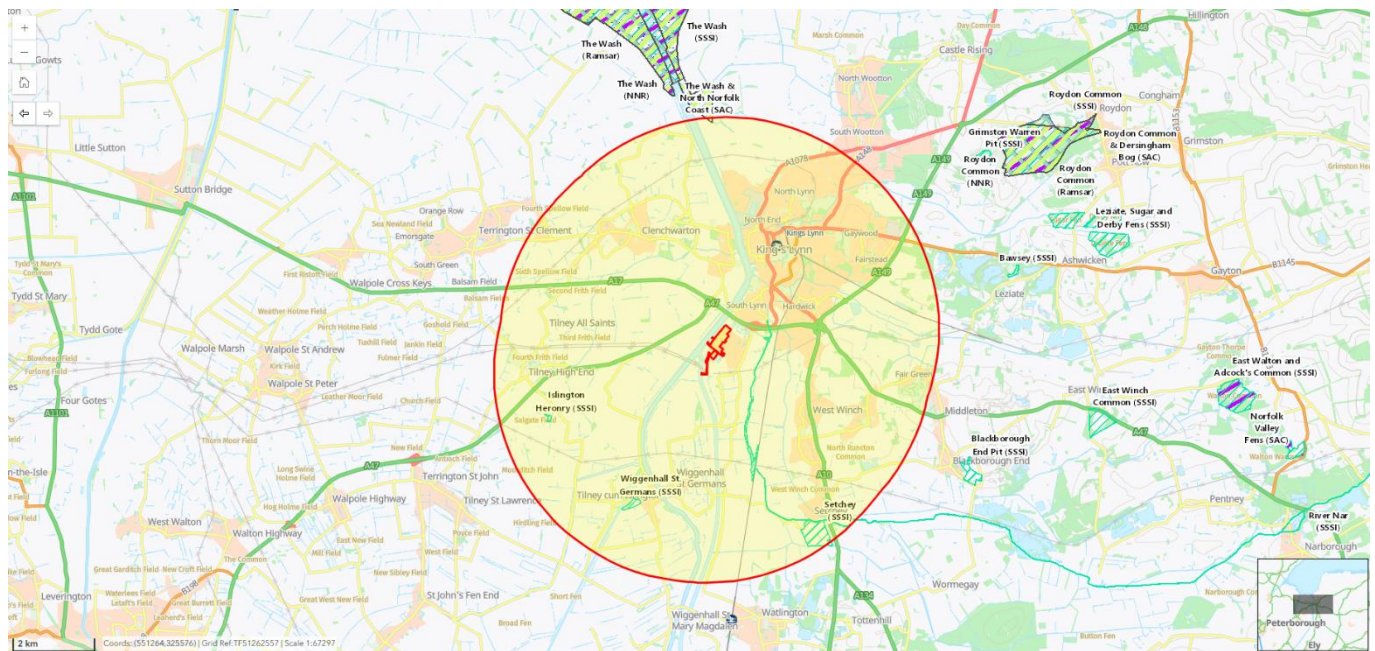
2. Nearby Habitats

2.1 Features Identified

A search was performed using the MAGIC Map² to identify the ecological aspects of interest within a 5 km buffer of the site boundary, which was included in the application for variation, Supporting Report.

The features identified included four Sites of Special Scientific Interest (SSSI) and one National Nature Reserve (NNR). There were no Ramsar Sites, Special Protection Areas (SPAs), Special Areas of conservation (SACs) or ancient woodland areas identified during the search. Figure 2 below provides a screenshot of the search performed, highlighting the designated sites identified within 5 km of the site boundary.

Figure 2 – Ecologically Designated Sites within 5 km of the Site Boundary



Each of the identified sites within the vicinity were investigated using Natural England's Designated Sites View site³, to obtain information and understanding of the features of each ecologically designated area and associated pressures that exists for each. These details are provided in **Table 1** below.

² [Magic Map Application](#)

³ [Site Search](#)

