EA Annual Report 2018

Mersey Valley Processing Centre (BS5514IN)

1.0 Site Information

• Environmental Permitting (England and Wales) Regulations 2016
• Mersey Valley Processing Centre
• Environmental Permit number: BS5541IN

As outlined in a site meeting with Mr M Poyzer Environment Agency on 18th October, United Utilities Water Limited have suspended the incineration activity at Mersey Valley Processing Centre (MVPC) until further notice. The existing dewatering processes on site will remain operational without change. A flow diagram of the on-site processes has been submitted to the Environment Agency to show assets that will remain operational and those that will be suspended.

Whilst incineration is suspended, United Utilities will not keep the inventory of chemicals for the incineration process on site.

With regards to existing permit requirements - waste returns will be submitted as 'nil' returns for the duration of the suspension.

The following reports for Quarters 3 and 4 i.e July – December 2018 will have NIL returns:-

Forms – A3, A4, A5, A6, A7, A8 (Monthly CEMS data)
SET1 (Scrubber Effluent Treatment Plant)
SET2 (Scrubber Effluent Treatment Plant)
ASH1 (Botom Ash PC Residues Composition)
ASH2 (Botom Ash PC Residues Solubility)

Should incineration operations re-start, monitoring will be performed within 2 months of the incineration operation. The EA will also be notified prior to any re-introduction of the incineration process.

CEMS data will be submitted to the EA following the first week of incineration operation (or when stable operation is obtained).

All appropriate management system documentation will be updated as required.

2.0 Environmental Performance

Please see data/information below on environmental performance:

2.1 Environmental Performance Indicators

Total Sludge incinerated (dry basis)	11712.13	tonnes
Electrical energy used at Installation	**13973285**	KWhrs
Electrical energy produced at Installation	1281207.70	KWhrs

Environmental Performance Indicators

Parameter	Annual	All Units per tonne of waste incinerated (dry basis)
Electrical energy Imported to site	12692077 KWH	1083
Total Mass of bottom ash produced	52.36 tonnes	0.0045 /t
Total Mass of APC residues produced	6381.06 Tonnes	0.54kg/t
Total Mass of Powdered Activated Carbon Lime consumption	12.56 Tonnes	0.001072 kg/t
Water consumption	371266.23	

Trends in Environmental Performance Year	Parameter	
	Bottom ash / tonne of waste incinerated (dry basis)	Electrical Energy imported / tonne waste incinerated (dry basis)
2013	1.1	773.4
2014	1.02	338.62
2015	3.91	276.84
2016	4.9	811.59
2017	0.002	335.83
2018	0.0045	1083

2.2 MVPC daily average readings for combustion gases (Jan 1– Dec 15)

Combustion Gas	WID Daily Limit (Nmg/m^3)	Stream 1 (Nmg/m^3)	Stream 2 (Nmg/m^3)	Stream 3 (Nmg/m^3)
Particulates	10	N/a	N/a	
Hydrogen Chloride	10	N/a	N/a	
TOC	10	N/a	N/a	
Carbon Monoxide	50	N/a	N/a	
Oxides of Nitrogen	200	N/a	N/a	
Sulphur Dioxide	50	N/a	N/a	

2.3 Emissions limits that were exceeded
There have been 4 scheduled notifications sent to Environment Agency regarding exceedence in 2018.

February		April																	
3	SO2	14	CO																
8	VOC																		
8	CO																		

2.4 MVPC Solid Residue (Incinerator Bottom Ash) TOC Results

2018 Average = 0.12
WID Consent = 3%

3.0 Plant Performance

Sludge Processed (De-watered) (m^3)	1588401
Sludge Incinerated (T dry basis)	11712.13
Hours of Incineration (Stream 1)	N/A
Hours of Incineration (Stream 2)	N/A
Hours of Incineration (Stream 3)	3731

4.0 Review of fugitive emissions (section 4.1.5 of PPC Permit)

Attached (Appendix 1) is the site fugitive emissions table. This has been reviewed and any changes to the text from previous years are highlighted by including LB 2015 within the text.

5.0 Management Information (section 4.1.6)

United Utilities Water plc has an integrated Business Quality and Environmental Management System that is certified to ISO 9001 and 14001. This System covers all activities undertaken by the business. The scope of the certification goes down to site specific level that measures environmental compliance. Whilst the business sets high level corporate quality and environmental targets by way of Scorecards, the targets set within the Scorecards cascade down through the business to individual level. This 'golden thread' approach can be seen in individual personal objectives, which link back to the high level corporate targets.

