Best Available Techniques (BAT) review of the processes for the Ash Processing Plant (APP) to be operated by Titan Cement (UK) Limited at Fiddlers Ferry, Warrington

1. This review has been prepared based on Environment Agency (EA) guidance *Best available techniques: environmental permits*[1] (the EA BAT guidance) with reference to the enhanced pre-application advice provided by the EA in a letter dated 27 February 2025 (Appendix A). In the pre-application advice, it is stated that "*for installation activities, you will need provide a comprehensive BAT assessment against the relevant sector BAT conclusions*". As explained in the EA BAT guidance, the European Commission produces best available technique reference documents (BREFs) which contain BAT for installations.

2. As described in the Technical Description Document (Appendix B) the APP process comprises a process to dry and deagglomerate Coal Derived Fly Ash (CDFA) using Atritor Dryer Pulverisers, which deagglomerate the material and dry it in one process using streams of warm air. The dried, deagglomerated material is then subject to the electrostatic separation of the mineral from unburned carbon in order to meet British Standard EN450[2] product standards. Technical data sheets for the Atritor Dryer Pulverisers and the electrostatic separators are presented at Appendix TD A of the Technical Description Document.

3. Table S1.1 of Environmental Permit number EPR/ZP3831DX (the permit) for the site specifies that the relevant installation activity comprises S5.4 A(1)(b)(iii) *Recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day involving treatment of slags and ashes.* The pre-application advice confirms that the application to vary the permit will comprise a variation of the S5.4 A(1)(b)(iii) activity relating to the drying/deagglomeration process (which currently is permitted as a physical separation, drying and grading activity) and a new activity also under S5.4 A(1)(b)(iii) for the electrostatic separation activity. The EA BAT guidance includes a link to the BREF documents produced by the European Commission[3]. There is no specific BREF or BAT conclusions document for the treatment of slags and ashes. The EA BAT guidance identifies that if a particular process is not covered, the UK regulators have agreed cross-cutting BAT conclusions interpretation guidance[4] that can be used. A copy of this guidance has been requested and obtained from the EA and has been used where relevant in this BAT assessment.

4. The absence of a specific BREF/BAT conclusions document for the treatment of slags and ashes was acknowledged in the BAT assessment submitted to the EA in 2018 pursuant to improvement condition IC2 and in the response to pre-operational condition PO2 relevant to the determination of emission limit values for the vent stacks associated with the dryers. The submission pursuant to IC2 confirmed that the BREF for Ceramic Manufacturing was the most relevant sector with reference to the powder drying processes described in the BREF. Following review of the IC2 and PO2 submissions, the EA agreed an emission limit for particulate matter (dust) of 30mg/Nm^3 for the vent stacks associated with the dryers, consistent with the ceramics BREF. An

[1] https://www.gov.uk/guidance/best-available-techniques-environmental-permits Last accessed 30 October 2025.
[2] British Standard EN 450-1:2012 Fly ash for concrete – Definition, specifications and conformity criteria
[3] https://bureau-industrial-transformation.jrc.ec.europa.eu/reference/ Last accessed 30 October 2025
[4] UK Cross-Cutting Interpretation Guidance and Permitting Advice on the Best Available Techniques (BAT) Conclusions published under the Industrial Emissions Directive (IED). Version 2 – July 2024. Guidance available on request from the EA.

extract from Compliance Assessment Report (CAR) form reference ZP3831DX/0312340 dated August 2018 is copied below:

> The pre-operational conditions are completed, a proposed monitoring regime has been provided by the operator for PO2, dated 04 December 2017. The proposed emission limit values and monitoring Schedule contained within it are accepted. The following parameters will be monitored by periodic monitoring on an annual basis from emission point A1 (dryer): particulate matter, oxides of nitrogen and carbon monoxide. Particulate matter will have a limit set of 30mg/m3. No limit will be set for oxides of nitrogen or carbon monoxide as the impacts were determined following assessment to be insignificant and there are limited controls on the dryer burner. The proposed annual monitoring regime will confirm that the unit continues to perform at the anticipated standard and subject of the assessment. Reporting reference conditions are agreed as: corrected to dry air at a temperature of 273k, pressure 101.3kPa and oxygen content of 16%.

5. EA technical guidance for regulated industry sectors[5] (the EA technical guidance) identifies that new guidance Non-hazardous and inert waste: appropriate measures for permitted facilities[6] (the EA AM guidance) applies to new and existing non-hazardous and inert waste facilities applying for permits from 12 July 2021. The EA technical guidance recommends that operators of non-hazardous waste treatment installations should refer to the Best available technique associated emissions levels (BAT AELs) in the BAT Conclusions for waste treatment[7]. The relevant BAT Conclusions were discussed during the pre-application meeting on 4 February 2025 and the published pre-application advice confirmed that the application to vary the permit would need to include a BAT assessment against the relevant sector BAT Conclusions and referred to the waste treatment BREF and BAT Conclusions for waste treatment.