Table 1 - Details of SSSIs and NNR identified within the 5 km buffer

Site	Distance and Direction from Palm Paper Site	Details
Islington Heronry SSSI	3.75 km SW	This SSSI is a small, isolated stand of mature oaks, surrounded by fenland. The largest colony of Grey Herons <i>Ardea cinerea</i> in Norfolk is supported by this site, with approximately 80 nests occupied each year. The adjacent dykes provide ideal feeding conditions for the birds. A variety of woodland bird species are also present in the wood. There are no pressures identified for this site.
Setchey SSSI	4.26 km SE	This site is a key area for studies into Flandrian sea-level change. The typical Fenland sequence of stratigraphy of the area consists of a lower peat layer on a weathered till, a marine / brackish clay, a second peat layer, and a surface marine / estuarine clastic bed. These features are a key factor of the overall network of Fenland sites, allowing correlation across the area from west to east. There are no pressures identified for this site.
Wiggenhall St. Germans SSSI	3.36 SW	Sea-level studies are investigated using pollen and foraminifera analyses at this site. Deposits at this site consist of fine-grained clastic sediments intercalated by three peat layers and with a thin basal peat. There are no pressures identified for this site.
River Nar SSSI	0.826 km W	The River Nar, combining features of a southern chalk stream and an East Anglian fen river, originates as a spring-fed stream west of Mileham in Norfolk and flows to join the River Great Ouse at Kings Lynn. There are a variety of natural physical features encompassed within the upper river, including riffles, pools, gravel beds and meanders, with the lower reaches consisting of steep sided sections with water flowing slowly via a primarily arable flood plain. Rich and diverse flora exist within this habitat. It is well-known that brown trout are supported by the Nar, with numbers increasing steadily, along with stable populations of pike, roach and eel. There are a further 11 species recorded to exist in the Nar, contributing only a small amount. The chalk acts as a natural aquifer, maintaining flow throughout the year, peaking in spring with frequent flooding of adjacent land, resulting in the generation of a range of adjacent semi-natural inundation communities and wetland habitats. In the upper reaches of the river extensive areas of traditionally managed unimproved pasture survive. A combination of summer cattle grazing and hay making have encouraged the establishment of a variety of wetland species, including southern marsh orchid. Area adjacent to the river that is seasonally flooded that has not been reclaimed as

Site	Distance and Direction from Palm Paper Site	Details
		pasture allows for areas of rough fen and unmanaged scrub to remain. This therefore creates a river corridor of considerable importance to wildlife. Although the river channel can be regarded as nationally important in its own right, the quality and type of adjacent habitats increase its value for fauna which use both the river and floodplain. Breeding birds include snipe, lapwing, redshank, sedge and grasshopper warblers. The variations in river profile including slope, width and depth are important factors in the provision of nesting sites for kingfishers and sand martins, and the combination of water meadow, fen, scrub and woodland in the upper Nar provides feeding and resting grounds for a number of other birds including grey wagtail, reed warblers, teal, marsh harriers, willow and marsh tits. Entomological studies are incomplete but 12 different species of dragonfly were recorded in 1991 at several locations along the Nar; this represents an outstanding assemblage for the UK. 11 pressures have been identified covering the following areas: ■ Freshwater impacts; ■ Invasive non-native species; ■ Land management; and ■ Pollution.
The Wash NNR	4.87 km N	The designated features of this site include: ■ Breeding bird assemblage; ■ Coastal saltmarsh; ■ Common seal; ■ Demonstration; ■ Economic use; ■ Estate assets; ■ Invertebrate assemblage; ■ Landscape; ■ Plant assemblage; ■ Public access; ■ Sand / mudflats; and ■ Wintering passage birds. There are no pressures listed.

3. Evaluation of Potential Impacts

3.1 Background

The application submission included a qualitative Environmental Risk Assessment (ERA) that considered the potential risks to the surrounding environment and its features, alongside risk management measures that will be implemented as part of the project to prevent harm to identified ecological receptors.

Below, the consideration of the emissions arising from the site is undertaken in relation to the ecological receptors identified within 5 km of the site boundary, along with risk management measures that will be implemented to prevent any harmful impacts to nearby habitats. This assessment considers point source emissions and activities associated specifically with the changes proposed in this permit variation application.

3.2 Emissions to Air

As part of the changes to be introduced within this permit variation, there are 12 new point source emissions to air, which includes eight overpressure release valves (not associated with emissions under normal operating conditions). Table 2 provides details of new emission points:

Table 2 - New Point Source Emissions to Air

Emission Number	Unit	Relevant Emissions	Emission Point Permit Reference
E1	Anaerobic Reactor 1	None under normal conditions	A10
E2	Anaerobic Reactor 2	None under normal conditions	A11
E3	Anaerobic Reactor 3	None under normal conditions	A12
E4	Anaerobic Reactor 4	None under normal conditions	A13
E5	Desulphurisation 1 (emitted via aeration lane in aerobic treatment stage)	Low H ₂ S and trace Mercaptan, Dimethylsulfide and Dimethyl disulfide	A14
E6	Desulphurisation 2 (emitted via aeration lane in aerobic treatment stage)	Low H ₂ S and trace Mercaptan, Dimethylsulfide and Dimethyl disulfide	A15
E7	Biogas Storage Overpressure Protection	None under normal conditions	A16

Emission Number	Unit	Relevant Emissions	Emission Point Permit Reference
E8	Flare	NO _x - 350mg/Nm ³ SO _x - 20mg/Nm ³	A7
E9	Lean Gas Exhaust Outlet	CO ₂ – 1954.49 g/Nm ³ CH ₄ – 9.29 g/Nm ³ SO _x – 0.00527 g/Nm ³	A8
E10	BGTS Blow Out Valve	None under normal conditions	A17
E11	Overpressure Protection BGTS	None under normal conditions	A18
E12	Compressor Blow Out Valve	None under normal conditions	A19

It should be considered that, despite 12 new point source emissions to air being proposed through the application for a permit variation, there are no significant changes to the nature of emissions from the site and no changes to the emission limit values in the existing permit are anticipated to be required; therefore, it can be justified that there are no significant changes to impacts on nearby ecologically designated sites.