Appendix 1

Potential Fugitive Emissions to Air

Potential Fugitive Source	Potential Fugitive Emissions	Actual Fugitive Emission	Current Techniques to prevent emissions	Proposed Future Techniques to prevent emissions upon installation of stream 3
Sludge reception and sludge buffer tanks.	Odour.	No	The tanks are enclosed and are connected to the odour control system.	No additional measures foreseen.
Dewatering plant (immediate locality of centrifuges) and cake conveyors.	Odour.	Very limited	The centrifuges are located within the de-watering hall and are enclosed. Odour extraction points are located beneath the cake conveyors which are connected to the odour control system. In addition, there is building ventilation fans located in the press hall which is equipped with carbon filters (LB 2009).	
Feedstock (including sand, Powdered Activated Carbon (PAC lime) and polymer) storage silos during filling operations.	Dust.	No	The loading systems and silos are fully enclosed and the silos are equipped with bag or cloth filters.	No additional measures foreseen.
Delivery of methanol into storage tanks	Methanol Vapour.	No	Kit has been installed. Tank is double contained, as is the associated pipework. The tank is back vented to the tanker during filling operations. (LB 2009)	

Potential Fugitive Source	Potential Fugitive Emissions	Actual Fugitive Emission	Current Techniques to prevent emissions	Proposed Future Techniques to prevent emissions upon installation of stream 3
Sludge cake loading operations from emergency storage silo.	When it is necessary to store dewatered sludge cake, it is directed via a pressurised pumping system to the emergency storage silos. The pumping action has been identified as being the primary cause of denaturing the sludge which causes it to become odorous.	Yes	The loading of tippers is at present carried out with the doors open. The loading bay is connected directly to the main odour control system. The pressurised pumping system has now been replaced by a conveying system to reduce denaturing of the sludge cake upon transfer to the storage silos. The pumps can still be used if there is no available route to the silos. The trailers are sealed to prevent the leakage of liquid (if present) and covered before leaving site. (LB 2009). An operational change has occurred to allow for safe loading operations due to unsafe levels of H2S gas within the enclosure. The entrance and exit doors to each loading bay have been left open to provide natural ventilation within the enclosure. The gas levels have been monitored since this change to prove the area is safe to continue loading operations. The potential of odour nuisance to our neighbours has been mitigated by only using this route when necessary (LB 2013)	Further engineering design work is ongoing to allow the entrance and exit doors to be closed while loading, and keep the operator safe (LB 2013).
Bed ash sand removal from the incinerator.	Dust and ash.	No	Bed ash sand is screwed out of the bottom of the incinerator when required via an enclosed chute system directly into a covered skip for streams 1 & 2. Stream 3 system consists of a double valve that allows a certain amount of ash to be discharge each time. The ash is discharge hot into a small open skip and removed to an area within the building for cooling. When cooled to a sufficient temperature the small skip is discharged into a bigger skip. This skip is removed by framework contractor when requested by site operations. (LB 2013)	No additional measures foreseen.
Primary gas cleaning stage and ash transfer system.	The Primary bag filters have been replaced with Electrostatic Precipitators (Feb 2009). The new kit comprises of 1 large vessel that stores the charged metal plates, screw conveyor to remove the ash collected, double flap valve and transfer pipework. This is the same for each stream of incineration. Incinerated sewage sludge ash could potentially escape if holes develop in the screw body, body of the flap valves and transfer pipework. This would be caused by dense phase pneumatic ash transfer, which blows the ash intermittently at high velocity through the system causing erosion.	No	The precipitators and ash transfer system are regularly inspected as part of the normal maintenance inspections and any requirement for repairs will be recorded on the local reactive maintenance system. There is now only 1 double flap valve on each system, compared to 6 originally. Bends in the pipework have been reinforced with basalt linings and an alarm system has been installed to give early indication of wear on the pipe. All of these improvements reduce the risk of fugitive emissions.	Stream 3 will be a reproduction of streams 1 & 2.

