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1 Introduction

O.C.O Technology Ltd (the ‘applicant’) has requested that Reva Environmental Ltd (the ‘agent’) prepares an Environmental Permit (EP) application, for a new installation at Larkshall Mill, East Wretham, Thetford, Norfolk, IP24 1QY.

The objective of the application is to ultimately install three lines that will treat air pollution control (APC) residues to create an aggregate that can be used in block manufacture. APC residues are delivered in powder tankers and transferred into silos, then into a reactor where they are treated with carbon dioxide to lower the pH and reduce the leachability of some heavy metals. The material is then mixed with cement, sand, and water to turn it into pellets. The pellets are stored in covered bays and delivered to end users to make blocks. Processing is all carried out in a building. This process is already permitted at 3 of the applicant’s sites in the UK:

- Leeds Aggregate Manufacturing Facility, EPR/TP3737YG/V005, permitted for 3 production lines;
- Avonmouth Aggregate Manufacturing Facility, EPR/HP3638WW/V004, permitted for 2 production lines (an application for a 3rd line is planned for 2022); and
- Brandon Aggregate Manufacturing Facility, EPR/JP3332FK, permitted for 2 production lines.

The facility will be built in two phases, with just two of the three lines being built initially. The application is for all three lines in order to futureproof the permit and all assessments completed are based on the full development.

Question 3d of Part B2 of the EA new bespoke installation application form requires information to be provided about the Environmental Management System (EMS), including confirmation of what, if any, standard it is certified to. The applicant operates its existing permitted facilities in accordance with an integrated management system (IMS) comprising a set of policies and procedures which apply to all O.C.O Technology facilities, including the proposed facility at East Wretham. The applicant ensures that the system is kept up to date. The existing IMS has been written in accordance with ISO 14001: 2015 and is certified, as evidenced by the documents provided in Appendix C of the application.

This EMS Summary Report has been written as a supporting document to demonstrate to the EA that the certified system addresses the requirements in the EA guidance ‘develop a management system: environmental permits’. It follows the headings in that guidance and signposts to the location of information within the existing IMS.

A Table of Contents from the IMS has been provided with the original application, but just to the Heading 2 level. For clarity – Annex 1 of this EMS Summary Report presents the contents to the maximum, Heading 4 level.

2 Site Infrastructure Plan

A number of site plans have been produced for the site, primarily for the purposes of the EP application (EPR/BP3702MC/A001). These are considered to form part of the EMS and include:

- Site Location Plan. This shows the geographical location of the site and the EP boundary.
- Site Layout Plan. This identifies features/infrastructure, both internally and externally within the EP boundary. This includes the proposed treatment lines (plant and equipment), waste storage, raw material storage, product storage, site boundary, yard area, air emission points, vehicle access and exit points.
- Site Setting. This shows the location of the site relative to potentially sensitive receptors including watercourses, residential, commercial, and industrial premises, and habitat features.
- Site Drainage Plan. This shows the drainage network at the site, including locations of manhole covers and drains.

In addition to this, a separate plan will be kept on site that identifies the location of mains water and electricity supply to the site, routes around the site and the location of any isolating switches, stop valves etc. in addition to other features such as the location of spill kits and the emergency assembly point(s).

3 Site Operations

The site will operate as a materials recovery facility, specifically for the recovery of hazardous APC residues. The EP will cover the following activities:

The facility will operate the following activities:

- 5.3 A(1)(a)(vi) – Disposal or recovery of hazardous waste with a capacity exceeding 10 tonnes per day involving the recycling or reclamation of inorganic materials other than metals or metal compounds (R5). This listed activity will apply three times (AR1, AR2 and AR3) to reflect the three production lines and will allow a combined annual waste throughput of 100,000 tonnes) for the purposes of producing pellets; and
- 5.6 A(1)(a) – Temporary storage (AR4) of hazardous waste with a total capacity exceeding 50 tonnes (R13). The maximum storage capacity is proposed to be 2,850 tonnes at any one time, across 12 silos, and a maximum storage time of 6 months will be enforced, from the date of receipt of the waste.

Three directly associated activities (DAAs) are also proposed as follows:

- Handling and storage of wastes, prior to treatment and recovery activities for hazardous wastes (AR5);
- Storage of raw materials (AR6) for use within production lines AR1 to AR3 (est. up to 150,000 tonnes usage per year combined); and
- Management of surface water for disposal (AR7) via discharge to soakaway (lagoon). Uncontaminated surface (roof) water collection and reuse system to be implemented for the full development (three-line facility).

Each line will be an exact duplicate of the other, will process the same wastes and use the same raw materials to produce the aggregate. They will run in parallel so can be operated independently to provide flexibility of operations. The proposed daily throughput capacity for each line is 140 tonnes, which is 420 tonnes combined across all 3 lines.

