Appendix B Appraisal against BAT Standards

BAT Issue	Devonport EfW Facility	Application Reference
EPR 5.01 Section 1.1 Accident Management		
Hazard Identification	• A formal review of the proposed processes and systems has been undertaken to identify potential hazards to the environment that are posed by the installation. The approach employed has been developed using relevant EA guidance (e.g. H1, EPR 5.01, etc) • The hazard identification process includes identification of abnormal operating conditions.	Application Volume 1 Section 9
Risk Assessment	• The potential risk associated with the identified hazards has been completed by considering: o Frequency of occurrence o Nature and quantity of substance released o Pathways and receptors involved o Environmental consequence of the event o Overall risk and its significance to the environment o Control and mitigation measures needed to prevent or reduce the risk	Application Volume 1 Section 9
Risk Reduction Techniques	• Risk reduction techniques to be employed are discussed and have been developed with reference to the appropriate standard. These include: o Substance inventory o Raw material management procedures o Appropriate storage considerations o Automated process control system o Physical protection measures o Secondary containment o Overfill protection o Security arrangements o Incident reporting and investigation procedures o Defining roles, responsibilities and lines of communication o Safe shutdown procedures o Emergency procedure arrangements o Spill control techniques and procedures o Personnel training o Fugitive release control o Plant redundancy o Containment of contaminated waters	Application Volume 1 Section 9
Emergency Plan	• An emergency plan has been developed that details the actions required in the event of an emergency – this plan will be subject to routine testing for ongoing effectiveness	Application Volume 1 Section 9

BAT Issue	Devonport EfW Facility	Application Reference
EPR 5.01 Section 1.2 Energy Efficiency		
Energy Efficiency Techniques including MSW Incineration Considerations	• Electricity will be generated for use both on and off the site in the adjacent Naval Dockyard with excess exported to the grid ; • CHP generated heat is exported for use in adjacent Naval Dockyard heating systems and MVV will continue to support the local authority in assessing the feasibility of district heating options for the future; • Plant design facilitates the generation of 8.7 MW electricity and 8.56 MW heat per 100,000 tonnes of waste treated; • FGR is used which increases energy efficiency; • A dry air pollution control system is used which optimises recovery of heat from the flue gases; • Plant operating procedures, staff training and control systems are designed to facilitate the maintenance of steady plant capacity to minimise down-time; • Plant design incorporates appropriate selection and use of refractory materials and thermal insulation, prevention of air ingress through relevant sealing and avoids pumping where possible; • Plant design optimises the water - steam system to increase energy efficiency. • Planned preventative maintenance will be completed to maintain process efficiency and high levels of heat transfer. The routine and preventative maintenance system includes the maintenance measures required for the plant, including motors, drives, steam system, boilers and furnaces	Application Volume 1 Section 8
Energy Consumption	• Specific energy consumption calculated as 0.502 MWh/tonne waste treated total demand. In respect of R1 calculation the facility achieves 0.95 in full power mode and 1.01 in CHP mode which is significantly higher than the 0.65 threshold and the 0.65 to 0.7 average achieved at most of the newer EfW facilities in the UK.	Application Volume 1 Section 8
WID Requirements	• Article 4 (2b) and Article 6 (6)– heat generated during the incineration process is recovered as far as possible using steam generation with subsequent electricity generation and heat export.	Application Volume 1 Section 8
Energy Management	• Energy management techniques are employed at the site in accordance with H2 guidance.	Application Volume 1 Section 8
EPR 5.01 Section 1.3 Efficient Use of Raw Materials and Water		
General	**WID Article 5** • 1 – there is a requirement for all deliveries to and loads removed from the facility to be enclosed. Discharge of waste loads will take place inside an enclosed reception hall with fast acting roller doors. These measures will reduce potential negative environmental impact from the delivery and reception operations.	Application Volume 1 Section 7

BAT Issue	Devonport EfW Facility	Application Reference
	• 2 – the mass of waste for each EWC category has been identified from information provided by the producer (i.e. waste collection authorities) • 3 and 4 are not applicable as these refer to the incineration of hazardous waste	
Feedstock homogeneity	• Plant design provides for identification and removal of problem waste streams.	Application Volume 1 Section 5
