

# Milton Keynes Waste Recovery Park

## Annual Performance Report Jan 2019



**Document  
Title:**

**Milton Keynes Waste Recovery Park  
2018 Annual Performance Report**



<b>Issue Date:</b>	January 2019
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Contents Page

1.0 Introduction ..... 5

2.0 Plant Description..... 5

3.0 Summary of Plant Operation ..... 8

4.0 Summary of Plant Emissions..... 9

5.0 Summary of Permit Compliance ..... 16

6.0 Summary of plant improvements ..... 19

7.0 Details of any public liaison planned for 2019: ..... 20

# Milton Keynes Waste Recovery Park Permit Ref: UP3937ZZ

## Annual Performance Report

This report is required under the Industrial Emissions Directive's Article 55(2) requirements on reporting and public information on waste incineration plants and co-incineration plants, which require the operator to produce an annual report on the functioning and monitoring of the plant and make it available to the public.

### 1.0 Introduction

<b>Name and address of plant:</b>	Milton Keynes Recovery Park Dickens Road Old Wolverton Milton Keynes MK12 5QF  The installation is located approximately 3.1 miles to the northwest of the centre of Milton Keynes and to the south west of the M1 in the county of Buckinghamshire. The site is a former distribution centre on the Dickens Road in Old Wolverton industrial area of Milton Keynes.
<b>Description of waste input:</b>	Residual domestic and commercial and industrial waste, waste wood
Operator contact details if members of the public have any questions	

### 2.0 Plant Description

This permit controls the operation of an Installation, comprising of two listed activities, and their respective directly associated activities for the recovery or a mix of recovery and disposal of non-hazardous waste with a capacity exceeding 75 tonnes per day (or 100 tonnes per day if the only waste treatment activity is anaerobic digestion) through biological treatment.

Activities associated with the incineration are receipt and storage of municipal waste and commercial/industrial waste, production of steam and electricity, abatement of flue gas and handling of incinerator Bottom Ash (IBA) and Air Pollution Residue (APCR).



## **The main features of the Installation are as follows**

### **Mechanical Treatment (MT)**

The Mechanical Treatment (MT) plant can process up to 140,000 tonnes per annum (tpa) of municipal, industrial and commercial residual waste. It enables recyclates to be removed from the waste, it feeds the ATT process and it will extract up to 36,000 tonnes of organic waste per annum which is transferred to the onsite anaerobic digestion (AD) and in-vessel composting (IVC) plant. It utilises a series of physical separation techniques: Waste reception; trommels; shredding; ballistic separation; near infra-red separation; air knives; magnetic separation and use of manual pickers.

Air from the dust filter units from the MT waste reception and tipping halls is extracted to two carbon filter units to control odour. Negative pressure and is maintained within the MT hall to limit the release of fugitive emissions including odour.

### **Advanced Thermal Treatment (ATT)**

Advanced thermal treatment (ATT) by gasification will process up to 94,000 tpa. The plant consists of two lines of ATT which will thermally treat waste to produce syngas through gasification, which is combusted to generate high temperature steam which in turn drive a turbine to produce electricity.

Refuse derived fuel (RDF) will be conveyed into the fuel bunker from the MT, both from treatment of residual, commercial and industrial wastes within the MT, and from direct delivery of RDF from third party waste providers. Material from the bunker will be mixed before loading as fuel to achieve a consistent quality. The fuel hopper, located at the edge of the fuel bunker, will provide fuel to the plunge feeders, and the plunge feeders will push the fuel under the guillotine and into the gasification chamber.

The RDF will be moved along the grate at the bottom of the gasification chamber by duplex feeders. As the fuel moves towards the ash transport system it will be dried and gasified. Any remaining solids (bottom ash) will be discharged into a bottom ash quench bath.

### **Electricity Generation**

The syngas produced in the gasification process flows into the oxidation chamber. The oxidation chamber is designed to ensure a residence time greater than two seconds at a temperature of above 850°C.

Following the oxidation of the syn gas, flue gas at approximately 900°C, flows around the outside of the tubes in the water tube boiler. The flue gas then flows through the tubes for two passes through the smoke tube boiler. Finally the flue gas flows around the outside of the tubes in the economiser. The flue gas leaving the economiser is approximately 150°C, an acceptable temperature for the flue gas cleaning system.

