Appendix 4: BAT assessment

BAT No.	Topic	Brief Description	BAT	Compliant?	Derogation needed?	Provide brief comments on how compliance with BAT is (or will be) achieved, or a justification for an alternative response
1	EMS	Improve overall environmental performance	Implement an EMS that incorporates all of the following features: i) commitment, leadership, and accountability of the management, including senior management, for the implementation of an effective EMS;	Yes	No	Leadership and commitment to sustainability and environmental improvement is driven from the top of the organisation. Mondelez international have an established Environmental, Social and Governance (ESG) strategy below which are a series of ESG goals applicable to all parts of the business. Mondelez Sheffield site has an established Environmental Management System (EMS), aligned to the principles of ISO 14001 and participates in initiatives which contribute to the corporate ESG goals. The EMS comprises a series of corporate-level documents supplemented by site specific procedures. The Mondelez Sheffield Environmental Policy includes environmental commitments including a commitment to continuous improvement in environmental performance and compliance with applicable environmental regulatory requirements.
			ii) an analysis that includes the determination of the organisation's context, the identification of the needs and expectations of interested parties, the identification of characteristics of the installation that are associated with possible risks for the environment (or human health) as well as of the applicable legal requirements relating to the environment;	Yes	No	Mondelez has considered the needs and expectations of interested parties in its management systems, including in the environmental aspects identification and evaluation process. A written procedure (Standard for Aspects & Impacts, E1) is in place for the identification, assessment and management of environmental aspects and impacts and a site-specific aspects and impacts register is in place. Requirements for compliance with legal and other obligations applicable to the site, including environmental permit conditions, are established within the EMS. Mondelez Sheffield maintains a subscription to a web portal which provides details of applicable HSE legislation and includes functionality for scheduling and recording compliance reviews. The system provides regular email updates for changes to legislation, which are reviewed and communicated to appropriate management and operational personnel as required using the internal communication channels defined within the EMS.
			iii) development of an environmental policy that includes the continuous improvement of the environmental performance of the installation;	Yes	No	The Mondelez Sheffield Environmental Policy includes environmental commitments including a commitment to continuous improvement in environmental performance and compliance with applicable environmental regulatory requirements.
			iv) establishing objectives and performance indicators in relation to significant environmental aspects, including safeguarding compliance with applicable legal requirements;	Yes	No	In line with corporate ESG goals, objectives and targets are established which seek to improve performance in key areas including: energy use, CO2 emissions, waste arisings and water consumption. At a site level an environmental improvement programme is in place which includes local initiatives that contribute to the corporate goals.
			v) planning and implementing the necessary procedures and actions (including corrective and preventive actions where needed), to achieve the environmental objectives and avoid environmental risks;	Yes	No	A roadmap action tracker is established and managed to record Sheffield site specific actions to achieve the high level goals and objectives. A monthly roadmap meeting is held to review progress in achieving the identified actions. The Enablon system is used to report and record performance data to track progress in achieving these goals.
			vi) determination of structures, roles and responsibilities in relation to environmental aspects and objectives and provision of the financial and human resources needed;	Yes	No	Effective environmental governance is a core element of the Mondelez Global Strategy, underpinned by a commitment to strong leadership and clear communication of accountabilities and responsibilities. The documented Leadership and PDCA standard establishes the key components of the Mondelez HSE system that must be applied by all sites globally, including requirements in relation to leadership at each site. Accountabilities and responsibilities for environmental issues defined in written job descriptions. There are written procedures for control of activities undertaken by contractors.
			vii) ensuring the necessary competence and awareness of staff whose work may affect the environmental performance of the installation (e.g. by providing information and training);	Yes	No	A site-specific induction training pack is maintained which addresses key environmental issues. This induction training is provided to all employees and contractors. Individual and job role training needs are evaluated with training provided to staff as necessary via toolbox talks or more formal classroom training, depending on the requirement. The system of contractor controls in operation ensures that pre-requisites such as evidence of contractor competencies are obtained and reviewed in advance of any work being started and this is supplemented by specific risk assessments and method statements for each individual task, controlled via a permit system.