Gas Treatment	• Reagents for gas treatment have been assessed for environmental performance including the potential for waste generation, high reagent consumption rates and increased water use. • Plant design and commissioning will facilitate optimisation of reagent dosing and reaction conditions	Application Volume 1 Section 7
Furnace Conditions	• Plant design and commissioning will optimise process operation to ensure good combustion conditions are maintained and that bottom ash will not contain more than 3% total organic content; • SNCR reagent dosing systems and plant operation will be optimised to minimise the potential for ammonia slip.	Application Volume 1 Section 5
Waste management	• Process wastes including bottom ash and APC residue will be collected and stored separately at the site. • Bottom ash will be recovered and sent for off-site aggregate reprocessing. • APC residue will be evaluated on an ongoing basis for recovery potential.	Application Volume 1 Section 5
Water Audit	• As this is a new facility, the first water audit will take place after the initial year of operation and then be repeated at least every 4 years thereafter • Flow diagrams and water mass balances will be developed during the detailed design process and will be verified at the time of plant commissioning	Application Volume 1 Section 7
Water Use Techniques	• Water efficiency techniques will be applied at source where possible • Process water will be reused on the process where practicable • Appropriate surfacing, containment, maintenance and housekeeping measures will be utilised to minimise the potential for surface and ground waters to become contaminated with fugitive emissions • Housekeeping standards will be maintained by vacuuming where possible – wash-down procedures requiring water will be facilitated by the reuse of process water where possible • All hoses, hand lances or other washing equipment will be equipped with trigger controls • Dry scrubbing systems will be employed which do not require significant quantities of water except for a small amount for ash quenching/conditioning. This quench water is recycled process water.	Application Volume 1 Section 7

BAT Issue	Devonport EfW Facility	Application Reference
	• Mains water use will be for dilution of chemicals, boiler water top up and welfare facilities and consumption will be recorded from a metered supply, where possible meters will be provided for different process areas	
EPR 5.01 Section 1.4 Avoidance, Recovery and Disposal of Wastes		
Waste Minimisation Audit	• As a new facility, no waste minimisation audit has taken place to date but will be completed during the first year of operation and then repeated every two years • Audits will be managed under the integrated BMS system • Process mapping and materials mass balances will be developed as part of the detailed design process and will be reviewed as part of the waste minimisation audit • Techniques for ensuring feedstock homogeneity that will be employed include: o Upstream waste management to ensure only WCA generated wastes and known C&I waste streams are accepted o Mechanisms are in place to remove problematic wastes • Maintenance of combustion conditions as reviewed in the Operational Techniques report will be undertaken to ensure bottom ash is minimised and TOC content remains <3% by dry weight • Flue gas reagent use is under automated process control to ensure that it is optimised	Application Volume 1 Section 5 Application Volume 1 Section 7
General Arrangements	• The site will maintain records of all waste transported from the site in accordance with general duty of care requirements – each load will be accompanied by transfer documentation that will identify the type of waste, the destination, the vehicle details and a weighbridge record detailing the weight • All residual materials generated at the site will be stored and transferred in dedicated suitable containers and vehicles • Landfill disposal, recovery and treatment needs will be via the closest suitable facility	Application Volume 1 Section 5
Bottom Ash Handling	• Bottom ash will be quenched using recycled process water to minimise dust becoming airborne • Water used in the quench process will be drained from the ash and returned to the quench tank • Ash will be stored in dedicated bunkers in the process building • A suitable vacuum unit will be made available to assist with the removal of any ash spillage	Application Volume 1 Section 5
APC Residues	• Storage will be within dedicated enclosed silos equipped with level alarms and filters • Displaced air will be ducted through a silo bag filter during loading and discharge	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
Rejected Feedstock	• Contract arrangements with the WDA/WCA will minimise the risk of unsuitable materials being accepted at the facility • Provision has been made for enclosed/covered storage for rejected materials, which will be bulked and transferred to a suitable treatment, recovery or disposal facility	Application Volume 1 Section 5