The steam turbine and condenser system produce electricity from the steam generated in the heat recovery and steam generation system. There is one turbine system for the two ATT lines. Approximately 6.0 MWe of electricity is generated by a steam turbine which is fed by the steam generating boiler. The electricity is used at the facility and also exported to the national grid.

## **Anaerobic Digestion (AD)**

A biological treatment process classified as a Section 5.4 Part A(1)(b)(i) activity will comprise of the following processes.

Anaerobic Digestion (AD) will process the extracted organic fraction of the incoming residual, industrial and commercial waste from the MT plant. The biogas from the anaerobic digesters will be combusted in two gas engines (DAA) to generate approximately 1 MWe of electricity, which will be exported to the national grid.

Exhaust gases from the two AD engines is released via two 26m high stacks. The flare is for use in emergency situations and at start up and shut down, which has been designed to meet the same emission standards. However emissions from the flare will not be routinely monitored.

In-Vessel Composting (IVC) process the digestate emerging from the AD fermenters following two periods in the Aerated Static Pile (ASP). Forced aeration, heating and pressure ventilation within the ASP reduces moisture content and allow aerobic conditions to develop. The output from the ASP system is screened using a trommel screen. Oversized material is discharged on a conveyor for return as feed for the ATT facility.

Three sealed aerobic tunnels heat and process the screened output from the AD digesters. The tunnels are equipped with an aerated floor system and a roof blower system. Once the required temperature within the mass has been achieved, the material is retrieved from the rear of the vessels into the compost storage building, where the material is held while quality testing is conducted.

Leachate from the composting ASPs and tunnels will gravitate into the central leachate collection manifold. This will be pumped into the leachate storage tank.

## **Emission Control**

Exhaust gases from ATT will be treated by an air pollution control system that will consist of flue gas recirculation to reduce the amount of NO<sub>x</sub> formed in the oxidation chamber, dry lime injection (for acid gases), activated carbon (for dioxins, furans and mercury) and a bag filter system (for particulate matter).

Emissions from the ATT process will be released via two 55m high stacks. The emission to air will comply with the emission limits in Annex VI of the Industrial Emissions Directive (IED).

## **Emissions Monitoring**

Continuous and periodic monitoring is undertaken for the flue gases in the stack as required by the permit.

## **Air Pollution Control Residue (APCR)**

Solid residues are sampled on a regular basis to assess bottom ash burnout and to monitor the levels of specified pollutants. Bottom ash from the gasifiers will be removed from site for appropriate treatment, recovery or disposal. Prior to collection it will be stored in the ash bunker to the south of the ATT facility.

### 3.0 Summary of Plant Operation

Municipal waste received	71493.204 tonnes
Commercial and industrial waste received	203.800 tonnes
Waste wood (biomass) received	2565.660 tonnes
Other waste received – Road Sweepings Fines Food Waste Activated Sludge	908.070 tonnes 127.180 tonnes 29.250 tonnes 13.300 tonnes
Total waste received	75340.464 tonnes
Total plant operational hours	3312 hours
Total hours of “abnormal operation” (see permit for definition)	None
Total quantity of incinerator bottom ash (IBA) produced	4387.640 tonnes
Disposal or recovery route for IBA	Augean – Hazardous Smoke Lane Avonmouth BS11 0YA  Johnsons Aggregates – Non-Hazardous Portland House, Bickenhill Lane, Solihull, Birmingham, West Midlands, B37 7BQ, United Kingdom
Did any batches of IBA test as hazardous? If yes, state quantity	None
Total quantity of air pollution control (APC) residues produced	1523.665 tonnes
Disposal or recovery route for APC residues	Carbon 8 Aggregates Ltd Brandon IP27 0AX



Total electricity generated for export to the National Grid

12865.55 MWh

## 4.0 Summary of Plant Emissions

### 4.1 Summary of continuous emissions monitoring results for emissions to air

The following charts show the performance of the plant against its emission limit values (ELVs) for substances that are continuously monitored.

