**C 3.6e Waste Avoidance**

The Cranswick Sutton Fields site uses the following general techniques to minimise its waste production to ensure that its practices are aligned with the relevant parts of the European BAT reference document for the Food, Drink and Milk Industries (and the recently withdrawn technical guidance note EPR 6.10, The Food and Drink Sector, issued by the Environment Agency:

* Always considering the hierarchy re-use>recycling>recovery>disposal when considering and reviewing disposal options for all of its process wastes.
* Always considering the best overall environmental option when considering and reviewing disposal options for all of its process wastes.

The main wastes currently generated from the processes undertaken at the site include:

* Packaging and similar type waste made up from the following categories:
* Various grades of plastic
* Various grades of cardboard
* Various grades of paper (office and process derived)
* Wooden pallets
* Foil and film
* Scrap metal
* Other scrap wood
* Mixed general waste (skips and compactors)
* Category 3 Animal By-product (ABP) waste.
* Very small quantities of hazardous waste such as waste oils and empty containers having previously contained cleaning and other hygiene chemicals. fluorescent light tubes, batteries, WEEE etc.
* Process derived waste water from food processing and processing plant etc cleaning which is disposed of to foul sewer.
* External surface water and roof water run off which is disposed of to foul sewer.

The site operates a zero waste to landfill policy. Wherever possible wastes are returned into the supply chain from which they came (eg. plastics, cardboard and paper packaging, wooden pallets etc). Where this is not possible wastes are sent for recovery (eg. mixed paper, card etc), or beneficial use such as RDF production followed by energy recovery in an energy from waste incineration plant (eg. general mixed waste in skips / compactors), or anaerobic digestion plant (eg. high organic content waste water), land-spreading, composting, etc.

Packaging use is minimised as far as possible but there is limited scope due to the need to meet distributor / end user requirements and food hygiene requirements. Improved waste segregation at source on site and the installation on site of compacting and baling equipment assists in improving packaging waste recycling rates.

All category 3 ABP waste is currently sent to rendering facilities. Processed category 3 waste is generally used in pet food manufacture and oil extracted is used in synthetic diesel oil manufacture.

The waste types generated as described above will not change as a result of the proposed development except for the production of waste vegetable oil at a rate of around 3000 te/year.

The table below shows the typical quantities (based on 2019 and 2020 data) of hazardous, non-hazardous and animal by-product (ABP) waste generated from the current processes at the Sutton Fields site, and sent for disposal or recovery, along with the total quantity of waste generated and the quantity of waste generated per tonne of product.

|  |  |
| --- | --- |
| **Waste Category** | **Typical Quantity (te)** |
| **Hazardous waste to disposal** | 1.0 |
| **Hazardous waste to recovery** | 1.0 |
| **Non-hazardous waste to disposal**  | 0 |
| **Non-hazardous waste to recovery** | 1165 |
| **ABP waste to disposal**  | 0 |
| **ABP waste to recovery**  | 445 |
| **Total waste (excluding ABP waste)** | 1167 |
| **Total waste (including ABP waste)** | 1612 |
| **Percentage of waste generated sent to recovery (excluding ABP waste)** | > 99% |
| **Percentage of waste generated sent to recovery (including ABP waste)** | > 99% |
| **Total waste generated per tonne of product (excluding ABP waste)– te/te** | 0.036 |
| **Total waste generated per tonne of product (including ABP waste)– te/te** | 0.050 |

Whilst the waste types generated at the site will not change (with the exception of waste cooking oil) once the proposed development is completed, the quantities of waste generated will increase by a factor of up to 2.8 as a result of the increased site throughput. The table below shows the projected maximum annual quantities of the same waste categories which will be generated at the site once the new facility is fully commissioned, and the site as a whole is operating at the design capacity of 260 tonnes per day equivalent to 91,000 tonnes per year. The significant increase in the quantity of non-hazardous waste sent to recovery is attributable to the waste vegetable oil generated by the new process.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Hazardous waste to disposal / te** | **Hazardous waste to recovery / te** | **Non-hazardous waste to disposal / te** | **Non-hazardous waste to recovery / te** | **ABP waste to disposal / te** | **ABP waste to recovery / te** | **Total waste / te excluding ABP waste** | **Total waste / te including ABP waste** |
| 3 | 3 | 0 | 6200 | 0 | 1200 | 6206 | 7406 |
|  |  |  |  |  |  |  |  |
| **Total waste generated per tonne of product (excluding ABP waste) – te/te** | **Percentage of waste generated sent to recovery (excluding ABP waste)** | **Total waste generated per tonne of product (including ABP waste) – te/te** | **Percentage of waste generated sent to recovery (including ABP waste)** |  |  |  |  |
| 0.068 | > 99% | 0.081 | > 99% |  |  |  |  |

In addition to the foregoing, there are three main sources of waste water currently generated at the facility and discharged to foul sewer in accordance with the conditions of three trade effluent discharge consents issued by the sewerage undertaker Yorkshire Water.

* uncontaminated surface and roof water which flows via external drainage systems to consented discharge to foul sewer.
* domestic effluent from site offices and amenities which flows to foul sewer.
* contaminated process derived waste water generated in various parts of the processing plant, primarily from processing plant, equipment and infrastructure cleaning activities, and collected via internal drainage systems which include traps to remove gross solids and finally flowing via an interceptor to consented discharge to foul sewer.

The discharges are reflected in table S3.2 of Schedule 3 to the current environmental permit EPR/KP3733AN which identifies three discharge locations designated S1, S2 and S3 as shown in the permit extract below.