WID Requirements	• Article 4 (2c) and Article 9 – every effort will be taken to minimise the production of residues and suitable recovery routes have been identified • Article 4 (2d) – residues that cannot be recovered or reused will be sent for treatment and/or disposal in compliance with current regulatory requirements • Article 6 (1) – bottom ash contains <3% TOC by dry weight • Article 9 – all process waste storage will be in silos (APC residue) or an internal storage bunker (bottom ash) – removal from site will be via enclosed or covered loads thus minimising the potential for releases to air	Application Volume 1 Section 5
Recovered Materials	• Routes for residual materials have been identified to facilitate the recovery of metals and bottom ash. • Routes for the recovery of APC residues will be kept under review. • Waste disposal/recovery routes will be audited to ensure appropriate management in accordance with a schedule set out in the ISO 14001 management system	Application Volume 1 Section 5
EPR 5.01 Section 2.1 Incoming Waste and Raw Material Management		
Legislative Requirements For Incoming Waste Management	**WID Article 4** • 4(a) – operator has identified the list of wastes to be accepted including the relevant EWC code and anticipated annual volumes (see table 4.4b below) • 4(b) – operator has identified the total incinerating capacity of the plant (see section 4.3 below) **WID Article 5** • 1 – there is a requirement for all deliveries to and loads removed from the facility to be enclosed. Discharge of waste loads will take place inside an enclosed reception hall with fast acting roller doors. These measures will reduce potential negative environmental impact from the delivery and reception operations. • 2 – the mass of waste for each EWC category has been identified from information provided by the producer (i.e. waste collection authorities) • 3 and 4 are not applicable as these refer to the incineration of hazardous waste	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
All Installations		
Waste Pre-treatment	• Process design will facilitate the removal of large bulky items if necessary or other problematic wastes via overhead cranes in the tipping hall. Due to the nature of the process no specific pre-treatment stages are required although the facility will have the ability to bale and store incoming waste during periods of plant shut down and blend this material with fresh incoming waste once the plant operation resumes.	Application Volume 1 Section 5
Housekeeping Standard	• The site will operate with high standards of housekeeping, and the plant will be maintained to high standards to minimise fugitive emissions	Application Volume 1 Section 5
Loading/Unloading	• Waste materials will be discharged into the reception hoppers within an enclosed building • Residual products will be stored in designated areas and/or appropriate containers to facilitate off-site transfer	Application Volume 1 Section 5
Odorous Waste	Odour control will be facilitated through: • Fast-acting doors in reception area and bale store area • Maintaining a slight negative pressure in building • Drawing combustion air from the waste bunker areas • Drawing internal air from waste bunker and bale store areas through a dust and carbon filter during furnace shutdown.	Application Volume 2 Section 1
Fire-Fighting	• MVV will carry out a fire risk assessment in line with the Regulatory Reform (Fire Safety) Order 2005. • The design will follow the guidance of Building Regulations Approved Document B 'Fire Safety'. • All fire protection and detection products, systems and services will be provided by suppliers and contractors included on the Loss Prevention Certification Board's List of Approved Fire and Security Products and Services. • Fire protection systems will be designed and installed generally in accordance with National Fire Protection Association (NFPA) 850 – Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations • All fire alarm and detection systems will be installed in accordance with BS 5839, Part 1 - 2002 and subsequent amendments	Application Volume 1 Section 5 Application Volume 1 Section 9
Fuels & Treatment Chemicals	• Tanks with appropriate containment and level alarms have been provided for liquid reagents and silos with filtration have been provided for raw materials (e.g. PAC) • Auxiliary fuel for the process is stored in dedicated fuel tanks	Application Volume 1 Section 5
Rainwater Contamination	Separate water management arrangements have been provided as follows: • Drainage has been designed using hydraulic modelling	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
	• Roof water is collected for irrigation use • Road/paving run-off collected via drain/interceptor system • Foul waters sent direct to sewer	
Municipal		
Waste Acceptance	Site arrangements have been put in place to ensure that: • Incoming waste will be received in enclosed/covered vehicles • Discharge will be to a dedicated reception bunker • Reception area will be maintained under negative pressure • Off-loading will be undertaken with enclosed reception hall • Waste will be visually inspected in the bunker, problematic waste for the process will be removed for off-site transfer • Grab cranes are used to transfer material to the feed chute	Application Volume 1 Section 5