			viii) internal and external communication;	Yes	No	The approach to internal communication of environmental issues, concerns and initiatives includes communication of key issues during management briefings and on site noticeboards. Electronic screens are in place at a number of locations on site such as canteen / mess areas etc, which display key HSE information, with QR codes provided with links for more detailed information. Period packs are prepared on a monthly basis and are used to brief employees on key issues including KPI performance.
			ix) fostering employee involvement in good environmental management practices;	Yes	No	Staff are encouraged to report any issues of concern as well as suggestions for improvement. Screens on site display key HSE information and encourage positive behaviours and staff participation. A system is in place for mandatory reporting of hazards and near misses.
			x) Establishing and maintaining a management manual and written procedures to control activities with significant environmental impact as well as relevant records;	Yes	No	The HSE management system documentation is maintained on the Mondelez business intranet and document control procedures are in place for all system documents and records. All controlled documentation within the HSE management system is identified by a unique document reference, date and revision number. All documentation is subject to periodic review to ensure its continued relevance; an electronic record of revisions and approvals is held via the document control system. Environmental records are managed on site in accordance with document control procedures.

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			xi) effective operational planning and process control;	Yes	No	The Mondelez HSE Management System comprises a series of documented standards, organised into topic areas. Management standards cover issues such as leadership, legislation, contractor management and management of change. Environmental standards cover issues such as carbon and energy management, air emissions and waste management. Sitting below these corporate standards are documented procedures which are adapted at a local level to be site-specific. These procedures establish the processes required to implement the corporate-level documented standards and to meet site specific requirements. This includes local procedures covering waste management and spillages. Written EMS procedures will be reviewed and, if necessary, updated to incorporate the requirements of the new site environmental permit. Contractor control procedures are also in place as part of the HSE management system.
			xii) implementation of appropriate maintenance programmes;	Yes	No	A planned preventative maintenance system is operated to ensure that equipment and infrastructure is maintained in good condition and that the likelihood of equipment failure, with potential environmental consequences, is minimised. The planned maintenance system, including calibration schedule, is controlled and managed at a site level either via the SAP system (for manufacturing equipment) or an alternative computerised maintenance management system for utilities / facilities items (managed and operated by the site facilities management team). Significant plant performance or maintenance concerns are reviewed on a daily basis during production meetings until the issue is resolved. Any breakdown or failure that could result in a significant environmental effect would be prioritised.
			xiii) emergency preparedness and response protocols, including the prevention and/or mitigation of the adverse (environmental) impacts of emergency situations;	Yes	No	Emergency planning and accident prevention is addressed by procedures in the EMS, including the site Emergency Response procedures which incorporates responsibilities and actions to be taken in the event of a site emergency, The scope of the procedure covers issues such as spills and flooding events. Written procedures ensure that environmental incidents and accidents are minimised and that, if they do occur, action is taken to minimise and mitigate the impacts.
			xiv) when (re)designing a (new) installation or a part thereof, consideration of its environmental impacts throughout its life, which includes construction, maintenance, operation and decommissioning;	Yes	No	Mondelez considers environmental impacts during the design and specification of new processes, plant and equipment. There is a Mondelez standard and site-level procedure in place to address management of change requirements. Site personnel follow a three-stage process, applied in succession, which ensures that environmental considerations are taken into account when planning new or amended activities. This includes: • Authority to modify; • Authority to commission; and • Authority to operate. At each stage there is a requirement to review and challenge the proposed change to ensure that HSE impacts are avoided, minimised, controlled or appropriately managed.
			xv) implementation of a monitoring and measurement programme, if necessary, information can be found in the Reference Report on Monitoring of Emissions to Air and Water from IED Installations;	Yes	No	The Mondelez environmental governance system establishes monitoring and measurement requirements for environmental key performance indicators (KPIs) such as CO2 emissions, energy use, waste, water consumption and environmental incidents relating to the site as a whole. Performance data is reported and tracked locally and is also reported centrally to Mondelez group via the Enablon software system. This monitoring programme will be reviewed following receipt of the site environmental permit, in order to incorporate any new environmental monitoring requirements.
			xvi) application of sectoral benchmarking on a regular basis;	Yes	No	Due to the nature of site production processes, there are no directly applicable sectoral benchmarks available for comparison. However, Mondelez does track and compare its performance over time.