Potential Fugitive Source	Potential Fugitive Emissions	Actual Fugitive Emission	Current Techniques to prevent emissions	Proposed Future Techniques to prevent emissions upon installation of stream 3
Tertiary gas cleaning stage.	There is the potential for fugitive emissions of powdered activated carbon (PAC lime) to be generated during the addition and removal of PAC lime from the polishing filters.	Very limited	PAC lime is blown via an enclosed system into the polishing filters when required and blown via an enclosed system into storage silos during removal from the filters. The enclosed transfer system is inspected on a regular basis as part of the normal maintenance inspections and any requirement for repairs will be recorded on the maintenance system (LB 2013).	No additional measures foreseen.
Ash loading operations from the ash storage silos	There is the potential for fugitive emissions of incinerated sewage sludge ash to be created during loading operations from the ash storage silos.	No	The discharge of ash from the three (LB 2013) storage silos into articulated tippers is conducted within a dedicated enclosed area. The discharge of ash into the tippers cannot be undertaken when the door of the loading area is open (controlled by magnetic sensors). A water spray is located on the screw feeders which feed the ash onto the shuttle belt and provide the ash with a water content of 15 – 20% water content. The discharge of ash is controlled automatically and is stopped when the maximum weight is reached. Displaced air in the loading area passes through a filter and is directed to a short vent stack. The trailers are sealed to prevent the leakage of liquid (if present) and covered before leaving site.	No additional measures foreseen.
Centrate treatment plant	Odour.	No	The tanks are enclosed and connected to the odour control system.*(LB 2013)*	
Cleaning operations	There is the potential for the generation of airborne ash during cleaning operations of settled ash deposits.	No	Dry sweeping of ash deposits is actively discouraged at the site. Wash down hoses are located in the incinerator and gas clean up buildings and are used to wash the ash deposits (including those in the ash silo loading area) into a sand filter. An external contractor uses a vacuum to remove the ash from the sand filter; ash is transferred into sealed bags or a covered skip. A similar system is used to remove ash leakages from the waste heat boiler pits if the need arises from plant failure. During bi-annual shutdown periods, vacuums are used to clean ash build up on the inside of equipment such as the waste heat boiler.	No additional measures foreseen.
Odour Control Unit performance failure.	odour	No – however Breach of stack	Robust monitoring and controlling of all aspects of the operation of the OCU.	Additional measures for future involve Surveys and reviews and review of OMP .

Potential Fugitive Emissions to Water

Potential Fugitive Source	Potential Fugitive Emissions	Actual Fugitive Emission	Current Techniques to prevent emissions	Proposed Future Techniques to prevent emissions upon installation of streams 3 and 4
Rainwater runoff from hardstanding areas.	Contaminated rainwater.	No	All rainwater runoff from hardstanding areas is directed to the site drainage system[(1)].	No additional measures foreseen.
Firewater in the event of a fire.	Contaminated firewater.	No	All firewater would drain to the site drainage system [(1)].	No additional measures foreseen.
Spillages and leaks from Aboveground Storage Tanks (ASTs)	Chemical and oils	No	Above ground storage tanks on-site containing potentially hazardous materials such as acids, alkalis and oils are contained within dedicated bunds.	No additional measures foreseen.
Spillages during chemical and oil delivery	Chemicals and oils	No	Chemical delivery areas are provided with the facility to isolate the drainage in the delivery from the drainage system network via an interlocked valve.	No additional measures foreseen.
Spillages and leaks from materials handling and process areas (not within bunded areas).	Chemicals, oils and process water.	No	Spillages and leaks in both internal and external areas are directed to the site drainage system[(1)].	No additional measures foreseen.
Failure of drainage system integrity.	Site wastewater.	No	Constructed in approximately 1996 and commissioned in 1998. Constructed of concrete or vitrified clay pipe, foul drainage downstream of manhole FW36 is sulphate resistant.	No additional measures foreseen.
Failure of sump integrity	Contaminated water.	No	Constructed in approximately 1996 and commissioned in 1998. Constructed of concrete.	No additional measures foreseen.
Failure of dewatering liquor holding tank.	Dewatering liquors	No	Constructed in approximately 1996 and commissioned in 1998. Constructed of concrete.	No additional measures foreseen.

[(1)] The on-site drainage system discharges to the holding tank which discharges into the sump of the pumping station (PS1). The water is then discharged via an oil interceptor to Widnes Wastewater Treatment Works (WWTW). There is the facility to contain the water within the holding tanks to prevent contaminated water being discharged to Widnes WWTW in the event of a spillage or fire via a manual valve.