Dust Management	• Wash-down and run-off liquids will be collected via under floor channels and directed to a process water storage tank – this liquid will be used as process water.	Application Volume 1 Section 5
Odour Management	• Fast-acting automatic shutter doors will be employed in waste reception areas; • The fuel bunker will be ventilated and extracted air from the area is used as combustion air; • Bunker management procedures will be employed to facilitate the mixing of materials by gantry cranes, periodic emptying and cleaning of the bunker to assist in preventing anaerobic conditions developing; • Waste processing will be undertaken during normal operation over 3 - 5 days. In the event of furnace shutdown incoming waste can be stored for up to 10 days in the bunker and for longer periods can be baled and stored for use when the process restarts – during this period air will be directed through a dust and carbon filter to maintain odour control standards; • Waste storage will take place in dedicated storage areas and site permitted capacity will not be exceeded;	Application Volume 2 Section 1
EPR 5.01 Section 2.2 Waste Charging		
Automatic waste feed interlock	• The proposed system is designed around an automatic waste feed system that will prevent waste feed to the combustion process when: a. Process is starting up and required temperature of 850^{O}C has not been reached b. The required temperature of 850^{O}C cannot be maintained c. The continuous emission monitors show that emission limit values are exceeded due to disturbance or failure of the abatement systems	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
	• The automatic feed interlock system includes interlock arrangements for the charging chute •	
Airtight Seals	• The combustion system has been designed to minimise air in-leak and escape of fumes from the system by: a. Use of waste filled charging hopper to maintain air tight seal • The system being maintained under negative pressure	Application Volume 1 Section 5
Charging Rate Control	• The proposed combustion system have been designed around: 1. Firing rate set by steam production, such that the waste feed is varied to maintain this taking account of the heating value of the incoming waste and other control parameters. 2. Treatment is balanced against heat release, quality of burn-out and combustion efficiency • A firing diagram has been provided	Application Volume 1 Section 5
Municipal Waste Feed for gasification process	• Waste feed will be through a feed hopper which has a low level alarms in place • The system will be under negative pressure thus preventing the escape of combustion gases • The lower part of the feed chute is double walled and water cooled to minimise the risk of fire. • Consistent feed will be maintained to the furnace through use of low level alarms in the feed hopper to ensure that waste feed is continuous • Overloading of the furnace will be prevented via bed depth control and the monitoring of temperature and airflow is used to ensure automatic control of combustion conditions	Application Volume 1 Section 5
EPR 5.01 Section 2.3 Furnace Types		
Furnace design	• A moving grate system will be used at Devonport and is widely used for the treatment of MSW. Furnace selection was assessed as part of the BAT appraisal.	Application Volume 1 Section 5
EPR 5.01 Section 2.4 Furnace Requirements		
Legislative Requirements	**WID Compliance** • Article 6 (1) – bottom ash contains < 3% TOC by dry weight • Article 6 (1) – combustion temperature will be raised and maintained in excess of 850^{O}C for a residence time of at least 2 seconds following the last injection of combustion air. • Article 6 (1) – the system will be equipped with an auxiliary burner • Article 6 (3) – system will have an automatic waste feed interlock that prevents waste being fed to the furnace when combustion temperature has not been reached, or has fallen below 850^{O}C or during times when an emission	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
	limit value (ELV) is breached due to disturbance/failure of abatement equipment • Article 6 (6) - Heat generated will be recovered through steam generation and converted to electricity and heat • Article 10 (1) – monitoring equipment will be installed to facilitate the measurement of parameters, conditions and masses associated with the incineration process • Article 11(3) residence times, temperature and oxygen content of exhaust gases will be verified during commissioning • Article 13 (2) – in the event of abnormal conditions, operations shall be reduced or closed down as soon as practicable until normal operations can be restored	