6. The EA AM guidance identifies in section 1.2 that there is overlap between BAT for waste installation facilities and necessary measures for waste operation facilities. The EA AM guidance uses the term 'appropriate measures' to cover both sets of requirements and the EA AM guidance identifies that some measures in the guidance may not be suitable or relevant for specific operations. The EA AM guidance explains that where a measure is not suitable or relevant, an operator can propose alternative measures that achieve the same level of environmental protection, or they can provide an explanation of why the specific measure is not relevant.

7. The EA Appropriate Measures guidance states in section 1.3 how appropriate measures should be implemented at new and existing facilities:

> *"For new facilities the appropriate measures must be in place before operations start…*
>
> *For existing facilities, if the cost of complying with the appropriate measures is disproportionate to the environmental benefit, immediate compliance may not be reasonable. Through permit reviews, the Environment Agency will assess the current operating techniques of existing facilities against the relevant appropriate measures."*

The APP at Fiddlers Ferry comprises an existing facility, hence the guidance relevant to existing facilities applies.

[5] https://www.gov.uk/government/collections/technical-guidance-for-regulated-industry-sectors-environmental-permitting Last accessed 5 September 2025.
[6] https://www.gov.uk/guidance/non-hazardous-and-inert-waste-appropriate-measures-for-permitted-facilities Last accessed 5 September 2025.
[7] Commission Implementing Decision (EU) 2018/1147 of 10 August 2018 establishing best available techniques (BAT) conclusions for waste treatment, under Directive 2010/75/EU of the European Parliament and of the Council

8. Consistent with the pre-application advice, the BREF for waste treatment has been considered in the context of the proposed activities comprising the drying/deagglomeration of CDFA and the electrostatic separation of the mineral from unburned carbon. The BREF for waste treatment splits waste treatment activities into three main sections comprising:

    a. Mechanical treatment of waste
    b. Biological treatment of waste
    c. Physico-chemical treatment of waste

    Although certain aspects of the proposed activities at the APP cross over somewhat with the activities described in the BREF (for example drying of solid waste is discussed in the section of the BREF relevant to physico-chemical treatment of waste with calorific value), the proposed activities do not correspond directly to the activities described in the BREF. The activities in the BREF for mechanical treatment focus on treatment in shredders and treatment of WEEE and waste with calorific value (typically related to the recovery of fractions of Municipal Solid Waste for use in Energy from Waste plants) which is inconsistent with the activities proposed at the APP. The proposed activities do not comprise biological treatment of waste or physico-chemical treatment of waste. Section 7 of the BREF presents details of emerging techniques, however none of the emerging techniques referred to are relevant to the proposed activities at the APP.

9. As explained in the Technical Description Document (Appendix B) the electricity supply for the APP will be provided by two gas fuelled generators supported by two smaller diesel fuelled generators that are used infrequently for start-ups of the processing equipment, where the gas generator cannot run at such a low power. The gas generators comprise Medium Combustion Plant (MCP) and fall under the requirements of the Medium Combustion Plant Directive (MCPD). The guidance in EA application form Part C2.5 for MCP states "*You need to review the Best Available Techniques assessment for your installation including the additional MCP/SG and any associated fuel storage facilities. This should include a review of the impact of other emissions such as noise.*" This BAT assessment includes consideration of the MCP activity including associated fuel storage and other emissions including noise and air quality.

10. Guidance is presented on GOV.UK in respect of BAT for diesel generators at installations[8]. This BAT assessment includes in Table 2 consideration of BAT for the proposed diesel generators.

11. As mentioned above in paragraph 3, the EA BAT guidance identifies that if a particular process is not covered, the UK regulators have agreed cross-cutting BAT conclusions interpretation guidance that can be used. The BAT review of the APP has been undertaken with reference to the cross-cutting guidance. The BAT review is presented in the tables below with reference to each of the BAT Conclusions for Waste Treatment, includes consideration of the BAT Conclusions in the context of the MCPD and includes consideration of BAT for the diesel generators. The review demonstrates that the proposed new plant and techniques at the APP comprise BAT.