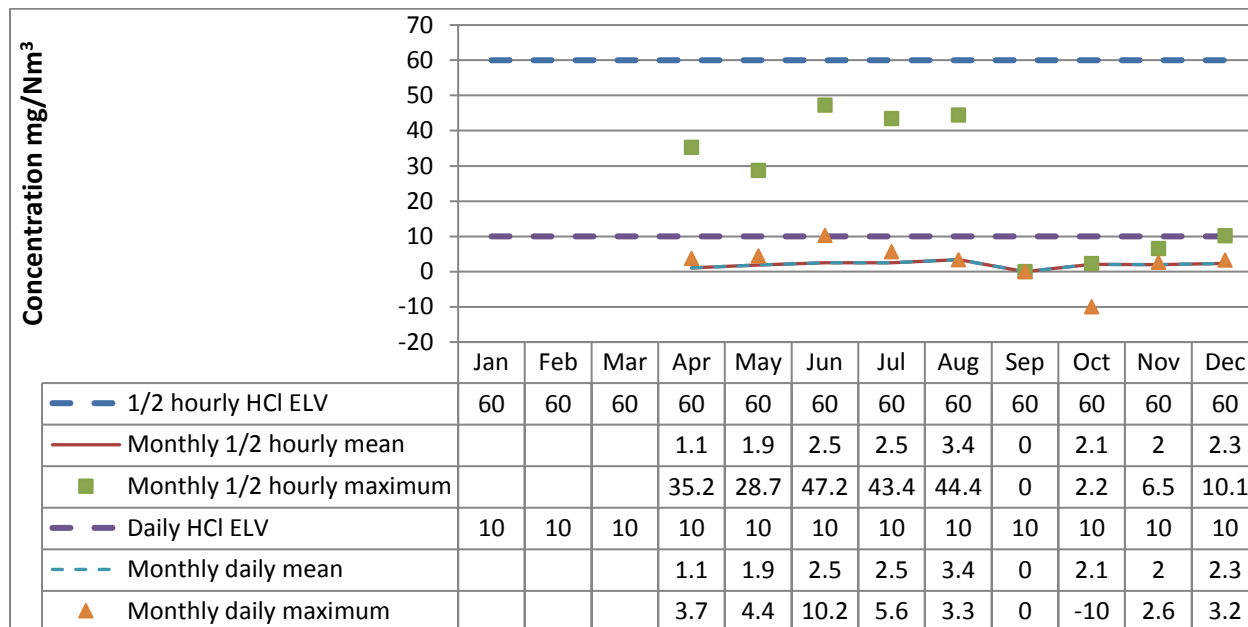


Monthly emissions summary incl half-hou

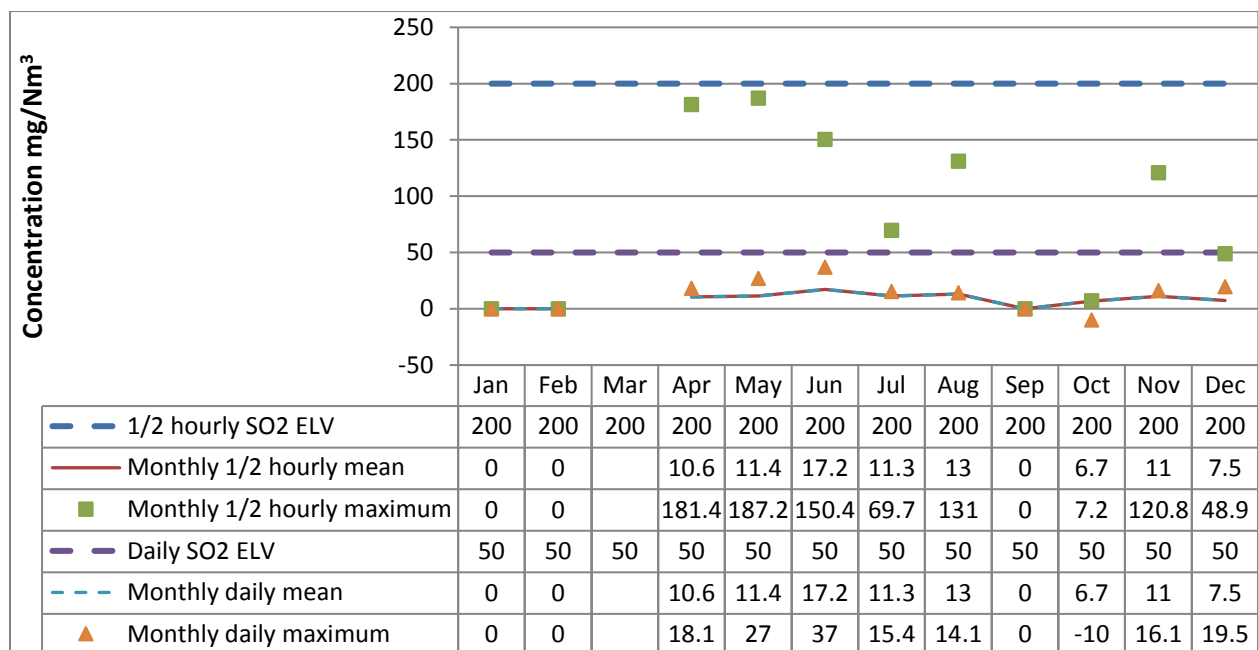