			xvii) periodic independent (as far as practicable) internal auditing and periodic independent external auditing in order to assess the environmental performance and to determine whether or not the EMS conforms to planned arrangements and has been properly implemented and maintained;	Yes	No	A range of internal audit and inspections are undertaken on site. This includes site inspections, known as Gemba walks, which comprise a rotating programme of inspections across different departments and both internal and external areas of the site. Any issues raised during Gemba walks are either resolved locally or if more significant will be added to the daily management system (DMS). The DMS includes key data and information about site operations and is reviewed and updated by the site management team on a daily basis. Housekeeping audits are also undertaken by each department according to an established schedule. In addition to these site based inspections, an annual self assessment against all Mondelez HSE standards is undertaken. Any issues or concerns identified by this assessment are recorded in the Enablon system and an action plan is created. On a three yearly basis, cross audits are undertaken whereby trained auditors from other Mondelez sites complete an audit against Mondelez HSE standards. This is covers the same content as the annual self inspections but is more in depth and provides an independent assessment. The site also operates a certified ISO 50001 system and formal audits focussing on energy management aspects of the HSE management system are undertaken in accordance with system requirements.

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			xviii) evaluation of causes of nonconformities, implementation of corrective actions in response to nonconformities, review of the effectiveness of corrective actions, and determination of whether similar nonconformities exist or could potentially occur;	Yes	No	The EMS contains procedures for the identification and reporting of environmental related incidents and non-conformities. A number of different systems are used to record and manage identified nonconformities, depending on the source of the issue. The Mondelez Enablon system is used for HSE system audit findings (arising from self assessments and cross audits). Hazard and near misses are recorded on a local spreadsheet and are tracked and reviewed. Issues arising from Gemba walks are either resolved locally or if more significant will be added to the daily management system (DMS). The DMS includes key data and information about site operations and is reviewed and updated by the site management team on a daily basis.
			xix) periodic review, by senior management, of the EMS and its continuing suitability, adequacy and effectiveness;	Yes	No	The Mondelez HSE Management System incorporates review processes to ensure the continuing suitability, adequacy and effectiveness of the system and to ensure that continual improvement in environmental performance is maintained across the business. At the Sheffield site an annual management review is held which considers overall performance of the HSE management system.
			xx) following and taking into account the development of cleaner techniques.	Yes	No	The Mondelez research and development team (based at Bournville) are responsible for development of products and production techniques. This may include equipment/technology and/or recipe changes to improve production efficiency e.g. recent investment in jellies stoving to improve energy efficiency.
			BAT is also to incorporate the following features in the EMS: i) noise management plan (see BAT 13);	Not applic	No	A screening assessment undertaken by the Environment Agency as part of the enhanced pre-application support has concluded that a noise impact assessment is not required for this permit application. Noise is considered qualitatively in the environmental risk screening assessment (Form C2, Question 6). The Food, Drink and Milk Industry BAT conclusions document statement that a noise management plan is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated. In line with the EA screening assessment and absence of noise complaints, it has been determined that a noise management plan is not required for the Sheffield site.
			ii) odour management plan (see BAT 15);	Not applic	No	Whilst sweet (i.e. sugar, fruit, mint) odours do arise from the manufacturing process, these are predominantly internal only. Mondelez Sheffield does not have sensitive human receptors close to the boundary and does not have a history of odour issues or odour complaints. It is also noted that confectionery manufacturing odours are generally characterised as having a positive hedonic score (i.e. are considered 'pleasant'). BAT 15 is only applicable where an odour nuisance at sensitive receptors is expected and/or has been substantiated, and as such an odour management plan is not considered necessary for this installation.
			iii) inventory of water, energy and raw materials consumption as well as of waste water and waste gas streams (see BAT 2);	Yes	No	Water, energy and raw materials use is monitored and recorded as well as wastewater emissions to sewer. Monitoring data is presented in response to Form B3, questions 2 and 6. The site monitoring programme will be reviewed following receipt of the new site environmental permit, in order to incorporate any new environmental monitoring requirements.
			iv) energy efficiency plan (see BAT 6a).	Yes	No	Mondelez operates an energy management system certified to ISO 50001, has a Climate Change Levy agreement in place and participates in ESOS. Energy efficiency and CO2 emissions reduction are key elements of the Mondelez ESG (Environmental, Social and Governance) strategy. As such, energy use monitoring and investment in projects targeting energy efficiency improvements are implemented where opportunities are identified. Further information on energy efficiency is provided in response to Form B3, Question 6. BAT principles will be applied in the selection of all new equipment to be installed on site.