[8] https://www.gov.uk/guidance/emergency-backup-diesel-engines-on-installations-best-available-techniques-bat

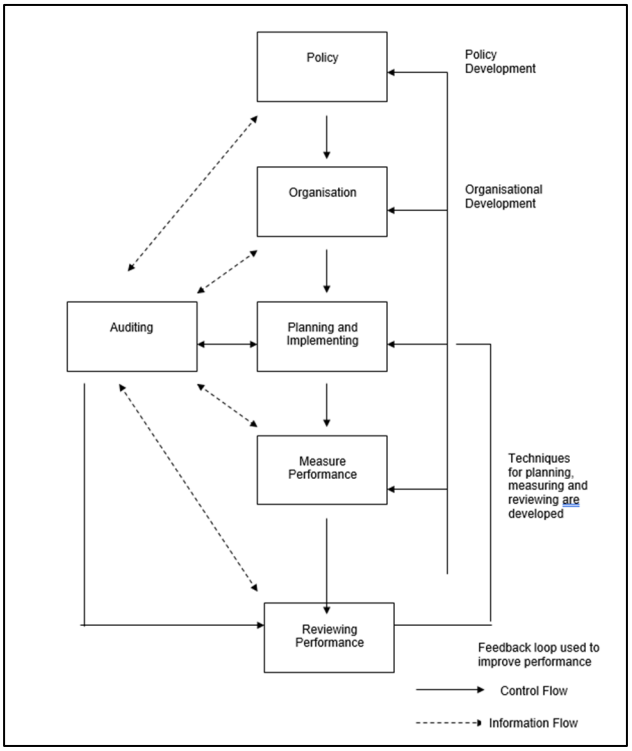
12. The relevance of the criteria specified in the BAT conclusions is related to the nature, scale and complexity of the APP process. If any of the BAT criteria are considered not relevant this has been identified in the table. This BAT assessment should be read in conjunction with the technical description document for the APP process which is provided at Appendix B and the information presented elsewhere in this document and in the Dust and Emissions Management Plan (Appendix I) and Noise Impact Assessment (Appendix J) provided with the application to vary the Environmental Permit for the site.

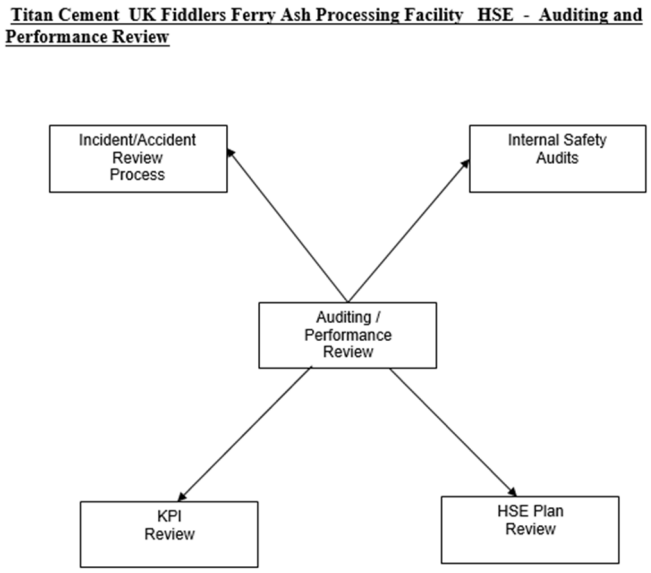
13. Consistent with the pre-application advice, the EA AM guidance has also been reviewed as part of the assessment of BAT for the APP process. As the EA AM guidance was published to implement the BAT Conclusions for waste treatment, the review is presented in the table with reference to the lead document, namely the BAT Conclusions document.

14. Where text has been quoted from the BAT documents it is provided in *blue italic font*.

15. In summary, the review of the BAT relevant to the CDFA processing activities at the site is presented in Table 1 (based on the Waste Treatment BAT) and in Table 2 (for the backup diesel generators). It is concluded from the review that the proposed new plant and techniques at the APP comprise BAT.

Table 1 – BAT Conclusions for waste treatment

WT BAT	Details to confirm that the process comprises BAT
1. General BAT Conclusions	
1.1 Overall environmental performance	
BAT 1 Environmental Management System	Titan will implement an Environmental Management System (EMS) at the site in accordance with the requirements of the permit. A summary of the EMS is provided with the application to vary the permit. The EMS follows the Plan Do Check Act Cycle underpinned by the Company Environmental Policy as illustrated below  The EMS will include the procedures relevant to the APP process which will be subject to regular internal and external audits and reviews including during the process of commissioning the APP. The flow diagram below sets out the auditing and review process which is the basis on which continual improvement is targeted.

WT BAT	Details to confirm that the process comprises BAT
	 The EMS and associated procedures take into account the items listed in BAT 1. The EMS will include procedures relevant to the operation of the MCP at the site.
BAT 2 Waste Acceptance	The waste accepted at the site is limited to a single waste type (CDFA under list of waste code 10 01 02) and will be imported from Fiddlers Ferry ash lagoons which are located adjacent to the APP as shown on Figure TD 1. The waste pre-acceptance and acceptance procedures that will be implemented at the site will include aspects such as waste pre-acceptance checks via periodic inspections of the site of waste arising (the adjacent Fiddlers Ferry ash lagoons) and periodic quality testing of the material to confirm that the characteristics of the waste are consistent with the basic characterisation information provided by the waste producer. All material transferred from the lagoons to the APP will be subject to visual inspection and periodic testing to confirm that the material is consistent with the basic characterisation. Titan will implement waste tracking procedures to record and track the location and quantity of waste received, stored and processed at the plant. The waste tracking system will be an integral part of the process to effectively manage the quantity of material stored at the plant prior to processing and the quantity of material stored in the silos following processing.