Monthly emissions summary incl half-hou

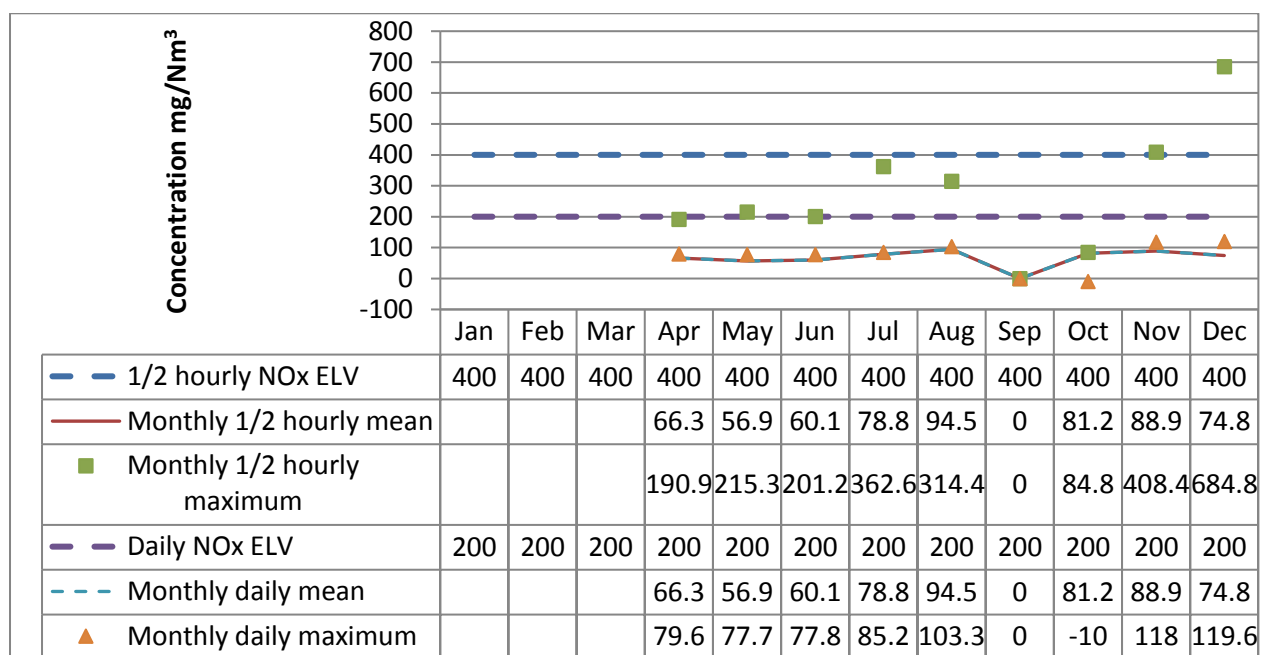
#### Line 1 - Hydrogen