Furnace Requirements including grates and primary air	• The process has been designed to achieve an average temperature of around 850^{O}C with a residence time of at least 2 seconds and process monitoring and alarms have been set around these criteria. Combustion conditions will be verified during commissioning although simple plug flow calculations have been provided to demonstrate the achievement of temperature and residence time requirements • The system is equipped with an auxiliary burner to achieve and maintain the required temperature • Bottom ash will be minimised through good combustion control and meet the WID requirements for composition – materials will be segregated and sent for recycling. • Primary air will be supplied into separate zones each of which will be separately controllable • The system will be operated with proper distribution of air to minimise the formation of hot zones and the subsequent volatilisation of inorganic material, this will be verified at the time of commissioning • Air cooling of the grate assists temperature reduction and minimises airflow requirements • The use of the auxiliary system is prescribed in start-up and shutdown procedures, and during plant operation is automated to facilitate maintenance of combustion temperature. • Low sulphur gas oil will be used as a supplementary fuel for the auxiliary burner	Application Volume 1 Section 5
Combustion chambers and secondary air	• The design of system ensures that it is maintained under a slight negative pressure that prevents escape of combustion gases and disturbance of combustion conditions during waste charging • The control system monitors temperatures and pressures in the combustion zone, and incorporates visual and audible alarms, such that the waste interlock will automatically be activated when combustion temperature and ELV compliance can not be maintained	Application Volume 1 Section 5
Combustion conditions	• The control system will be monitored and controlled by an automated system that ensures oxygen content,	Application Volume 1

BAT Issue	Devonport EfW Facility	Application Reference
	residence time and temperature in the combustion zone are sufficient to complete combustion and that there is sufficient turbulence to promote mixing • Basic combustion calculations will be verified at the time of commissioning . • Appropriate instrumentation will be used to confirm the temperatures with the secondary combustion zone	Section 5
EPR 5.01 Section 2.5 Validation of Combustion Conditions		
Design Stage	• Generic CFD modelling has been provided by the technology provider to demonstrate residence time and temperature requirements will be met.	Application Volume 1 Section 5
Operational Stage	• Validation techniques to be employed during plant commissioning will be submitted and agreed wit the EA and will include the points specified in EPR 5.01 Section 2.5 as a minimum.	Application Volume 1 Section 5
Oxygen Measurement	• Oxygen levels will be maintained to at least 6% by volume (wet).	Application Volume 1 Section 5
Combustion Control	• The control system will be monitored and controlled by an automated system that ensures oxygen content, residence time and temperature in the thermal oxidation unit are sufficient to complete combustion and that there is sufficient turbulence to promote mixing • The control system monitors temperatures and pressures in the combustion zone, and incorporates visual and audible alarms, such that the waste interlock will automatically be activated when combustion temperature and ELV compliance can not be maintained • Primary air will be supplied into separate zones each of which will be separately controllable • The system will be operated with proper distribution of air to minimise the formation of hot zones and the subsequent volatilisation of inorganic material, to be verified at the time of commissioning	Application Volume 1 Section 5
EPR 5.01 Section 2.6 Combined Incineration of Different Waste Types		
Combined Combustion	• Not applicable	-
EPR 5.01 Section 2.7 Flue Gas Recirculation		
Flue Gas Recirculation	• Flue gas recirculation will be utilised to assist with NOx control and increase thermal efficiency.	Application Volume 1 Section 5
EPR 5.01 Section 2.8 Dump Stacks and Bypasses		
Dump Stacks	• Not applicable	-
EPR 5.01 Section 2.9 Cooling System		
Cooling System	• An air cooled condensing system will be used.	Application Volume 1 Section 5
EPR 5.01 Section 2.10 Boiler Design		
Boiler Design	• Boiler design is based on optimised velocity gases and rapid reduction of gas temperature thus limiting the available period for dioxin and furan reformation.	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
	• Feed water treatment system, that produces demineralised water from mains water, waste water from the treatment process will be used to quench bottom ash; • Feed water chemical dosing system that will control the pH of the boiler water by injecting chemicals downstream of the feed water pumps ▪ Boiler blow-down system, to remove deposits and impurities from the boiler. The blow-down water will then be used to quench bottom ash • Boiler system is protected by a pressure safety valve that vents to atmosphere. The boiler will be equipped with instruments for recording water level, steam pressure and alarms for high/low water level and steam pressure all in accordance with relevant standards and regulations.	