WT BAT	Details to confirm that the process comprises BAT
	An output quality management system will be implemented at the site to confirm that the mineral fraction separated from the CDFA is compliant with the requirements of British Standard EN 450 hence satisfies the specification requirements of the end user and that the carbon fraction is compliant with the appropriate customer specification. The quality management system will include procedures for periodically testing the output materials to confirm that the physical and chemical properties and particle size distribution of the material meets the required specification. Incoming CDFA will be stored in separate locations from processed material. The two output materials from the process, mineral and carbon, will be stored in separate silos. As there will only be one waste type accepted at the site, there will be no mixing or blending of different wastes, hence BAT2f is not relevant. The waste will be sorted and screened at the ash lagoon prior to delivery to the APP site. A ferrous metal separator will be installed prior to the feed into the Atritor Dryer Pulverisers as a precautionary step for the purpose of removing any small fragments of tramp[9] metal that may have the potential to damage the dryers. The purpose of the metal separator is only for the removal of incidental inclusions of tramp metal in very limited quantities. Consistent with BAT2g any small pieces of metal are removed by an overband magnetic separator magnet which attracts ferrous metal materials. Collected tramp metal (which is estimated to be no more than 50kg per year) will be stored in a drum or similar enclosed container. BAT 2 – *waste acceptance* is not relevant to the operation of the MCP at the site.
BAT 3 Emissions to water and air BAT Conclusion 3 is relevant to maintaining an inventory of waste water and waste gas streams to facilitate the reduction of emissions to water and to	Under the applicability heading for BAT3 it is stated: "*The scope (e.g. level of detail) and nature of the inventory will generally be related to the nature, scale and complexity of the installation, and the range of environmental impacts it may have (determined also by the type and amount of wastes processed).".* Only a single, homogeneous waste type will be accepted at the site comprising CDFA. The CDFA is itself a product

[9] Tramp metal is defined https://agg-net.com/resources/articles/materials-handling/solving-tramp-metal-problems as "*any item of rogue metal not naturally present in the mined ore or quarried aggregate. Such contamination includes digger teeth, pit props, blasting caps, nuts and bolts, and metal originating from the wear and tear of process plant."* hence does not comprise metal arising in the CDFA.

WT BAT	Details to confirm that the process comprises BAT
air and the technique comprises a component of the EMS (BAT 1)	of the thermal combustion of coal used as a fuel in power generation. There is no thermal treatment of the CDFA other than drying to remove moisture. Heat exchangers will be fitted to the warm air stream exiting the filters on the Atritor dryers and the cooling of this warm air stream results in a small proportion of the water in the air stream condensing in the exchanger. The condensed water will be collected and stored in water tanks at the APP. As the water will comprise water that has been evaporated as steam during the drying process which is then condensed back to liquid water as it is cooled in the heat exchangers it is considered that the water will comprise clean water. An inventory of waste water will be maintained through periodic testing of the condensed water for parameters including pH, temperature and conductivity. In the event that the water is to be discharged from the site, the testing will be extended to include the relevant parameters in Table 6.1 and/or Table 6.2 of the BAT conclusions. An inventory of waste gas streams will be maintained as part of the EMS. The CDFA which provides the feedstock for the process is itself a product of the thermal combustion of coal used as a fuel in power generation. There is no thermal treatment of the CDFA other than drying to remove moisture. The air quality assessment presented at Appendix F and the Technical Description Document presented at Appendix B provide details of the predicted emissions from the treatment process and MCP comprising oxides of nitrogen, carbon monoxide and particulate matter and provide details of the stack monitoring that will be undertaken to quantify the emissions and obtain information about the characteristics of the waste gas streams. Details of the particulate matter abatement are provided under BAT 25. The results of the stack monitoring carried out pursuant to the requirements of Table S3.1 of the permit will be the subject of periodic reviews to facilitate the potential for reduction of emissions to air.
BAT 4 Storage of waste The relevant aspects of BAT 4 relate to the provision of an optimised storage location, adequate storage capacity and safe storage operations.	The BAT conclusion for optimised storage location states: "*the storage is located as far as technically and economically possible from sensitive receptors…*" As shown on Figure ERA 1 included with this application (Appendix H), there are currently no residential receptors located within 500m of the APP permit boundary. As explained in the Technical Description Document, CDFA will be imported to the facility in a damp state and