chloride



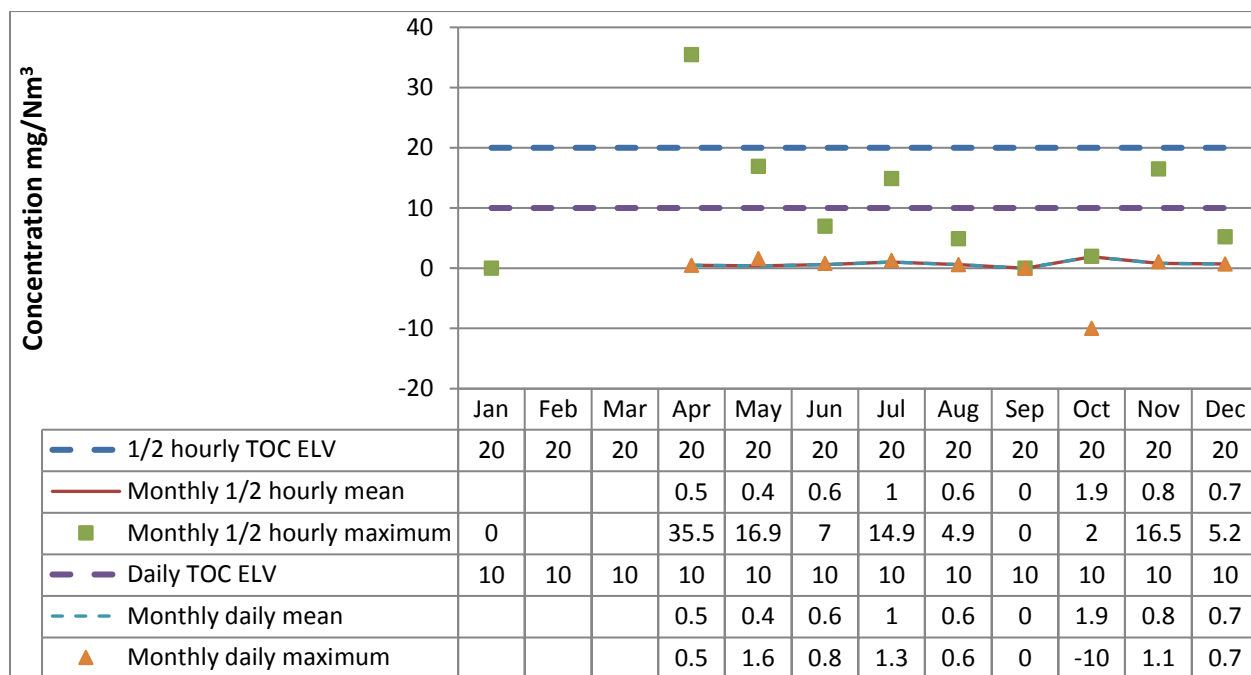
#### Line 1 – Sulphur dioxide



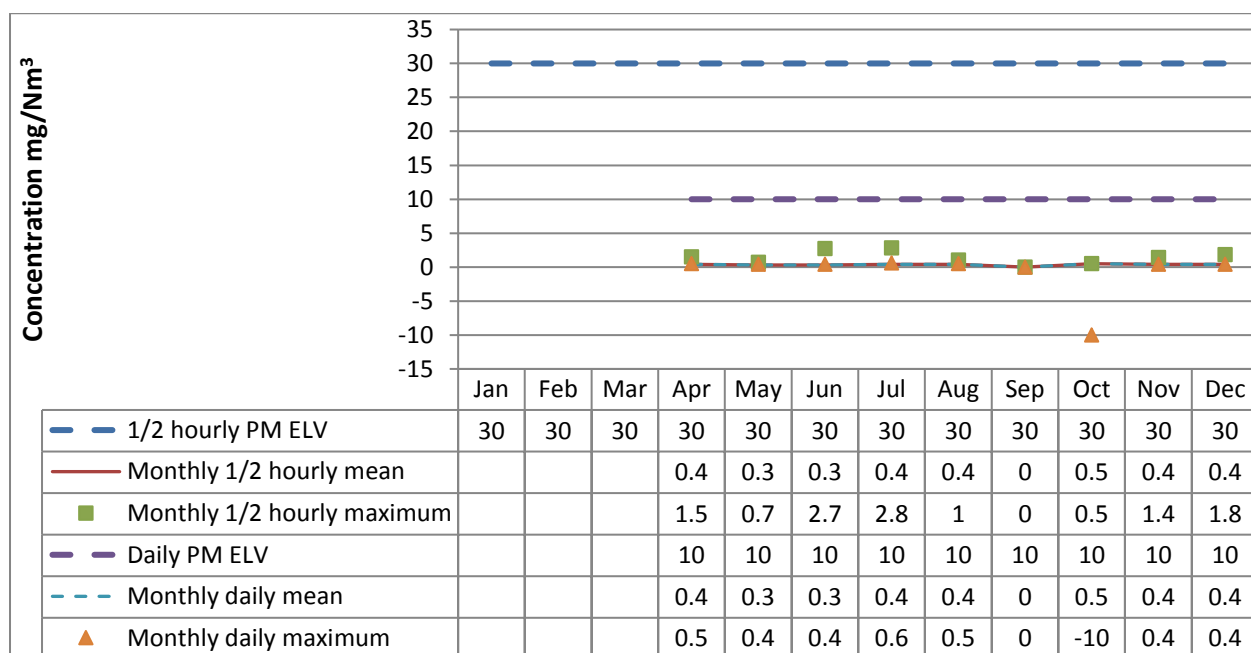