The proposed development will not change the general sources of waste water from those described above and will not change the nature of the process derived effluents generated. However, greater volumes of process derived waste water will be generated once the proposed development becomes operational. The volume of surface and roof water run off generated by the site will not be impacted significantly as the new process will be installed in an existing, albeit modified, building on an area of the site covered by impermeable surfacing, served by existing drainage systems which carry flow to the foul sewerage network. Further details relating to emissions to sewer are provided in Section C3.2, Emissions to Air, Water and Land, of the permit variation application.

All food processing activities are and will continue to be undertaken within the confines of the main processing plant buildings which are served by internal drainage systems directing all process derived waste water via an interceptor directly to foul sewer. There are no links between internal and external drainage systems in order to avoid inadvertent contamination of surface water in general external working areas as a result of spills or leaks in internal operating areas. The primary source of contaminated process derived waste water is from the cleaning of food production equipment and associated infrastructure. The most heavily organic contaminated waste water generated is diverted, as far as possible, away from sewer discharge to anaerobic digestion with energy recovery.

Water efficient processing equipment and techniques, (for example minimising the amount of waste water generated from cleaning by using dry cleaning techniques where possible, low volume / high pressure sprays and plunge taps which only use a pre-set amount of water to fill required receptacles before shutting off) are used as described in Sections C3.1 (Activities to be Varied) and C3.3a / C3.3a1 (Operating Techniques and Technical Standards)

Clean uncontaminated roof and surface water is and will continue in the near future to be collected via external drainage systems and directed to foul sewer. Discharge to surface water is not viable due to the distance to the nearest water course (River Hull) and pipework routing issues, and discharge via “soakaways” is not viable due to the site’s underlying geology. However, this represents a large volume of water, some of which has the potential to be used on site where potable water quality is not required (eg. cleaning external working areas, cleaning plant not directly involved in food production processes, flush water for w.c.’s / urinals etc).

The site is situated in an area which typically sees rainfall at a rate of around 750 mm per year. The total area of the permitted site is around 3.2 hectares. The quantity of surface and roof water currently discharged from site will therefore be around 24000m3 per year. The footprint of all the buildings on site from which clean roof water could be collected will be around 15600 m2 capable of generating around 11700m3 per year usable harvested rainwater. Plans are currently being progressed to install equipment for rainwater harvesting from office building roof areas and use of the collected water within the offices.

The trade effluent (ie. process derived waste water) is not currently sampled and tested before discharge to sewer. However, a sampling point is installed, and the sewerage undertaker regularly takes samples of the discharge for compliance and charging purposes. The Operator has plans in progress to install 24 hour flow proportional sampling equipment and to periodically submit samples of the discharge for analysis by an independent third-party laboratory. Discharge flow rates and volumes are not currently measured but are estimated based on metered potable water usage rates by agreement with the sewerage undertaker. Further details are provided in Section 3.4a, Emissions Monitoring, of the permit variation application.

The currently consented maximum cumulative daily discharge rate and instantaneous maximum flow rate for each of the three trade effluent discharges is shown in the table below.

|  |  |  |
| --- | --- | --- |
| **Discharge Location** | **Maximum Daily Discharge Rate – m3** | **Maximum Instantaneous Flow Rate – ls-1** |
| S1 – West discharge | 10 | 1 |
| S2 – East discharge | 35 | 15 |
| S3 - Aquarius | 1 | n/a |

Applications have been submitted to the sewerage undertaker to increase the daily permitted discharge volume to 200m3 for each of the three discharge locations S1, S2 and S3. All trade effluent generated by the proposed new development will be discharged to sewer via discharge location S3.

The table below shows the total annual quantity of potable water used by the site, the total annual quantity of trade effluent discharged to sewer (excluding approximately 24000 m3 surface and roof water run off) and the total quantities of potable water used and trade effluent discharged to sewer per tonne of product generated at the site over the period 2018 to 2020 inclusive along with equivalent projected figures when the proposed development site is completed and the whole site is operating at full capacity.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Year** | **Potable Water Used – m3** | **Trade Effluent Generated – m3 (excluding surface and roof water run-off)** | **Potable Water Used per Tonne of Product Generated – m3/te** | **Trade Effluent Generated per Tonne of Product Generated – m3/te (excluding surface and roof water run-off)** | **Trade Effluent Generated per Tonne of Product Generated – m3/te (including surface and roof water run-off)** |
| **Current Site Operations** |  |  |  |  |  |
| **2018** | 62000 | 26000 | 2.13 | 0.89 | 1.72 |
| **2019** | 65000 | 27400 | 2.09 | 0.88 | 1.66 |
| **2020** | 71000 | 30100 | 2.22 | 0.94 | 1.69 |
|  |  |  |  |  |  |
| **Extended Site Operations** | **Projected Potable Water Use – m3** | **Projected Trade Effluent Generated – m3****(excluding surface and roof water run-off)** | **Projected Potable Water Used per Tonne of Product Generated – m3/te** | **Projected Trade Effluent Generated per Tonne of Product Generated – m3/te****(excluding surface and roof water run-off)** | **Projected Trade Effluent Generated per Tonne of Product Generated – m3/te****(including surface and roof water run-off)** |
|  | 165000 | 70000 | 1.81 | 0.77 | 1.03 |

The quantities of potable water used, and trade effluent generated per tonne of food product generated have generally decreased in recent years as staff education in the importance of minimising water use and avoiding waste generation, together with physical measures implemented to reduce potable water consumption and minimise waste generation, have taken effect. However, potable water use, and waste water generation rates vary in absolute terms to reflect site production rates.

Current water consumption and waste water generation rates are low and the rates already achieved and projected following completion of the proposed development compare very well with the BREF benchmark value range of 1.5 to 8.0m3 water per tonne of raw materials processed.

Waste and waste water generation rates will continue to be monitored as key performance indicators at the facility to ensure that design targets are met and to provide information that can be used to secure future improvements.