EPR 5.01 Section 3.1 Emissions To Air		
Particulate Control	• Bag filter will be employed which is an acknowledged and proven BAT.	Application Volume 1 Section 6
NOx Control	• Inleak prevention using appropriate sealing and maintenance of negative pressure in furnace. • Control of combustion air during combustion using multiple injection points with separate control. • Flue gas recirculation. • Use of low NOx burner for auxiliary fuel system. • Use of SNCR using urea which is an acknowledged and proven BAT.	Application Volume 1 Section 6
Acid Gas Control	• Acid scrubbing using sodium bicarbonate and activated carbon. • Optimisation of the reagent dosing using upstream and downstream HCl and SO_2 continuous monitoring. • Variable reagent feed control •	Application Volume 1 Section 6
Carbon Dioxide	• Optimisation of energy efficiency • Use of low sulphur gas oil as auxiliary fuel	Application Volume 1 Section 6
Carbon Monoxide & VOCs	• Principal control is achieved through optimisation of combustion conditions.	Application Volume 1 Section 6
Dioxin & Furan Control	• Optimisation of combustion conditions to ensure that temperatures and residence times are such that dioxins and furans will be destroyed. • Dioxin and furan emissions will be controlled through application of pollution control systems, namely dry scrubber using activated carbon and bag filter for particulate control.	Application Volume 1 Section 6

BAT Issue	Devonport EfW Facility	Application Reference
	• Boiler design is based on optimised velocity of gases and rapid reduction of gas temperature thus limiting the available period for dioxin and furan reformation.	
Metals Control	• Dry scrubber using activated carbon will be used to control mercury emissions; • Particulate abatement using a bag filter will be used for control of other heavy metal emissions.	Application Volume 1 Section 6
Iodine and Bromine	• Wet scrubber will not be used for pollution control and as such no additional control for plume colouration due to iodine or bromine will be required.	Application Volume 1 Section 6
Fugitive To Air	• Covered loads on waste received/removed and on raw material deliveries. • Bag filters on powdered reagent, PAC and APC residue silos. • Maintenance of high standards of housekeeping. • Effective plant maintenance to minimise leaks.	Application Volume 1 Section 6
EPR 5.01 Section 3.2 Emissions To Surface Water and Sewer		
Surface Water	• Surface (rain) water run off discharged directly to adjacent watercourse via full retention interceptor • Use of collected surface water for landscape irrigation	Application Volume 1 Section 6
Sewer	• Recirculation of process water in the process. • Monitoring of effluent and discharge to sewer in line with agreed discharge limits in the event that occasional discharge is required	Application Volume 1 Section 6
Ground Water	• No direct discharges to ground water at the site	Application Volume 1 Section 6
Fugitive To Water	• Provision of containment (bunding) on fuel tanks. • Interceptor on site drainage system • Maintenance of high standards of housekeeping. • Effective plant maintenance to minimise leaks.	Application Volume 1 Section 6
EPR 5.01 Section 3.3 Odour		
Odour	• Maintenance of negative pressure within the reception building • Fast acting roller door on the tipping hall entrance. • Waste will be tipped and stored within an enclosed building. • be used as combustion air within the incineration process. • Air extracted from within the tipping and bunker halls will be extracted through a separate dust and carbon filter when the incineration process is not available. • Roller shutters on tipping chutes. • Waste handling areas will be subject to regular cleaning. • All waste movements into and out of the facility will be within covered waste vehicles.	Application Volume 2 Section 1

BAT Issue	Devonport EfW Facility	Application Reference
EPR 5.01 Section 3.4 Noise and Vibration		
Noise & Vibration	• Use of acoustic enclosures and silencers where required. • Use of very low noise signature equipment where appropriate (e.g. ACC) • Use of cladding with appropriate attenuation properties. • Switching plant off when not in use. • Maintenance of plant to minimise the risk for vibration & increased noise due to deterioration. • Enclosure of main plant processes inside enclosed treatment building.	Application Volume 1 Section 6
EPR 5.01 Section EPR 5.01 Section 3.5 Monitoring and Reporting of Emissions (Water, Sewer and Air)		
Continuous	• MCERTS registered CEM in line with WID monitoring requirements.	Application Volume 1 Section 6
Spot	• Extractive monitoring by certified monitoring firms in line with WID requirements. This will include monitoring of PAHs and PCBs as required by the environmental permit.	Application Volume 1 Section 6
Environmental	• Site inspections.	Application Volume 1 Section 6
Process	• Process variables are monitored using fully automated control systems and parameters measured include: ▪ Combustion temperature ▪ Oxygen ▪ Pressure ▪ Feed rates	Application Volume 1 Section 6
EPR 5.01 Annex 1 Emissions Benchmark		