Line 1 – Oxides of nitrogen



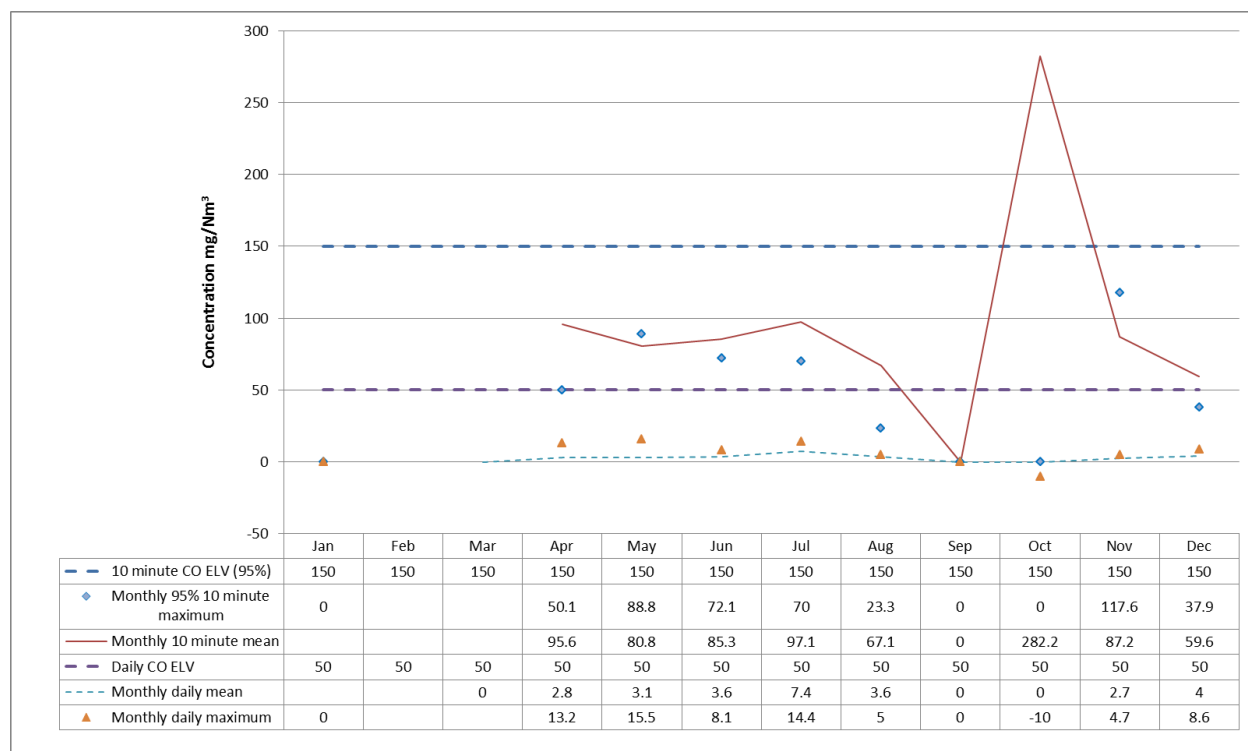
Line 1 – Total organic carbon