2	EMS - inventory of inputs & outputs	Increase resource efficiency and reduce emissions	Establish, maintain and regularly review (including when a significant change occurs) an inventory of water, energy and raw materials consumption as well as of waste water and waste gas streams, as part of the environmental management system (see BAT 1), that incorporates all of the following features:	Yes	No	Water, energy and raw materials use is monitored and recorded as well as wastewater emissions to sewer. Monitoring data is presented in response to Form B3, questions 2 and 6. The site monitoring programme will be reviewed following receipt of the new site environmental permit, in order to incorporate any new environmental monitoring requirements.
			I. Information about the food, drink and milk production processes, including: (a) simplified process flow sheets that show the origin of the emissions; (b) descriptions of process-integrated techniques and waste water/waste gas treatment techniques to prevent or reduce emissions, including their performance.	Yes	No	A description of activities and processes undertaken within the scope of this permit application is provided in Section II: Technical description. This includes descriptions and supporting process flow diagrams.
			II. Information about water consumption and usage (e.g. flow diagrams and water mass balances), and identification of actions to reduce water consumption and waste water volume (see BAT 7).	Yes	No	Water is used for equipment cleaning, cooling, steam generation, seal flushes, domestic use and product addition (approximately 5% of potable water used on site is used for product addition). Annual water use data and a water use diagram is provided in Section III: Supporting Information, in response to Form B3 Q6b.
			III. Information about the quantity and characteristics of the waste water streams, such as: (a) average values and variability of flow, pH and temperature; (b) average concentration and load values of relevant pollutants/parameters (e.g. TOC or COD, nitrogen species, phosphorus, chloride, conductivity) and their variability.	Yes	No	All process effluent and some clean rainwater runoff is discharged for full treatment at Yorkshire Water's Blackburn Meadows wastewater treatment works. Effluent monitoring is carried out by Yorkshire Water prior to discharge to sewer. Further details of effluent discharges and effluent monitoring is provided in Section III: Supporting Information, in response to Form B3, Q2 and 4. See BAT 3 below.

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			IV. Information about the characteristics of the waste gas streams, such as: (a) average values and variability of flow and temperature; (b) average concentration and load values of relevant pollutants/parameters (e.g. dust, TVOC, CO, NOX, SOX) and their variability; (c) presence of other substances that may affect the waste gas treatment system or plant safety (e.g. oxygen, water vapour, dust).	Yes	No	There are a large number of air emissions points present at the Mondelez Sheffield site. The majority of these are small sources for which monitoring has not been carried out nor has been required as part of any regulatory regime. For sources where dust may be emitted, filters or other dust abatement plant are installed and maintained. Monitoring of oxides of nitrogen (as NOx) and carbon monoxide is carried out at the boiler stacks every three years in accordance with requirements specified in the Medium Combustion Plant Directive (MCPD). Further details of emissions to air and air emissions monitoring is provided in Section III: Supporting Information, in response to Form B3, Q2 and 4.
			V. Information about energy consumption and usage, the quantity of raw materials used, as well as the quantity and characteristics of residues generated, and identification of actions for continuous improvement of resource efficiency (see for example BAT 6 and BAT 10).	Yes	No	Mondelez operates an energy management system certified to ISO 50001, has a Climate Change Levy agreement in place and participates in ESOS. Energy efficiency and CO2 emissions reduction are key elements of the Mondelez ESG strategy. Further details of energy efficiency measures on site is provided in Section III: Supporting Information, in response to Form B3, Q6a. Production efficiency is a key site KPI; waste is measured by line and by shift in each operational area, with data aggregated to 24 hour performance which is reported at daily management meetings via the site DMS. Follow up investigations and corrective actions are identified and actioned as required. KPIs, including energy, production efficiency, waste and water and monitored and recorded via the Enablon system. Further details of water efficiency, raw materials section and waste management measures on site is provided in Section III: Supporting Information, in response to Form B3, Q3c, 6d and 6e.
