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1 Introduction

1.1 Site Location & Layout

Bakkavor Spalding is located at TF 2541 2393, off West Marsh Road. This is shown on document reference: BSPB205a Site Location Plan.

The site is bound to the north by road haulage companies Fowler Welch and Christian Salvesen plc, beyond which lies Tendafrost Frozen Foods Ltd. Immediately to the east of the site is West Marsh Road, beyond which lies the River Welland. To the east of the River Welland are residential properties and a few commercial units, including a garage/tyre business. Residential properties lie along the southern boundary of the site and to the southwest is a children's play area beyond which is a cemetery. The Cemetery Drain runs immediately adjacent to part of the western boundary, beyond which is a building belonging to Fowler Welch in the central western area. To the northwest on the other side of Cemetery Drain is an embankment, beyond which is Vernatt's Drain and an area of open land.

The site setting in relation to potentially sensitive receptors is shown on document reference: BSPB205d Site Setting.

The site itself covers an area of approximately 20 hectares; the built area is approximately one quarter of this. The site layout is can be found in document reference: BSPB205i Site Layout Plan.

2 Environmental Setting

2.1 Data Sources

The following sources of data have been used to generate this SCR:

- Landmark Envirocheck dated 7 June 2019. This includes:
 - Datasheets
 - Historical Ordnance Survey Plans
 - Sensitivity Maps
 - Groundwater Maps
- Site reconnaissance – series of site visits during March, April and May 2021
- Magic.gov.uk for details on habitats sites
- EA basic pre-application advice
- Google earth imaging

A copy of the Landmark report, and maps are references as follows:

- BSPB206a EP_EC_A_Datasheet
- BSPB206b EP_EC_A_HistSlice10000
- BSPB206c EP_EC_A_SiteSenSeg2500
- BBSPB206e EP_EC_A_SiteSenSlice10000_Soil_GeochemistrySPB206d EP_EC_A_SiteSenSlice10000
- BSPB206f EP_EC_A6_HistSeg2500
- BSPB206g EP_EC_A7_HistSeg2500
- BSPB206h EP_EC_A10_HistSeg2500
- BSPB206i EP_EC_A11_HistSeg2500

2.2 Geology

The Landmark report cites the BGS 1:625,000 Solid Geology map and defines the geology below the site as being Kellaways Formation and Oxford Clay Formation. Both bedrock and superficial aquifers are designated as unproductive strata.

There is 1 historical recorded mineral site within 1000 m of the site as follows:

- Spalding Brick Works - Spalding 830 m to the west. This was an opencast mine used to obtain common clay and shale.

The potential attributed to the site for collapsible ground stability hazard is insignificant ('no hazard'), and the potential for compressible ground stability hazards is moderate. The site is in a lower probability radon area; no radon protective measures are required when constructing buildings in the area.

2.3 Hydrogeology

Both bedrock and superficial aquifers are designated as unproductive strata.

The site is not in a Groundwater Source Protection Zone (SPZ) 1, 2 or 3.

According to the Landmark report, the site has limited potential for groundwater flooding, however the surrounding area is designated as having the potential for groundwater flooding to occur at the surface.

There are no groundwater abstractions recorded within 1 km of the site.

2.4 Surface Waters

The River Welland runs parallel to the perimeter of the site, at approximately 10 m southeast of the site. It is described as having low flow rate, and designated as River Quality B (good) in year 2000. Subsequent monitoring of the River Welland (annually up to 2009) shows it varying between Grade A Very Good and Grade B Good. The latest result (2009) has it classified as Grade B.

The Cemetery Drain which runs immediately adjacent to part of the western boundary is identified as being Local Nature Wildlife Site (LWS).

According to the surface water flooding map (refer to document reference:BSPB206j Flood Map) the site lies within a flood zone 3, which represents potential flooding from rivers without defences, in this case the site is influenced by the fluvial flood plan of the River Welland. Bakkavor Spalding have not experienced any significant flooding on the site since they took it over in 2005.

Table 1 details the active surface water abstractions that are recorded within 1 km of the site.

Table 1: Surface Water Abstractions

Operator	Location	Permit Start Date	Water use	Distance & Direction
Spalding Energy Co Ltd	Vernatts Drain	02.02.2002	Production of energy: Non-evaporative cooling	81 m N
British Sugar Plc	Vernatts Drain	01.01.1996	Food and drink: Non-evaporative cooling	638 m NE

2.5 Sensitive Receptors

There are no Ramsar, Special Protection Areas (SPAs), Special Areas of Conservation (SACs) or Special Sites of Scientific Interest (SSSIs) within the relevant search area (2 km). No Habitats Risk Assessment is therefore required.