Further to this, the majority of ecologically designated habitat receptors identified in Table 1 are a significant distance from the site and the location of point source emissions –therefore, the receptors are not expected to be significantly impacted by emissions arising from the site, as a result of the changes introduced through this permit variation application. This is explored and detailed further in Table 3 below.

Table 3 - Assessment of Impacts of Emissions to Air arising from Changes Introduced in this Permit Variation Application

Hazard	Receptor	Pathway	Probability of Exposure	Consequence	Risk Management	Overall Risk
Emissions to Air from eight overpressure release valves (E1 (A10) – E4 (A13), E7 (A16), E10 (A17), E11 (A18) and E12 (A19))	River Nar SSSI (825.57 m west of the site)	Air / wind transportation and then inhalation	Low	Low – this hazard is not likely to harm habitats and species	There will be no emissions to air under normal operation from these sources. Receptors are not in close proximity to the site and are not expected to be within a close enough distance that they would be impacted by operation. Release from these point source emissions to air will be during abnormal operating conditions	Very Low

Hazard	Receptor	Pathway	Probability of Exposure	Consequence	Risk Management	Overall Risk
					only and so will rarely occur. This means that probability of exposure is very low.	
Emissions to Air from desulphurisation process (E5 (A14) and E6 (A15))	River Nar SSSI (825.57 m west of the site)	Air / wind transportation and then inhalation	Low	Low – this hazard is not likely to harm habitats and species	Biogas will be treated using a heated activated carbon filter (removing odorous compounds) and will then also be directed to the aerobic treatment basin. The exhaust from biological desulphurisation is a low-strength odorous air stream and will contain traces of residual sulphur compounds. This will be routed to aerobic treatment tanks where it is diffused and biologically oxidised. This reduces environmental impacts to air and receptors. Receptors are not in close proximity to the site and are not expected to be within a close enough distance that they would be impacted by operation. Only very low concentrations of sulphur compounds are to be released to atmosphere as a result of the desulphurisation process. ..	Low
Emissions to Air from the enclosed flare (E8 (A7))	River Nar SSSI (825.57 m west of the site)	Air / wind transportation and then inhalation	Low	Low – this hazard is not likely to harm habitats and species	An air quality assessment, undertaken by Fichtner to determine the air quality impact of the flare, concluded that, given the emergency nature of the flare operation, alongside the buoyancy of the plume and distance to receptors, it is unlikely that the operation of the flare would have	Very Low

Hazard	Receptor	Pathway	Probability of Exposure	Consequence	Risk Management	Overall Risk
					significant impact on local air quality. Receptors are not in close proximity to the site and are not expected to be within a close enough distance that they would be impacted by operation. The flare will be utilised in emergency scenarios only, meaning the probability of exposure is very low. Effective dispersion from the flare will be achieved via the velocity and temperature of release (~ 800 °C).	
Emissions to air from the Lean Gas Exhaust Outlet (E9 (A8))	River Nar SSSI (825.57 m west of the site)	Air / wind transportation and then inhalation	Low	Low – this hazard is not likely to harm habitats and species	Emission from this point will be from a high exhaust outlet (6 m), which will support effective dispersion. Receptors are not in close proximity to the emission point and are not expected to be within a close enough distance that they would be impacted by operation.	Low

3.3 Emissions to Water

There will be no new point source emissions to water introduced as a result of this permit variation application and therefore no additional impact on nearby receptors, including ecologically designated sites.

The new anaerobic digestion process being introduced through this permit variation application is an additional stage of treatment for the existing effluent and will be directed back to the original effluent pathway and process to continue its current aerobic digestion process as per previous operations.



There may be a slight increase in volume of treated effluent to be discharged via existing emission point W1, however this will only amount to a few litres per day and will not have a significant effect on surrounding receptors. All existing ELVs will be complied with.

Table 4 - Assessment of Impacts of Emissions to Water arising from Changes Introduced in this Permit Variation Application

Hazard	Receptor	Pathway	Probability of Exposure	Consequence	Risk Management	Overall Risk
Emissions to Water There are no additional emissions to water arising from the changed introduced in this permit variation application.	River Nar SSSI (825.57 m west of the site)	N/A	Low – no additional point source emissions to water will be introduced.	Low – this hazard is not likely to harm habitats and species	There are no new process emissions to water from the site as a result of this permit variation.	Very Low

3.4 Conclusion

It can be concluded that the risks to local habitats and species are not significant in relation to the activities that are proposed for the changes to be introduced on site. Suitable abatement will be incorporated into the point source emissions to air that are not associated with abnormal operating conditions and overpressure releases. There are no additional effluent emissions anticipated to arise from the process.

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