			VI. Identification and implementation of an appropriate monitoring strategy with the aim of increasing resource efficiency, taking into account energy, water and raw materials consumption. Monitoring can include direct measurements, calculations or recording with an appropriate frequency. The monitoring is broken down at the most appropriate level (e.g. at process or plant/installation level).	Yes	No	Production efficiency is a key site KPI; waste is measured by line and by shift in each operational area, with data aggregated to 24 hour performance which is reported at daily management meetings via the site DMS. Follow up investigations and corrective actions are identified and actioned as required. KPIs, including energy, production efficiency, waste and water and monitored and recorded via the Enablon system. Further details of water efficiency, raw materials section and waste management measures on site is provided in Section III: Supporting Information, in response to Form B3, Q3c, 6d and 6e.
3	Monitoring - process parameters for emissions to water	Monitor key process parameters at key locations for emissions to water	For relevant emissions to water as identified by the inventory of waste water streams (see BAT 2), BAT is to monitor key process parameters (e.g. continuous monitoring of waste water flow, pH and temperature) at key locations (e.g. at the inlet and/or outlet of the pre-treatment, at the inlet to the final treatment, at the point where the emission leaves the installation).	Yes	No	Process effluent from CLP, jellies and soft mints processing areas receives partial treatment (balancing and pH correction) on site before discharge to Yorkshire Water's Blackburn Meadows Wastewater Treatment Plant. Effluent is pumped from the three processing plants to balance tanks. In line magnetic type flowmeters are located at the CLP, jellies and soft mints sumps monitor and totalise flows to the inlet of the on site effluent treatment plant (ETP). An inline pH probe at the balance tanks continuously monitors the effluent pH with acid or caustic dosed as required via a sepentine mixer system to maintain the effluent pH within consent parameters. Continuous pH monitoring is carried out downstream of the serpentine mixer and effluent is recirculated back to the ETP if not in compliance with the discharge consent. At the final discharge location an effluent sampler, continuous flow monitoring and continuous pH monitoring probe is installed. Further details are provided in Section III: Supporting Information, in response to Form B3, Q4.
4	Monitoring - emissions to water	Monitor emissions to water to the required frequencies and standards	BAT is to monitor emissions to water with at least the frequency given [refer table] and in accordance with EN standards. If EN standards are not available, BAT is to use ISO, national or other international standards that ensure the provision of data of an equivalent scientific quality.	Not applic	No	There are no direct discharges to water, other than clean rainwater runoff. All process effluent is discharged to Yorkshire Water's Blackburn Meadows Wastewater Treatment Plant, after balancing and pH correction in the on site effluent treatment plant. Monitoring parameters specified in BAT 4 are appliable only in the case of a direct discharge to watercourse, with the exception of chloride. One-off monitoring of chloride has been undertaken as part of this permit application. Whilst there is no AEL specified for chloride (in BAT 12), this substance has been screened out as not significant in the H1 assessment for emissions to water (Appendix 7).
5	Monitoring - air emissions	Monitor channelled emissions to air to the required frequencies and standards	BAT is to monitor channelled emissions to air with at least the frequency given [refer table] and in accordance with EN standards.	Not applic	No	BAT 5 sets out air emissions monitoring requirements applicable to specific FDM sub-sectors. None of these monitoring requirements are applicable to Mondelez Sheffield as the activities undertaken on site do not appear in the sector and specific processes set out in BAT 5. Monitoring of oxides of nitrogen (as NOx) and carbon monoxide is carried out at the boiler stacks every three years in accordance with requirements specified in the Medium Combustion Plant Directive (MCPD). Further details of emissions to air is provided in Section III: Supporting Information, in response to Form B3, Q2.