Emissions Inventory and Benchmarks	• Emissions limit values have been identified for the installation for releases to air and water – these ELVs are in accordance with the identified emissions benchmark for the sector including WID limits. • Units and reference conditions are in accordance with WID requirements as specified in the Sector Guidance Note.	Application Volume 1 Section 6
H6 Management Techniques		
WID Requirements	• Article 6 (8) – the facility will be managed by an individual with an appropriate level of experience and knowledge who holds a CoTC.	Application Volume 1 Section 4
Operations and Maintenance	The site will employ across all aspects of the process: • Defined procedures for the control of operations, emissions monitoring and plant maintenance to mitigate/control any potential adverse impact on the environment. • Established planned preventative maintenance regimes on all relevant plant items, and in particular those items whose failure could lead to impact on the environment. • Planned audits of the system, to ensure ongoing effectiveness against defined performance measures.	Application Volume 1 Section 5

BAT Issue	Devonport EfW Facility	Application Reference
Accidents/ Incidents/Non-conformances	Site risk assessments and control measures will be reviewed for ongoing relevance and effectiveness in order to minimise the potential impact as the result of accidents/incidents/non-conformances and complaints. The system contains: • Detailed hazard identification and risk assessment • Defined procedures for reporting and dealing with such issues.	Application Volume 1 Section 9
Organisation	The company will operate a formal, robust BMS system, which incorporates: • An environmental policy and programme; • Definition of roles and responsibilities; • Specified objectives and targets; • Operational/maintenance procedures; • Independent internal and external audits; and • Annual external reporting on environmental performance.	Application Volume 1 Section 4
Training System	Will incorporate training and awareness provision in relation to: • Awareness of regulatory implication of the Permit on site activities; • Awareness of potential environmental effects under normal/abnormal operations • Awareness of the need to report deviations from the Permit • Prevention of accidental emissions and action to be taken when these occur. •	Application Volume 1 Section 4
Competence and Training	• In relation to competence and training, the site will introduce a robust system that identifies specific training/competence requirements in relation to regulatory requirements, environmental effects of the operation and prevention of accidental releases/minimisation of the effect during an actual release. •	Application Volume 1 Section 4
Key Posts	Key posts for the site will be defined as including: • Permanent managers and operators • Personnel involved in purchasing equipment and materials • Personnel involved in managing contractors on site •	Application Volume 1 Section 4
Industry Standards	• Site operators and management personnel will undergo training and development in line with acknowledged industry standards (eg WAMITAB). •	Application Volume 1 Section 4
Contractor management	• The potential environmental risk associated with contractor activities will be evaluated at the time of appointment and instructions will be provided in relation to protecting the environment. •	Application Volume 1 Section 4
Maintenance	• The operator will define a procedure for identifying, reviewing and prioritising plant preventative maintenance regimes	Application Volume 1 Section 4

BAT Issue	Devonport EfW Facility	Application Reference
	• The preventative maintenance system will cover all plant whose failure could lead to impact on the environment – this includes all tanks, pipework, bunds, ducts and filters • The maintenance system will include a performance monitoring facility and overall maintenance will be audited as part of the IMS system •	
RGN 9 and H5 Surrender and Closure Considerations		
Design and Build Stage	• Underground tanks and pipes are avoided where possible • Facilities have been designed to enable draining/cleaning of vessels, pipes and drains where required • Construction materials have been selected where possible that: a. Minimise dust or other hazard during dismantling; and • Are recyclable.	Application Volume 1 Section 11
Operational Phase	• The installation operations are designed to incorporate measures to prevent pollution wherever possible • Where this cannot be guaranteed, risk minimisation is provided through the use of appropriate control measures • In the event, of an accident/incident, there are site procedures detailing the mitigation measures required to minimise any impact • Procedures are in place that detail the requirements for recording and investigating any accidents/incidents	Application Volume 1 Section 11
Site Closure Plan	Proposed closure arrangements for the installation are included in Section 5 of this report, and these include: • Plans are provided showing underground structures (e.g. drainage) • Vessel/pipeline emptying and cleaning • Structure demolition considerations • Minimising the quantity of material disposed of via landfill • Minimising the amount of hazardous materials to be managed. • Any requirements for monitoring pre- and post closure.	Application Volume 1 Section 11