WT BAT	Details to confirm that the process comprises BAT
	will be stored inside a building which provides a barrier to emissions of particulate matter. The drying activity is undertaken inside a dryer which is inside a building, and the dried ash, which presents a greater risk of dust emissions compared to the damp CDFA received at the site, is stored in feedstock silos inside the building prior to the separation activity and is transferred exclusively in enclosed pipework prior to and following separation. The final output materials are stored in silos fitted with bag filters to control dust emissions. The maximum storage capacity for treated and untreated CDFA is determined (and limited) based on the size of the building(s) and the number and size of the silos. The storage areas and silos have been suitably sized based on the proposed throughput of the activity. The quantity of waste held in the storage areas is monitored during regular site walkover surveys. As explained in the Technical Description Document as the activities are scaled up to the full throughput of 500,000 tonnes per year, the storage building will be extended, and additional silos will be added to ensure that there is sufficient storage capacity available. The material tracking procedures and information recorded at the site will ensure that the quantity of material stored at the site is understood and storage requirements are met. The silos are fitted with high level alarms to prevent overfilling. Consistent with the description presented in BAT 4 it is considered that the buildings and silos at the APP comprise an optimised storage location away from sensitive receptors. BAT 4 – *storage of waste* is not relevant to the operation of the MCP at the site.
BAT 5 Handling and transfer of waste	All relevant staff employed at the site are suitably trained to handle waste including in respect of measures to prevent, detect and mitigate spills and will be trained to operate the plant associated with the APP process. Relevant operational procedures are in place for the handling and transfer of waste. The handling and transfer procedures are risk-based considering the likelihood of accidents and incidents and their environmental impact. Training records are retained as part of the site EMS. BAT 5 – *handling and transfer of waste* is not relevant to the operation of the MCP at the site.

WT BAT	Details to confirm that the process comprises BAT
1. 2 Monitoring	
BAT 6 and BAT 7 Monitoring of emissions to water	As explained under BAT 3, in the event that condensed water captured from the air stream from the Atritor dryers is to be discharged from the site, monitoring for the relevant parameters in Table 6.1 and/or Table 6.2 of the BAT conclusions will be undertaken. The monitoring only applies when the substance concerned is identified as relevant in the waste water inventory mentioned in BAT 3.
BAT 8 Monitoring of channelled emissions to air	Details of the monitoring of channelled emissions to air from the Atritor Dryer Pulverisers and MCP are presented in Table 1a and 1b of the Technical Description Document. Consistent with the requirements of BAT 8 for the mechanical treatment of waste, and with the limited volatile or semi-volatile components of the waste being processed, the monitoring will comprise monitoring for dust (particulate matter) on a six monthly basis following the standard EN 13284-1. The emissions of oxides of nitrogen and carbon monoxide will be monitored for the emissions from the gas generators which comprise MCP.
BAT 9 Monitoring of diffuse emissions of organic compounds to air	BAT 9 states: "*BAT is to monitor diffuse emissions of organic compounds to air from the regeneration of spent solvents, the decontamination of equipment containing POPs with solvents, and the physico-chemical treatment of solvents for the recovery of their calorific value, at least once per year using one or a combination of the techniques given below*". As none of these activities are undertaken and no solvents are treated in the APP process it is unnecessary to give further consideration to BAT 9.
BAT 10 Odour monitoring	Under the applicability heading for BAT10 it is stated: "*The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated".* The only waste accepted at the site comprises CDFA from the adjacent lagoons. As confirmed in the Environmental Risk Assessment, the waste does not comprise a source of odour and there are currently no sensitive receptors within 500m of the site. On this basis, as the CDFA does not comprise a source of odour and an odour nuisance at sensitive receptors is not expected, no odour monitoring is required at the APP site. As an odour nuisance at sensitive receptors is not expected as a result of the operation of the MCP, no odour monitoring is required in respect of the MCP at the site.
BAT 11	The annual consumption of water, energy and raw materials will be recorded across all treatment activities

WT BAT	Details to confirm that the process comprises BAT
Annual consumption of water, energy and raw materials and annual generation of residues and waste water.	including the Atritor Dryer Pulverisers, the electrostatic separators and the MCP to satisfy the reporting requirements specified in the permit. Records of the annual generation of residues from the APP process will be maintained and documented as part of the site EMS. In accordance with the EMS, opportunities to reduce the use of water, energy and raw materials without adversely affecting the process performance and output quality will be reviewed regularly.
1.3 Emissions to air	
BAT 12 Odour management plan	Under the applicability heading for BAT12 it is stated: "*The applicability is restricted to cases where an odour nuisance at sensitive receptors is expected and/or has been substantiated".* As explained under BAT 10 above the waste does not comprise a source of odour and there are currently no sensitive receptors within 500m of the site. On this basis, as an odour nuisance at sensitive receptors is not expected, an Odour Management Plan (OMP) is not required at the APP site. As an odour nuisance at sensitive receptors is not expected as a result of the operation of the MCP, an OMP is not required in respect of the MCP at the site.
BAT 13 Odour reduction	BAT 13 refers to reduction of odour emissions relevant to open systems (e.g. compost windrows) or in relation to activities in which the waste in the process is being aerobically treated. It is unnecessary to give further consideration to BAT 13 for the APP process or MCP.
BAT 14 Reduce diffuse emissions to air	*In order to prevent or, where that is not practicable, to reduce diffuse emissions to air, in particular of dust, organic compounds and odour, BAT is to use an appropriate combination of the techniques given below. Depending on the risk posed by the waste in terms of diffuse emissions to air, BAT 14d is especially relevant.* As explained above, there are no anticipated risks of diffuse emissions of organic compounds or odour.
14a *Minimising the number of potential diffuse emission sources* *Generally Applicable*	The following techniques specified in the WT BAT are employed at the site: • *appropriate design of piping layout for pneumatic transfer of dried CDFA.* • *limiting the drop height of material* • *limiting traffic speed* • *using wind barriers*