The River Welland, at approximately 10 m to the southeast of the site, is designated as a nitrate vulnerable zone (NVZ) however the applicant site itself is not a designated NVZ. It is also designated as a Local Wildlife Site (LWS) by the Lincolnshire Environmental Records Centre (LERC).

Vernatts Drain is also described as a local nature reserve (LNR) and lies 42 m to the west of the site. It is a large area of approx. 1.6 hectares and is designated as an NVZ.

The following other nature conservation sites cited as being within 2 km of the site:

- Vernatts – a 1.68 hectare Local Nature Reserve (LNR) designated by Natural England and owned/managed by South Holland District Council. This comprises a wildflower meadow which attracts insects and a wetland habitat area which includes reedbeds, marsh and a large pond. It provides a home for the water vole, reed warbles and insect life;
- Land north of Spalding Stations – an LWS designated by LERC;
- Coronation channel - an LWS designated by LERC which flows north from Crowland, through Spalding and out to the Wash. It serves to divert excess waters around Spalding as a flood prevention measure;
- Spalding Cemetery - an LWS designated by LERC;
- Vernatt's Nature Reserve – also an LWS designated by LERC (see above);
- Blue Gowt Drain on West Marsh Road – an LWS designated by LERC;
- Pinchbeck Marsh – an LWS designated by LERC; and
- Disused March Line located at Spalding Arnold's Meadow – an LWS designated by LERC. This is a 2.6 hectare area comprises a hay meadow, a lake, several ponds and a bird hide. The meadow is partly flooded in the winter and records show 171 species of plants, 73 species of birds and 17 species of butterfly present. It is managed by the Lincolnshire Wildlife Trust.

The River Lamprey (within 500 m of the site) is used by protected species of European eel as a migratory route.

Also refer to documents:

- BSPB206a EP_EC_A_Datasheet
- BSPB211 Habitat Screening Tool.

3 Current Site Conditions

3.1 General

The existing site is in a general good state of repair. The open yard areas and access routes are constructed of bonded concrete hardstanding and are subject to planned maintenance for ongoing suitability. Where areas become damaged, these are identified via routine inspection and scheduled for repair on a risk and prioritisation basis.

At the time of the submission of the EP application, there are no signs of staining or significant damage to any parts of the impermeable hardstanding.

3.2 Groundwater Quality

Source protection zones (SPZs) are defined by the Environment Agency for groundwater sources used for public drinking water supply. There are 4 categories of SPZ: Zone I is known as an Inner Protection Zone, Zone II is an Outer Protection Zone, Zone III applies where the supply covers the total catchment of the borehole, and Zone IV is a Zone of Special Interest.

The site is not within any designated SPZ.

3.3 Vegetation

Whilst the northern boundary of the site is bounded by industrial/commercial premises, the other boundaries are well vegetated. Beyond Marsh Road to the east lies the River Welland, the banks of which are grass. To the southern boundary, the gardens of the residential properties screen the site from view. To the western boundary, the site has a boundary which comprises a mix of well established trees and bushes, and open grassland. The vegetation is healthy and supports wildlife; there is no evidence of any impact from the site activities on local vegetation.

3.4 Potentially contaminating activities

Potentially contaminating activities are limited to the storage of chemicals and oils. Tanks and other infrastructure are subject to a programme of inspection and maintenance. Site audits are used to identify any areas of damage, and actions taken to remediate any issues.

Chemicals and oils are either double bunded or stored in a bund which is 110% of the total capacity of the largest container. There is also a chemicals and oils inventory which records all of the liquids and their quantities stored on site (refer to document reference: BSPB207c Inventory of Chemicals Stored at Bakkavor Spalding). A site map also identifies the location of where the chemicals and oils are stored on site (refer to document reference (BSPB205h Storage of Chemicals and Oils Location Map).

3.5 Discharge Consents

There is a discharge consent in place with Anglian Water (refer to document reference: BSPB204 AW Discharge Consent), which applies to the release of 'used water, having passed through a pre-treatment plant, derived from the following:- i) clean in place and general cleaning from the manufacture of soup, sauces, salad, dips and dressings, ii) cleaning and rinsing of laboratory equipment and utensils, iii) cleaning and rinsing of R&D kitchen equipment and utensils, iv) boiler blowdown, v) softener backwash'.

The discharge is continuously monitored by Bakkavor, and by Anglian Water at point S1 shown on document reference: BSPB205g Site Drainage Plan – Effluent.

3.6 Surrounding Land Uses

Details of activities within 1 km of the site are provided below.