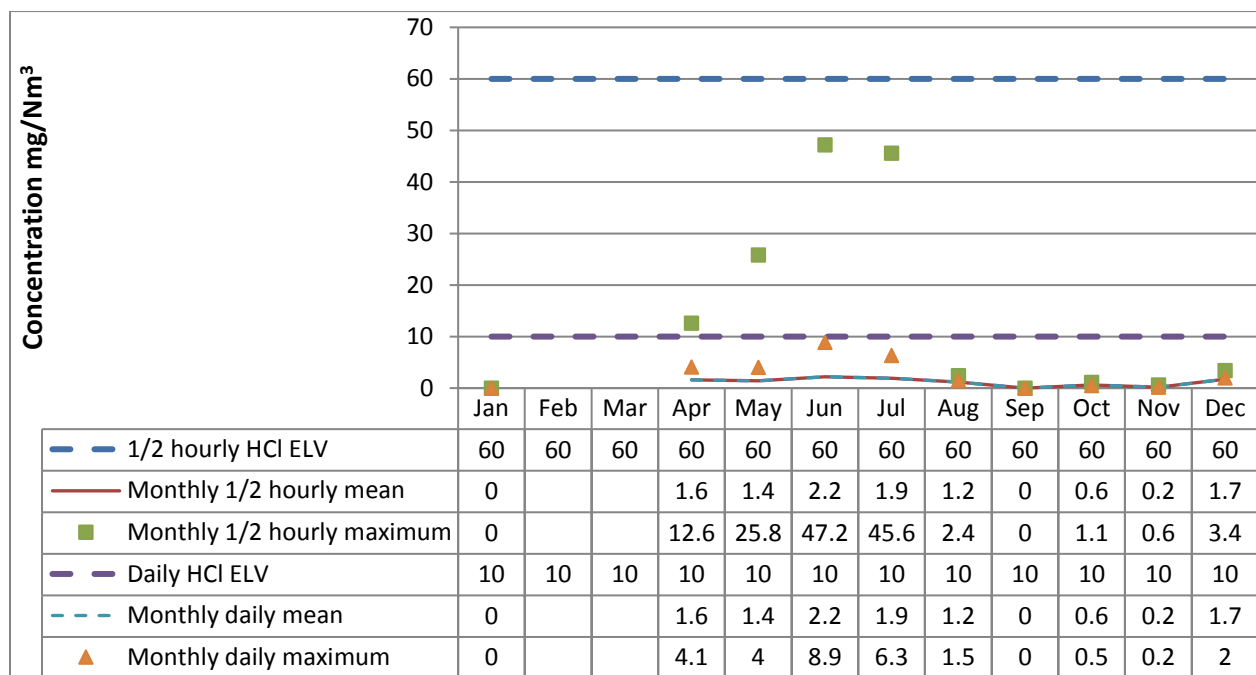
### Line 1 – Particulates



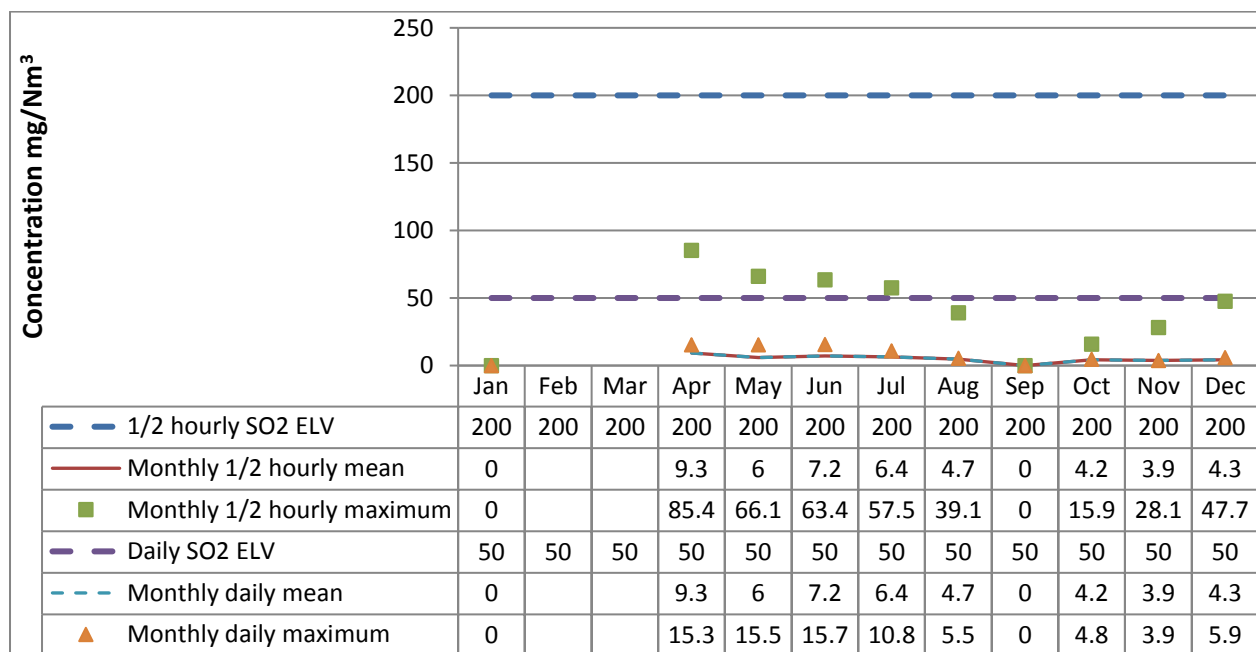