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6	Energy efficiency	Increase energy efficiency	In order to increase energy efficiency, BAT is to use an energy efficiency plan (BAT 6a) and an appropriate combination of the common techniques listed in technique 6b within the table in the BATCs.	Yes	No	Reducing greenhouse gas emissions / energy efficiency is a key element of Mondelez's ESG (Environmental, Social and Governance) strategy. Significant investment in energy efficiency projects has been made on site including the following projects, and further improvements are planned in line with the Mondelez energy efficiency strategy: - Replacement of all four older boilers with three new high efficiency natural gas-fired boilers; - As part of the boiler upgrade programme a new boiler hotwell has been installed and condensate recovery has been significantly increased. ; - Replacement of a number of large chillers on site with newer more energy efficient alternatives; - Three new industrial VSD (variable speed drive) compressors were installed during 2024 to replace 25 year old units - Replacement of site lighting with LED; - Replacement of old electrical transformers with new energy efficient transformers using amorphous metal transformer (AMT) technology (five replaced so far with a further three planned for replacement during 2026/27); - Ongoing programme to replace larger sized motors with new more energy efficient alternatives (50% of larger motors replaced over the last two years); - Energy sub-metering is in place for boilers, compressors and all sub-stations and a programme of work to roll out further sub-metering is in progress. Mondelez operates an energy management system certified to ISO 50001, has a Climate Change Levy agreement in place and participates in ESOS. Further details of energy use and energy efficiency is provided in Section III: Supporting Information in response to Form B3, Question 6.
7	Water and waste water minimisation	Reduce water consumption and the volume of waste water discharged	In order to reduce water consumption and the volume of waste water discharged, BAT is to use BAT 7a and one or a combination of the techniques b to k given below. [for detail of each technique, refer BAT 7 table in BATCs) (a) water recycling and/or reuse (b) Optimisation of water flow (c) Optimisation of water nozzles and hoses (d) Segregation of water streams *Techniques related to cleaning operations:* (e) Dry cleaning (f) Pigging system for pipes (g) High-pressure cleaning (h) Optimisation of chemical dosing and water use in cleaning-in-place (CIP) (i) Low-pressure foam and/or gel cleaning (j) Optimised design and construction of equipment and process areas (k) Cleaning of equipment as soon as possible	Yes Note: Mondelez Sheffield have prepared a water minimisation roadmap in order to achieve further improvements. Refer to Proposed Improvement Programme	No	BAT techniques are employed in order to reduce water consumption and the volume of waste water discharged. A description of the BAT techniques used is provided in Section III: Supporting Information in response to Form B3 6d. A water audit was carried out which identified a number of opportunities to reduce water usage on site. Mondelez Sheffield has prepared a roadmap for water minimisation, which includes a series of specific water reduction measures including short term improvements and longer-term investments to reduce water use and wastewater generation from site activities (significant projects are subject to detailed engineering feasibility assessments). Refer to the proposed improvement programme.
8	Use of harmful substances	Prevent or reduce the use of harmful substances	In order to prevent or reduce the use of harmful substances, e.g. in cleaning and disinfection, BAT is to use one or a combination of the techniques given below. (a) Proper selection of cleaning chemicals and/or disinfectants (b) Reuse of cleaning chemicals in cleaning-in-place (CIP) (c) Dry cleaning (d) Optimised design and construction of equipment and process areas [for detail of each technique, refer BAT 8 table in BATCs]	Yes	No	(a) Mondelez uses industry standard cleaning chemicals and disinfectants on site and is in regular contact with suppliers of cleaning chemicals; when alternative products are identified by suppliers, these are reviewed for suitability, taking account of possible hazard, process effectiveness and potential environmental effects (through conducting a COSHH risk assessment) in line with the principles of BAT 8 (a). (b) CIP systems on site do not currently incorporate chemical reuse. In some cases this is due to the infrequent use of the cleaning system which limits potential for water or chemical recycling due to hygiene concerns associated with the storage and reuse of wastewater. However, a water audit recently carried out (August 2025) has identified some opportunities to improve CIP system automation to enhance system efficiency and reduce water use. These opportunities will be subject to detailed technical and financial appraisal by Mondelez. (c) Dry cleaning techniques are used by preference, or prior to wet cleaning techniques, wherever possible. Refer also to BAT 7e provided in Section III: Supporting Information in response to Form B3 6d. (d) Key process areas have been optimised and redesigned during process upgrades to maximise efficiency within the constraints of the history of the site. Refer also to BAT 7j provided in Section III: Supporting Information in response to Form B3 6d. Triclosan anti-bacterial agent is not used on site.