3.6.1 EA Permitted Activities

A number of sites within 1 km are currently operated under an Environment Agency regulated IPPC permit. These are:

- Neerock Ltd – Woodhead Brothers (Spalding), EPR/PP3436YR dated 4 September 2017. The facility is located 379 m north of the applicant site and is permitted to process animal and raw vegetable matter (including rendering), and to treat non-hazardous waste by physico-chemical treatment for disposal or recovery purposes.
- Tulip Ltd – Fulney Lane Meat Processing Unit, EPR/UP3933EK dated 6 September 2013. The facility is located 784 m east of the application site and is permitted to slaughter animals, and process non-hazardous waste by physico-chemical treatment for disposal or recovery purposes.
- Spalding Energy Expansion Ltd – EPR/KP3436YN dated 18 July 2018. The facility is located 861 m northeast of the applicant site and is permitted to operate a combustion plant over 50 MWt input.
- Greencore Food to Go Limited – EPR/SP3936AK dated 12 April 2018. The facility is located 875 m north of the application site and is permitted to treat and process animal or vegetable raw materials and to treat non-hazardous waste by physico-chemical treatment for disposal or recovery purposes.

- Spalding Energy Co Ltd – EPR/RP3538AL dated 1 January 2016. The facility is located 996 m northeast of the applicant site and is permitted to operate a combustion plant over 50 MWt input.

3.6.2 LA PPC Activities

A number of LA PPC (Local Authority regulated) facilities are reported in the Landmark Envirocheck report; those that are currently active within 1 km of the site are presented in Table 2.

Table 2: LAPPC Facilities within 1 km

Operator	Permit No.	Permit issue date	Activity	Distance & Direction
A S Whitaker & Sons	Not supplied	Not supplied	Respraying of road vehicles	121 m N
A S Whitaker & Sons	Not supplied	Not supplied	Part B general coating process	309 m NW
Morrison Supermarkets Plc	Not supplied	Not supplied	Petrol filling station	749 m N
Lincs Co-Op Society	Not supplied	Not supplied	Petrol filling station	884 m E
U Haul	Not supplied	Not supplied	Waste oil burners, <0.4 MWt input	891 m N

3.6.3 Landfill Activities

There are no active landfill sites listed within 1 km of the site. There are a number of historical landfill sites in the area, and these are detailed in Section 4.3.

3.6.4 Discharge Consents

A number of discharge consents are reported in the Landmark Envirocheck report; many are revoked or superseded consents that have been modified. The current consents within 1 km of the site are presented in Table 3.

Table 3: Discharge Consents within 1 km

Operator	Location	Consent Issue Date	Discharge Type	Receiving Water	Distance & Direction
Salvesen Logistics Limited	West Marsh Road, Spalding	14.11.1985	Surface water	Fen Drain	60 m NE
Malet Azoulay (UK) Limited	Fowler Welch No.2 warehouse West Marsh Road	31.05.2002	Final/treated effluent	Tributary of Cemetary Drain	110 m W
Ms Yvonne Wells	Domestic property on Holbeach Road	24.06.2003	Final/treated effluent	Tributary of The River Welland	375 m E
Spalding Energy Co Ltd	West Marsh Road	21.09.1989	Surface water	River Welland	565 m NE
Anglian Water Services Limited	Albion Street, Spalding	09.06.1977	Sewage – pumping station	River Welland	608 m S
Lloyd Loom of Spalding Ltd	Wardentree Lane Pinchbeck	17.11.1995	Final/treated effluent	Unnamed watercourse	965 m N

3.6.5 Trade Directory Entries

The Landmark report lists all Trade Directory Entries. Those that are active, within 500 m of the site, and carry out potentially contaminative activities, are presented in Table 4.

Table 4: Trade Activities within 500 m

Name	Activity	Distance & Direction
Fowler Welch	Road haulage services	32 m NE
Westons Farm Supplies Spalding Limited	Agricultural merchants	54 m SE
Westons Garden Machinery	Lawnmowers & garden machinery – sales and servicing	54 m SE
Central Tyre Ltd	Tyre dealers	89 m SE
The Whitaker Group	Car body repairs	121 m N
S A Moore Transport Ltd	Road haulage services	230 m NW
K N Bunn Europe Ltd	Road haulage services	231 m NW
Commercial Road Garage	Garage services	254 m S
CPT Distribution Ltd	Road haulage services	349 m NW
Woodhead Brothers	Meat product manufacturers and wholesalers	357 m N
Elsoms	Agricultural merchants	370 m W
Johnson Community Hospital	Hospital	415 m NW
K & G Auto Gas	Garage services	488 m N
J & M Auto Services	MOT testing centre	437 m S
Edison Auto Centre	MOT testing centre	439 m NW
SJM Auto Services	MOT testing centre	497 m N
Cars-Chris'S Auto Repairs Services Ltd	Garage services	492 m NW
Commercial Cladding Services Ltd	Cladding suppliers and installers	496 m NW