WT BAT	Details to confirm that the process comprises BAT
	Dried CDFA is transferred between activities and storage silos through enclosed pipework designed to contain the material and prevent emissions of particulate matter. Pipework will be subject to routine maintenance and inspections. CDFA is delivered to the storage building at the APP as a damp material. Notwithstanding this, vehicle operators will be trained to minimise drop heights when unloading and transferring damp CDFA into hoppers at the APP and conveyors will be set up to minimise the drop height of materials to minimise the potential for emissions of particulate matter. Site speed limits are enforced at the site to minimise the potential for resuspension of particulate matter from site surfacing. Paved site surfacing areas will be cleaned and dampened with water when necessary to minimise the potential for dust and particulate matter to build up on the site surfacing and comprise a source of particulate matter. CDFA will be stored and treated within a building which provides a barrier to the wind.
14b *Selection and use of high integrity equipment*	The Atritor Dryer Pulverisers, the electrostatic separators and the MCP will comprise high integrity, new, equipment provided by manufacturers with a reputation for providing reliable equipment.
14c *Corrosion Protection*	The plant will be specified to handle ash and will maintained in accordance with the manufacturers' requirements including inspections for any indications of corrosion. Parts will be replaced if necessary.
14d *containment, collection and treatment of diffuse emissions*	Consistent with BAT 14d, waste storage and treatment will be undertaken using enclosed equipment (dryers and separators) inside a building. The emissions of dust from the dryers will be directed to appropriate abatement (see BAT 25) comprising a fabric filter. Details of the control measures are presented in the Dust and Emissions Management Plan (DEMP) included with the application (Appendix I).
14e *Dampening*	*Dampening potential sources of diffuse dust emissions (e.g. waste storage, traffic areas, and open handling processes) with water or fog.* The CFDA received at the site is naturally damp hence prior to treatment does not comprise a significant source of dust emissions hence does not require dampening. During dry windy conditions, site roads will be dampened if necessary to minimise the potential of emissions from the surface. Dampening is not required inside the building and would be contrary to the purpose of the activity which is to dry the CDFA hence would be a waste of energy resources. The water supply for dampening of roads comprises a

WT BAT	Details to confirm that the process comprises BAT
	combination of mains water and recycled water captured at the site.
14f Maintenance	The equipment used at the APP and the MCP will be routinely maintained in accordance with the manufacturers' requirements.
14g Cleaning of waste treatment and storage areas	Regular cleaning of waste treatment and storage areas will be undertaken at the site including conveyor belts and equipment.
14f Leak detection and repair programme	As this aspect refers to leaks of organic compounds from contained vessels it is not relevant to the APP process or the MCP. A leak detection and repair programme will be set up and implemented for the storage and transfer of diesel fuel used for the diesel generators.
BAT 15 and BAT 16 Flaring	As there is no flare associated with or necessary for the APP process it is unnecessary to give further consideration to BAT 15 and BAT 16.
1.4 Noise and vibrations	
BAT 17 Noise and vibration management plan	Under the applicability heading for BAT17 it is stated: "*The applicability is restricted to cases where a noise or vibration nuisance at sensitive receptors is expected and/or has been substantiated".* It was confirmed by the EA in the enhanced pre-application advice that based on the proposals at that time, the variation application will not require the submission of Noise Management Plan (NMP) or a Noise Impact Assessment (NIA). Although it is considered that the operation of the APP and the MCP will not have a significant or unacceptable adverse impact on noise sensitive receptors in the vicinity of the site, a NIA has been undertaken (Appendix J). The NIA concludes that it is unlikely that the proposed development would result in significant or unacceptable adverse impacts at noise-sensitive premises in the vicinity of the site. Noise mitigation measures are presented in the NIA.
BAT 18 Noise and vibration reduction	A combination of the techniques specified in BAT 18 will be employed in relation to the APP process and the MCP to reduce noise and vibration emissions including; BAT18a – locating noise generating equipment inside buildings or suitable enclosures, BAT 18b - implementing operational procedures for inspection and maintenance of equipment, employing experienced, trained staff to operate the equipment, and by operating of plant and machinery in a noise-sensitive manner, BAT 18d – enclosure of noisy equipment (inside the processing building), BAT 18e –