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9	Use of refrigerants	Prevent emissions of ozone depleting substances and of substances with high global warming potential	In order to prevent emissions of ozone-depleting substances and of substances with a high global warming potential from cooling and freezing, BAT is to use refrigerants without ozone depletion potential and with a low global warming potential.	Yes - some ultra low refrigerants in use; other systems will be replaced with ultra-low GWP systems at the end of their asset life.	No	All process refrigeration plant used on site contains refrigerant gases with zero ozone depletion potential (ODP). A number of the large chillers have been upgraded in the last few years and replaced by systems containing ultra-low global warming potential (GWP); others have been upgraded to replace very high GWP gases with lower GWP alternatives. The Mondelez global HSE standard 'E7 Refrigerants and Halons' establishes requirements for all sites to phase out use of CFCs, HCFCs, HFCs and halons. In compliance with this standard, all process refrigeration equipment on site which do not use ultra-low GWP gases will be replaced with low GWP gas alternatives at the end of their economic life. Regular maintenance, including leak checks, are carried out on equipment and systems containing HFC gases by appropriately qualified refrigeration engineers, in accordance with regulatory requirements. The frequency of leak checks is determined by the tonnes of CO2 equivalent (tCO2eq) of gas in the system. Further details of refrigerants used on site is provided in Section II: Technical Description, Cooling Processes.
10	Resource efficiency	Increase resource efficiency	In order to increase resource efficiency, BAT is to use one or a combination of the techniques given below: (a) Anaerobic digestion (b) Use of residues (c) Separation of residues (d) Recovery and reuse of residues from the pasteuriser (e) Phosphorus recovery as struvite (f) Use of waste water for land spreading	Yes	No	Waste generation is minimised at Mondelez Sheffield site. Production waste is a key performance indicator across the Mondelez group and is continually monitored and tracked, with deviations investigated and addressed. All production plants including Sheffield incorporate product rework facilities to allow production waste to be recycled back into the product wherever possible. Where waste generation is unavoidable, materials are treated in accordance with the waste management hierarchy in order to minimise materials sent for disposal. Due to the use of gelatine on site (an animal raw material), production waste cannot be recycled for animal feed but is instead recycled at anaerobic digestion facilities. Further details of waste streams, segregations systems and treatment / disposal routes are provided in Section III: Supporting Information in response to Form B3, Q6e. Waste management procedures are in place to control the segregation, storage, handing and transfer of wastes to appropriately licenced contractors. Waste recycling and disposal options are regularly reviewed to ensure that waste disposal routes used by the site continue to represent the best environmental option.
11	Emissions to water - waste water buffer storage	Provision of appropriate buffer storage capacity for waste water	In order to prevent uncontrolled emissions to water, BAT is to provide an appropriate buffer storage capacity for waste water.	Yes	No	Buffer storage capacity for CLP, jellies and soft mints manufacturing plants is provided at the on site ETP (there is minimal effluent generated from hard mints manufacturing processes). At the ETP there are two 91 m3 aerated balance tanks providing a buffer storage facility in the event of a significant incident such as spillage or containment failure. Effluent generation, including potential for generation of significant quantities of high strength effluent, is very limited at the hard mints manufacturing plant, due to the nature of the process and types and quantities of materials stored in this area.
12	Emissions to water - treatment	To reduce emissions to water	In order to reduce emissions to water, BAT is to use an appropriate combination of the techniques given below. Preliminary, primary and general treatment (a) Equalisation (b) Neutralisation (c) Physical separate (e.g. screens, sieves, primary settlement tanks etc) Aerobic and/or anaerobic treatment (secondary treatment) (d) Aerobic and/or anaerobic treatment (e.g. activated sludge, aerobic lagoon etc) (e) Nitrification and/or denitrification (f) Partial nitration - anaerobic ammonium oxidation Phosphorus recovery and/or removal (g) Phosphorus recovery as struvite (h) Precipitation (i) Enhanced biological phosphorus removal Final solids removal (j) Coagulation and flocculation (k) Sedimentation (l) Filtration (e.g. sand filtration, microfiltration, ultrafiltration) (m) Flotation [for detail of each technique, refer BAT 12 table 1 in BATCs, copied in to col J]	Yes	No	Partial effluent treatment comprising balancing and pH correction is carried out on site at Mondelez Sheffield, prior to discharge to public sewer, with full treatment to meet BAT requirements at Yorkshire Water's Blackburn Meadows WwTW. Effluent generated from CLP, jellies and soft mints plants is transferred to the on site effluent treatment plant (ETP). At the ETP the effluent is pumped to one of two 91 m3 aerated balance tanks where flow and load balancing takes place. An inline pH probe at the balance tanks provides continuous monitoring of pH and either acid or caustic may be dosed into the effluent via a serpentine flocculator to adjust effluent pH according to pre-set parameters. Effluent from hard mints manufacturing plant is collected in a dedicated sump and is removed from site by tanker for off site treatment and disposal. Wastewater generated from other areas of the site is discharged directly to public sewer.