3.6.6 Hazardous Substances

The Landmark Envirocheck Report identified the following within 1 km of the site:

- 0 active COMAH (Control of Major Accident Hazards) sites; and
- 1 active planning hazardous substance consent:
 - Operated by Pp & H Ltd and is located on Wardentree Lane, Pinchbeck, 911 m to the north. The consent allows the storage of up to 50 tonnes of liquified extremely flammable gas (including LPG) and natural gas (liquified or not)

No active explosive sites were identified, nor any active notifications of installations handling hazardous substances (NIHHS), nor active planning hazardous substance enforcements.

4 Historical Land Uses

4.1 On Site Activities

The site has been used as farming, gardens and allotments from 1887 to 1971. From 1972 the site has operated a food factory which has varied in type and capacity over the years.

4.2 Off Site Activities

Historically there have been 11 11 recorded landfill sites within 1 km of Bakkavor Spalding's Site.

4.3 Pollution Incidents

A number of pollution incidents are reported and all relate to pollution to controlled waters. Document reference: BSPB206a EP_EC_A_Datasheet pages 13 – 19 list all pollution incidents within

1km. The most recent recorded (unsubstantiated) pollution incident within 1 km of the site (including the site) was over 20 years ago, in December 1998.

Those pollution incidents that have been substantiated within 1 km of the site are presented in Table 5.

Table 5: Substantiated Pollution Incidents

Pollutant	Incident Date & Category	Distance & Direction
Oils – unknown; and General biodegradable – blood and offal	28 June 2002 Category 2 Significant impact to water No impact to air or land	11 m W
Ammonia / amine odour	19 August 2002 Category 2 Significant impact to air No impact to water or land	139 m NE
Atmospherics pollutant or effect – other	29 January 2009 Category 2 Significant impact to air No impact to water or land	450 m N
Atmospherics pollutant or effect – other	12 January 2009 Category 2 Significant impact to air No impact to water or land	467 m N
General biodegradable materials and wastes – vegetable cuttings and deposits	28 April 2003 Category 2 Significant impact to water No impact to air or land	595 m NW
Agricultural materials and wastes – other	17 April 2002 Category 2 Significant impact to water Category 3 Minor impact to both air and land	607 m NW
Contaminated water; Waste material – other	9 January 2009 Category 2 Significant impact to water No impact to air or land	750 m NW

4.4 Baseline Data

For the purposes of the original PPC Permit application in 2005, a First Phase 1A site Baseline site investigation was carried out by Golder Associates in 2005 (refer to document reference: BSPB207a Golders First Phase Baseline Reporting). Section 7 of that report included a scope for an intrusive investigation to characterise substances that posed a reasonable likelihood of pollution. The investigation identified no areas of concern and was approved by the EA as part of the original application.

Swan Environmental Services Limited (SES) undertook a Generic Quantitative Baseline Site Assessment and Investigation in April 2021 (refer to document: BSPB207b Bakkavor Spalding Baseline Site Assessment_11.05.21_v1.0). The overall aim of the Environmental Assessment process was to carry out a ground investigation in order to provide baseline ground conditions for the environmental permit application that is being made. This baseline report was also used to compare the results from the Golder findings in 2005. 30No. soil samples were taken from selected borehole locations and depths in order to test for chemical contaminants to determine any risks to human health, targeting adjacent processes where possible. There was no visual or olfactory evidence of contamination observed during the excavation of the exploratory holes. A slight odour was noted in WS105 within shallow soils adjacent to an Above Ground Storage Tanks, however no exceedances were noted upon analysis. A direct screen of the chemical concentrations was been completed

against generic assessment criteria (GAC), derived from conservative assumptions. Specifically, the soil laboratory testing results and compared against the C4SL (2014) for lead and LQM/CIEH S4UL (2015) based on a commercial land use.

No determinants were found to be in excess of the applied screening criteria within any of the boreholes.

Subsequent water monitoring and associated analysis, taken from WS:101, 111, 115, 120, 122 and 123 identified slight exceedances with Cadmium, copper, sulphate and zinc which is considered relative risk owing to the site's industrial use and associated processes and those compared to off-site activities and the nature of the wider industrial estate. Recommended have been made to carry out further groundwater monitoring in 6 months time, to allow time for the water levels in the trial pits to settle.

5 Conclusion

The results from the historic records and the Golders and SES baseline reports have shown that there are no areas of concern in relation to the site and surrounding areas. Hot spots and contamination were not found to be present in the soil and water results taken from both intrusive investigations.