WT BAT	Details to confirm that the process comprises BAT
	noise attenuation (enclosures are integral to the MCP). Further details are provided in the NIA included with the application.
1.5 Emissions to water	
BAT 19 Water consumption	The main objective of the first stage of the APP process is to dry (remove water from) CDFA. The condensed water captured during the drying process will be re-used on site in dust suppression on roadways or for wetting stored carbon. Incoming CDFA and treated CDFA will be stored inside a building or in silos hence will not come into contact with rainwater hence will not generate contaminated rainfall run-off. The surfacing internal to the building will comprise an impermeable surface. Diesel fuel used in the diesel generators will be stored in a tank provided with suitably sized secondary containment. A leak detection and repair programme will be set up and implemented for the storage and transfer of diesel fuel used for the diesel generators. No liquid wastes are stored in tanks or vessels.
BAT 20 Waste water treatment	Heat exchangers will be fitted to the warm air stream exiting the filters on the Atritor dryers and the cooling of this warm air stream results in a small proportion of the water in the air stream condensing in the exchanger. The condensed water will be collected and stored in water tanks at the APP. As the water will comprise water that has been evaporated as steam during the drying process which is then condensed back to liquid water as it is cooled in the heat exchangers it is considered that the water will comprise clean water. On this basis the water will not require treatment prior to re-use at the site or removal from the site. The waste water inventory (BAT 3) and water testing (BAT 6 and BAT 7) will provide the information to confirm that waste water treatment is not required.
1.6 Emissions from accidents and incidents	
BAT 21 The prevention and limitation of the environmental consequences of accidents and incidents.	An Accident Management Plan will be implemented at the site under the site EMS in order to prevent and limit the environmental consequences of accidents and incidents. Security measures are employed at the site to prevent unauthorised entry to the site. Procedures are implemented at the site in respect of containment of spillages. The Accident Management Plan will include procedures for the recording of accidents and incidents and

WT BAT	Details to confirm that the process comprises BAT
	the findings of inspections and includes procedures to identify and respond to incidents and accidents as well as to review their causes and to implement further preventative measures as appropriate.
1.7 Material efficiency	
BAT 22 Material efficiency	BAT is to substitute materials with waste. The extracted waste CDFA will be processed in the APP in order to dry and deagglomerate the material and then to electrostatically separate out unburned carbon in order to meet British Standard EN450 product standards. The mineral particles are used as a direct replacement for cement in concrete, lowering the overall carbon dioxide content of the finished concrete product, as well as improving concrete properties such as overall strength and improved permeability performance. The whole objective of the process is to process waste for subsequent use in place of raw materials. As in BAT19 above, the condensate captured during the drying process will be re-used on site in dust suppression on roadways or for wetting stored carbon in place of mains water.
1.8 Energy efficiency	
BAT 23 Energy efficiency	The plant and equipment specified for use in the APP process will be designed and specified to operate in an energy efficient manner. The annual energy consumption will be recorded for the APP and MCP to satisfy the reporting requirements specified in the permit and in order to optimise energy efficiency at the site. As for BAT 11, in accordance with the EMS, opportunities to reduce the use of energy without adversely affecting the process performance and output quality will be reviewed regularly. As explained in the comments on BAT 22 the output from the APP process substitutes virgin materials in the manufacture of concrete. From a broader energy efficiency perspective, the use of waste derived materials to substitute raw materials provides a significant saving in energy usage by saving the emissions that would have been generated in extracting, processing and transporting the raw materials which have been substituted by the use of waste derived materials.
1.9 Reuse of packaging	
BAT 24 Residue management plan	BAT 24 refers to reusing packaging (drums, containers, IBCs, pallets) for containing waste. CDFA is not received at the site in packaging, it is delivered to the site loose in road vehicles and is not removed from the site in