13	Noise - management plan	Prevent or reduce noise emissions	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to set up, implement and regularly review a noise management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: - a protocol containing actions and timelines; - a protocol for conducting noise emissions monitoring; - a protocol for response to identified noise events, e.g. complaints; - a noise reduction programme designed to identify the source(s), to measure/estimate noise and vibration exposure, to characterise the contributions of the sources and to implement prevention and/or reduction measures. *Note: BAT13 is only applicable where a noise nuisance at sensitive receptors is expected and/or has been substantiated.*	Not applic	No	A screening assessment undertaken by the Environment Agency as part of the enhanced pre-application support has concluded that a noise impact assessment is not required for this permit application. Noise is considered qualitatively in the environmental risk screening assessment (refer to Section II: Supporting Information, Form B2, Question 6 and Appendix 8) In line with the Food, Drink and Milk Industry BAT conclusions document statement that a noise management plan is only applicable to cases where a noise nuisance at sensitive receptors is expected and/or has been substantiated. A noise management plan is not required for this site. Notwithstanding this, Mondelez operates an integrated health, safety and environmental management system which includes procedures for management of potential nuisance and complaints, including those related to noise.

BAT No.	Topic	Brief Description	BAT	Compliant?	Derogation needed?	Provide brief comments on how compliance with BAT is (or will be) achieved, or a justification for an alternative response
14	Noise minimisation	Prevent or reduce noise emissions	In order to prevent or, where that is not practicable, to reduce noise emissions, BAT is to use one or a combination of the techniques given below. (a) Appropriate location of equipment and buildings (b) Operational measures (c) Low-noise equipment (d) Noise control equipment (e) Noise abatement [for detail of each technique, refer BAT 14 table in BATCs]	Yes	No	BAT principles are applied to minimise noise from the Mondelez Sheffield site. Whilst the Mondelez Sheffield site does not have sensitive human receptors in very close proximity to the boundary and does not have a history of noise nuisance or noise complaints, consideration is given to ensuring that noise is minimised, including the selection of low noise equipment where appropriate. Further detail is provided in Section III: Supporting information in response to Form B2, Question 6 and Appendix 8.
15	Odour - management plan	Prevent or reduce odour emissions	In order to prevent or, where that is not practicable, to reduce odour emissions, BAT is to set up, implement and regularly review an odour management plan, as part of the environmental management system (see BAT 1), that includes all of the following elements: - a protocol containing actions and timelines; - a protocol for conducting odour monitoring. - a protocol for response to identified odour incidents e.g. complaints; - an odour prevention and reduction programme designed to identify the source(s); to measure/estimate odour exposure: to characterise the contributions of the sources; and to implement prevention and/or reduction measures. *BAT 15 is only applicable to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated.*	Not applic	No	Whilst sweet (i.e. sugar, fruit, mint) odours do arise from the confectionery manufacturing process, these are predominantly internal only. There are no odours arising from effluent management as the only treatment on site is via pH adjustment and there are no aerobic or anaerobic treatment activities taking place. Mondelez Sheffield does not have sensitive human receptors close to the boundary and does not have a history of odour issues or odour complaints. It is also noted that confectionery manufacturing odours are generally characterised as having a positive hedonic score (i.e. are considered 'pleasant'). BAT 15 is only applicable where an odour nuisance at sensitive receptors is expected and/or has been substantiated, and as such an odour management plan is not considered necessary for this installation.