The inherent purpose of the facility is to support the implementation of the waste hierarchy and it will do this by diverting waste materials from disposal activities to a recovery activity, resulting in an output that has end-of-waste status

3.1 Operational Overview

A description of the listed activities is provided in the following sections. Regular checks are undertaken to ensure that operations are being undertaken in accordance with operational procedures.

3.1.1 Treatment of Hazardous APCr (Activities AR1, AR2 and AR3)

The proposed facility will use Accelerate Carbonation Technology (ACT) to recycle thermal treatment residues to produce an aggregate with 'End of Waste' status. It is a technology which is the outcome of extensive research by the University of Greenwich into the effect of carbonation on waste materials. Investment by Grundon Waste Management Ltd has allowed O.C.O to develop the ACT facilities that are currently operational in Brandon, Leeds and Avonmouth.

The treatment of APCr using ACT is well defined and established at the existing facilities. The nature of the waste is understood (and relatively homogenous) and the opportunity for up to 100% recovery of the constituents supports the chosen treatment process. If the resulting aggregate does not meet the End of Waste specification, it is re-processed.

The treatment process will be carried out in the building and comprises three lines. This is achieved through the application of the proven Accelerated Carbonation Technology (ACT). The ACT process consists of three stages:

- 1) Carbonation of air pollution control residue (APCr) and incinerator bottom ash (IBA) in a specialist mixer using carbon dioxide and water;
- 2) Blending of the carbonated material with fillers (e.g., sand/limestone dust/other) and binders (e.g., cement/other); and
- 3) Pelletisation of the mix.

The resultant aggregate is conveyed to a screener/crusher and then into product storage bunkers.

Each line will be an exact duplicate of the other, will process the same wastes and use the same raw materials to produce the aggregate. They will run in parallel so can be operated independently to provide flexibility of operations. The proposed daily throughput capacity for each line is 140 tonnes, which is 420 tonnes combined across all 3 lines.

3.1.2 Storage of Hazardous Waste pending Treatment (Activity AR4)

The waste is weighed at the site of waste production and is brought to site in sealed powder tankers and transferred into silos, then into a reactor where they are treated with carbon dioxide to lower the pH and reduce the leachability of some heavy metals.

APCr will be stored in 12 silos. The silos are suitably sized (125 m³ each) for the permitted volumes and allow the storage of up to 2,850 tonnes of waste at any one time which includes headroom to allow for extra storage to reflect seasonal variations or to provide emergency storage in the event of production breakdowns. They are situated in an area adjacent to the northern side of the process building and are designed in accordance with industry standards for the waste type and operational experience at the existing site; they have lightning protection (as does the process building).

The silos are set on elevated frames on a raised concrete plinth to protect them from vehicle movements. The tanker discharge points (for unloading of APCr) are fixed; the tanker connects its flexible hose to the fixed point. The silos are separately numbered and the contents and levels in each are recorded so the operator can track waste from separate sources once on site.

Once received, the APCr is processed as soon as possible so storage time is constrained by the storage capacity.

3.2 Risk Assessment

The facility will be operated in accordance with the ERA provided in the EP application (Appendix G, ref. OCO_2020.04/06). This is a qualitative risk assessment which identifies the potential hazards, their pathways to causing harm, and the likelihood of them happening alongside the consequences if they do.

This is further augmented by an Aspects and Impacts Assessment, completed in accordance with Section 3.5 of the IMS “Planning Quality Management, H&S Risk Assessment & Control, and Environmental Aspects & Impacts”. The output from this assessment is used to determine the most significant aspects and impacts; these drive the setting of environmental objectives and targets.

Section 3.1 of the IMS “Leadership and Commitment” refers to the accountability of senior management and this includes ensuring that objectives are established; Section 3.3 “Organisation” refers to the setting of clear objectives and targets which are regularly monitored and against which performance is reviewed.

3.3 Storage of Waste

Wastes stored at the site are limited to those allowed to be received under the EP, and any process outputs. Permitted wastes for receipt are defined in the EP by EWC code and basic description. Waste storage is only in the designated silos, as shown on the Site Layout Plan which forms part of the IMS.

This falls under Section 5 of the EMS (Operating Procedures) in relation to the control of incoming waste (planning, receipt, sorting, storage, and handling).

3.4 Waste Acceptance

O.C.O will operate in accordance with procedures for both pre-acceptance and waste acceptance. Compliance with these, ensures that waste arriving at the site is as expected, as described in the accompanying duty of care paperwork, and is therefore permitted for acceptance, storage and treatment.

This also falls under Section 5 of the EMS (Operating Procedures) in relation to the control of incoming waste (planning, receipt, sorting, storage, and handling).