WT BAT	Details to confirm that the process comprises BAT
	packaging, it is transported in road tankers. Accordingly, in effect the 'packaging' (i.e. the road vehicles and the road tankers) are routinely reused. There are no further opportunities for re-use of packaging in containing waste.
2. BAT CONCLUSIONS FOR THE MECHANICAL TREATMENT OF WASTE	
2.1 General BAT conclusions for the mechanical treatment of waste	
2.1.1 Emissions to air	
BAT 25	BAT 25 relates to mechanical treatment of waste comprising the shredding of waste hence BAT 25 is not relevant to the emissions to air from the Atritor Dryer Pulverisers as the treatment activity specified in the permit is S5.4A(1)(b)(iii) treatment of slags and ashes consisting of physical separation, drying and grading of CDFA. It does not comprise S5.4A(1)(b)(iv) treatment in shredders of metal waste. BAT 25 specifies that BAT for emissions to air of dust is to apply BAT 14d and to use one or a combination of the techniques in BAT 25. The section in this table at BAT 14 above explains how BAT 14d will be applied to reduce diffuse emissions to air, in particular of dust in relation to the APP activities. Notwithstanding that BAT 25 does not apply to the physical treatment of waste comprising the deagglomeration and drying of waste CDFA, consistent with BAT 25b, a fabric filter will be installed to abate the emissions of dust from the vent stacks associated with the Atritor dryers. The fabric filter will comprise a porous woven fabric through which the hot air will pass and the dust particles will be collected by the filter. The fabric filter will be selected based on the characteristics (including temperature) of the waste gas and will be specified to achieve a maximum emission rate of 10mg/m^3. This represents a significant reduction in the dust emission rate in comparison to the limit of 30mg/m^3 specified currently in Table S3.1 of the permit for the emissions of particulate matter from the dryer vent (which as explained earlier was set with the agreement of the EA based on the Ceramic BREF). The air quality assessment prepared in support of the application to vary the permit including the modelling of the potential impact of the emissions of dust from the stacks based on the conservative assumption that the particle size of all dust present is less than 10 microns (i.e. PM_{10}) and the release concentration comprises the maximum emission rate of 10mg/m^3. As explained under the entry for BAT8, the channelled emissions to air from the vent stacks associated with the Atritor dryers will be monitored for dust consistent with the requirements of BAT8 on a six monthly basis. As explained above, as BAT 25 is not applicable to the emissions to air from the Atritor Dryer Pulverisers, the BAT-AELs specified in Table 6.3 of the BAT conclusions for waste treatment are

WT BAT	Details to confirm that the process comprises BAT
	not relevant. The results of the monitoring of dust (as required by BAT8) will be compared to the maximum emission rate of 10mg/m^3 for the fabric filter to confirm that the filter is operating to its specification hence that the results of the air quality assessment remain valid.
2.2 BAT conclusions for the mechanical treatment in shredders of metal waste	
Not applicable to the APP process or MCP (BAT 26, BAT 27, BAT 28)	
2.3 BAT conclusions for the treatment of WEEE containing VFCs and/or VHCs	
Not applicable to the APP process or MCP (BAT 29, BAT 30)	
2.4 BAT conclusions for the mechanical treatment of waste with calorific value	
Not applicable to the APP process or MCP (BAT 31)	
2.5 BAT conclusions for the mechanical treatment of WEEE containing mercury	
Not applicable to the APP process or MCP (BAT 32)	
3. BAT CONCLUSIONS FOR THE BIOLOGICAL TREATMENT OF WASTE	
Not applicable to the APP process or MCP (BAT 33 – BAT 39)	
4. BAT CONCLUSIONS FOR THE PHYSICO-CHEMICAL TREATMENT OF WASTE	
Not applicable to the APP process or MCP (BAT 40 – BAT 51)	
5. BAT CONCLUSIONS FOR THE TREATMENT OF WATER-BASED LIQUID WASTE	
Not applicable to the APP process or MCP (BAT 52 – BAT 53)	

Table 2 – Emergency backup diesel engines on installations: best available techniques (BAT)

BAT for diesel engines on an installation that are classed as new medium combustion plant, operating up to 500 hours a year that are exempt from emission limit values (ELVs).	
Build Standard	
Engines must be optimised to reduce emissions. If you can show your engine achieves the following guidance level (which is not an ELV compliance requirement), it can be considered emissions optimised. Approximately 750mg per m^3 NO_x (as NO_2) at 15% O_2 standard temperature and pressure, dry, 273K and 101.3kPa (equivalent to 2,000mg per m^3 at 5% O_2 – commonly termed '2g') at a typical emergency load (usually greater than 67% of standby power rating).	The engines will be optimised to reduce emissions. The emissions data for the air quality assessment modelled emissions from the engines of oxides of nitrogen of 43mg/Nm^3 at a reference O_2 concentration of 3%. This emission concentration is significantly lower than 750mg/m^3 at 15% O_2 hence it is considered that the engines are emissions optimised. The technical data sheet for the diesel generator presented as an appendix to the Technical Description Document confirms that the diesel generator is MCPD compliant.
Operational controls	
Minimise how much you test diesel engines. You must test for less than 50 hours a year. Avoid testing engines when the air quality is poor. Do not test more than one engine at a time. When using backup diesel generators, you must manage the impacts on air quality to minimise harm to human health and the environment.	As the diesel engines will generally be employed for less than 50 hours per year, the testing of the engines will be less than 50 hours per year. Local air quality records will be consulted prior to testing the engines and testing will not be undertaken when the air quality is poor. The two engines will not be tested at the same time. The potential impact of emissions from the diesel generators on air quality has been assessed in the air dispersion modelling assessment included with the application to vary the permit. The engines will be used within the limits of the parameters modelled to ensure that impacts on air quality are managed to minimise harm to human health and the environment.