3.5 Fire Prevention Plan

The incoming waste is itself a product of thermal treatment so is not combustible. A Fire Prevention Plan has therefore not been considered necessary for the EP application. The IMS does however cover Emergency Preparedness, in Section 3.13 and O.C.O will establish, implement, and maintain processes to prepare for emergency situations, including fire, at the site and to respond if they occur.

The appointment of fire wardens ensures that there are sufficient staff with specific roles in the event of an environmental emergency. All other team members are provided with awareness instruction and training (e.g., fire extinguisher use) where required.

Emergency procedures are periodically tested where practicable, i.e., for fires, chemical spills etc.

4 Site and Equipment Maintenance Plan

Records of inspections, repairs and maintenance are kept on site, and used to verify that those checks have been undertaken in accordance with the IMS. The scheduling of maintenance is either prescribed by:

- The supplier/manufacturer of the equipment
- Relevant legislation (e.g., inspection of fire-fighting equipment)
- Other relevant guidance (e.g., sector guidelines/best practice).

Regular checks are undertaken to ensure that maintenance and inspection is being carried out, and to ensure that the integrity of equipment is maintained. This falls under Section 4.0 of the IMS, specifically Section 4.3.4 “Equipment Control & Management (Vehicle, Plant)” which confirms that a process is in place to ensure equipment is inspected, tested, serviced, and that a preventative maintenance procedure/plan is maintained.

5 Contingency Planning

The details provided in EP documents, site plans, risk assessments, and the majority of the IMS relate to measures that are in place during ‘normal’ operations i.e., when the facility can be operated as it is designed to do. The Aspects and Impacts Assessment, completed in accordance with Section 3.5 of the IMS expands on this to include consideration of abnormal (failure) scenarios.

A contingency plan is required to address the scenario when the facility cannot be operated in this way. There are many reasons why this could occur including, but not limited to, the following:

- Lack of staffing leading to inability to collect/receive/treat waste;
- Natural events (storms, floods, pandemics etc.) leading to closure of site or increased waste across existing contracts that exceeds the permitted site capacity; and
- Loss of water or mains power.

In the event of the facility being unable to continue ‘normal’ operations, O.C.O has a contingency plan in place which will be activated to ensure that waste can continue to be managed appropriately.

6 Accident Prevention and Management Plan

This forms part of the IMS. It is reviewed on a regular basis and also updated as required following any incidents, changes to process, or to reflect changes in legislation or best practice. It sets out the potential accidents that may occur as a result of processing waste, identifies the mitigation measures in place to prevent accidents, and sets out the action plan in the event of an incident; this is supported by the Emergency Preparedness section of the IMS, Section 3.13. The IMS includes emergency planning, where potential accident scenarios are used to establish an Environmental Emergency Action Plan. It builds on the ERA for the site, which in part itself satisfies part of the EA guidance on accident management in terms of defining control measures that would prevent an accident but goes a step further and takes the hazard information from the ERA and aligns it with potential accidents that could result in harm to human health and/or the environmental.

Waste stored at the facility is limited to those allowed to be received under the EP and is defined in the EP by EWC code and basic description. Dedicated waste storage locations are shown on the Site Layout Plan. Site procedures require waste acceptance and tracking processes to be followed. As a result, in the event of an emergency, the operator can identify (and is able to provide the emergency services with) details of the waste present on site at the time of the incident (estimated quantity, source/producer).

Training is provided to the operational staff; roles and responsibilities are clearly defined.

An incident reporting system enables clear reporting and investigation of incidents and is filed alongside any supporting information e.g., accident book record, witness statement, third party communications etc.

7 A Changing Climate

Whilst the existing plans for the facility are based on the existing climate, it is recognised that a changing climate may introduce conditions that could affect operations in the future. The following changes could reasonably be expected:

- Higher average temperatures
- More heat waves and hot days
- Rising sea levels

- Changes in rainfall patterns and intensity
- More storms

The UK Climate Projections (UKCP) provides up to date information of these possible changes.

The operator is responsible for maintaining and updating information relating to the potential impacts of climate change, including producing a climate change risk assessment (CCRA) and review it annually based on published projections. The climate change risk assessment, as for other management system documents, is reviewed on a regular basis and updated if required. Particular attention is paid to:

- Whether the changing climate can affect existing and planned operations, including whether it can affect the ability to comply with the environmental permit;
- Any risks to local communities and the environment;
- The need to aim for net zero by 2050; and
- The potential for multiple events occurring concurrently (e.g., supply chain failure AND extreme weather).

Any changes identified as being necessary to mitigate a changing climate will be reflected in the operating procedures in the IMS.

8 Complaints Procedure

The complaints procedure follows the guidance on management systems for environmental permits and includes measures to be taken to address any concerns, near misses, potential for or actual pollution whether that is to the land, air, water, or a perceived nuisance to staff, public and neighbours. It sets out how the operator will receive and record compliant, investigate them, and act upon them.

This falls under Section 3.8 of the EMS “Communication, Engagement and Participation”, and 3.10.5 “Incidents & Non-Conformities” which covers the reporting of all environmental incidents including those received via complaints from interested parties, initially using the O.C.O Incident Form.

This complaints procedure, as for other management system documents, is reviewed on a regular basis and updated if required.

9 Managing Staff Competence and Training Records

EA guidance requires the operator of a permitted facility to have a training system in place for all relevant staff that includes EP awareness for their work activities; awareness of potential environmental effects from operation under normal and abnormal circumstances, awareness of need to report deviation from the EP, and prevention of accidental emissions and action to be taken when they occur.

It is considered that for most individuals their impact is likely to be minor and awareness training is sufficient. General awareness training will be given to all new starters; and refresher training will be provided to all. The awareness training focuses on the fact the site has an EP and the key conditions of that EP e.g., waste acceptance, storage, and emergency scenarios.

Any contractors that are engaged to work on the site will receive a site induction prior to undertaking their work.

A training matrix will define requirements and records of all training will be kept, including any tests/exams that verify the success of that training. Training is covered in Section 3.7 of the IMS “Competence, Awareness, Resource & Training” and refers to a set of training procedures in Section 3.7.3.4 “Specific Training Requirements”.

The IMS procedures ensure personnel are trained and therefore able to effectively retain operational control and minimise the potential for impacts on the environment. The appointment of dedicated roles e.g., fire wardens, environmental champions, will ensure that there are sufficient staff with specific roles in the event of an environmental emergency.

Training includes making all employees aware of the IMS policies, manual and supporting documents, and their contribution to the effectiveness of it.

10 Keeping Records

Records pertinent to the operation of the site will be kept; this includes documents demonstrating compliance with the IMS (including operational procedures, maintenance requirements, accidents, incidents, non-conformances, and complaints), updates to site documents (including site condition report, specific management plans), and other records required by the EP (including waste returns, environmental monitoring data, duty of care checks etc.).

This is covered in Section 3.9 of the IMS “Documents & Records”. In accordance with the standard EP condition, all records retained will be legible, made as soon after the activity to which they relate as is reasonably practicable, and be retained for at least 6 years from the date they were made or (in the case of records relating to off-site environmental impacts and matters that might affect the condition of the land and groundwater within the EP boundary) until the EP is surrendered.

If records are amended, the original must remain legible or be able to be retrieved. EP records will be kept on site.

A copy of the EP will be kept at the site, both in hard copy and electronically, and all staff will have access to it and to a copy of the IMS. Where changes are made to any site documentation in relation to procedures, this will be communicated to the site team for their information and understanding.

11 Management System Review

The IMS is a set of live documents which will be subject to change during the life of the site and the EP. Changes may come about as a result of one or more of the following:

- A change in process/operations that needs to be reflected in the procedures and management plans;
- A change in procedure following an incident, accident, or complaint; or
- A change in legislation or guidance that affects the activities and/or the management system.
- A change in Management (key roles)

Should any of the above occur, a review of the IMS will be carried out. In any case, it will be reviewed by top management at least once per calendar year.

This is covered in Section 3.14 of the EMS “Management Review”. The review is carried out to ensure that the system remains suitable for the facility, is adequate and is effective in minimising the risk of pollution from the permitted activities. It is also an opportunity to review the previous years’ performance in terms of non-conformities, inspections, compliance with the EP and any external communications such as complaints.

Records of all reviews are kept in accordance with Section 10 above.

12 Site Closure

This part of the EA management system guidance relates to operators of landfills and category A mining waste facilities so is not largely applicable. The operator will however complete the site closure parts of the Site Condition Report (EA guidance H5) at the point of cessation of operations and surrender of the EP (Appendix E, Ref. OCO_2020.04/04, Annex SCR1).

13 Communication

Section 3.8 of the IMS details the procedures, processes and other documents that relate to management of communication. This covers both internal and external communications.

The IMS includes an interested parties assessment, and those which are assigned High Priority are reflected into the Objectives and Targets in order to manage the identified needs and expectations (see Section 2.4 of the IMS).

With respect to internal communication, procedures are in place to ensure that relevant environmental information is communicated to all personnel that undertake work on behalf of the company, including the environmental policy, relevant aspects, relevant objectives and targets, relevant risks, roles and responsibilities, and the environmental emergency action plan. This is supported by training and awareness provision. The IMS also makes provision for the sharing of relevant information to management and operational personnel regarding incidents, non-conformances, audit feedback, monitoring results, and any amendments made to the IMS due to changes in legislation or other environmental requirements.

With respect to communication with external interested parties on environmental issues, the IMS sets out the type of communication, the potential external parties (regulator, key customers, neighbours, local authority etc.), and how to respond to those including how to determine the relevant course of action.

Annex 1 – IMS Table of Contents (to Heading Level 4)

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