## Line 1 – Carbon monoxide



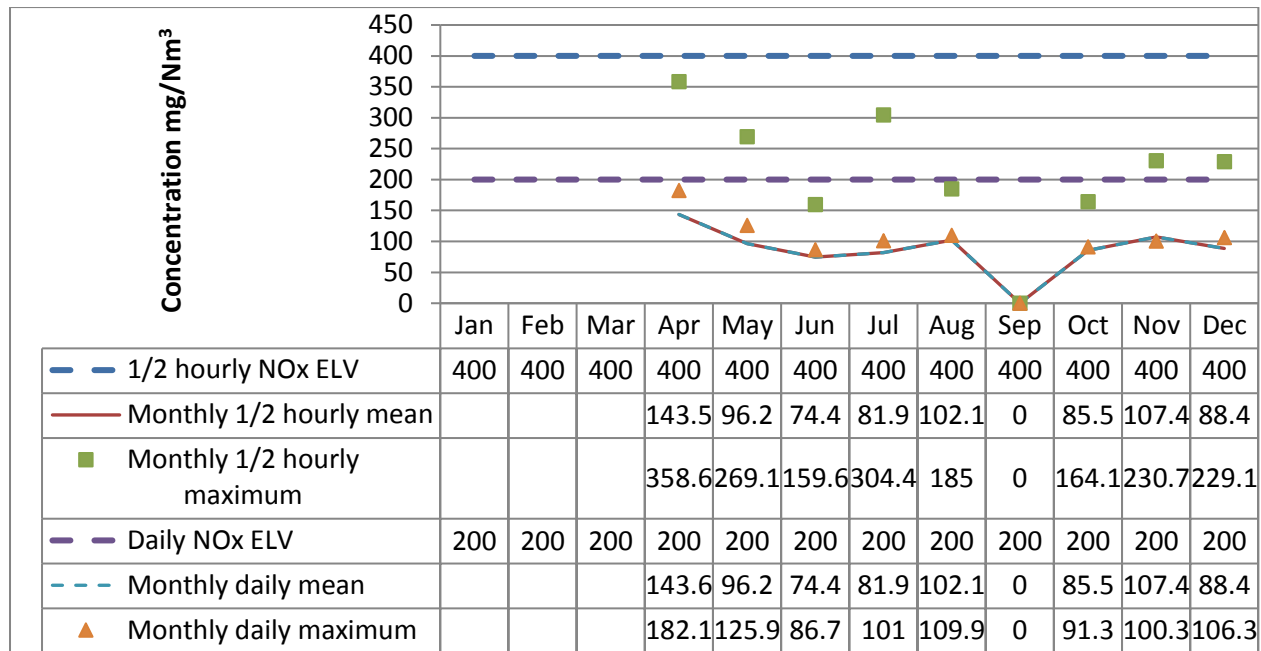
## Line 2 - Hydrogen chloride



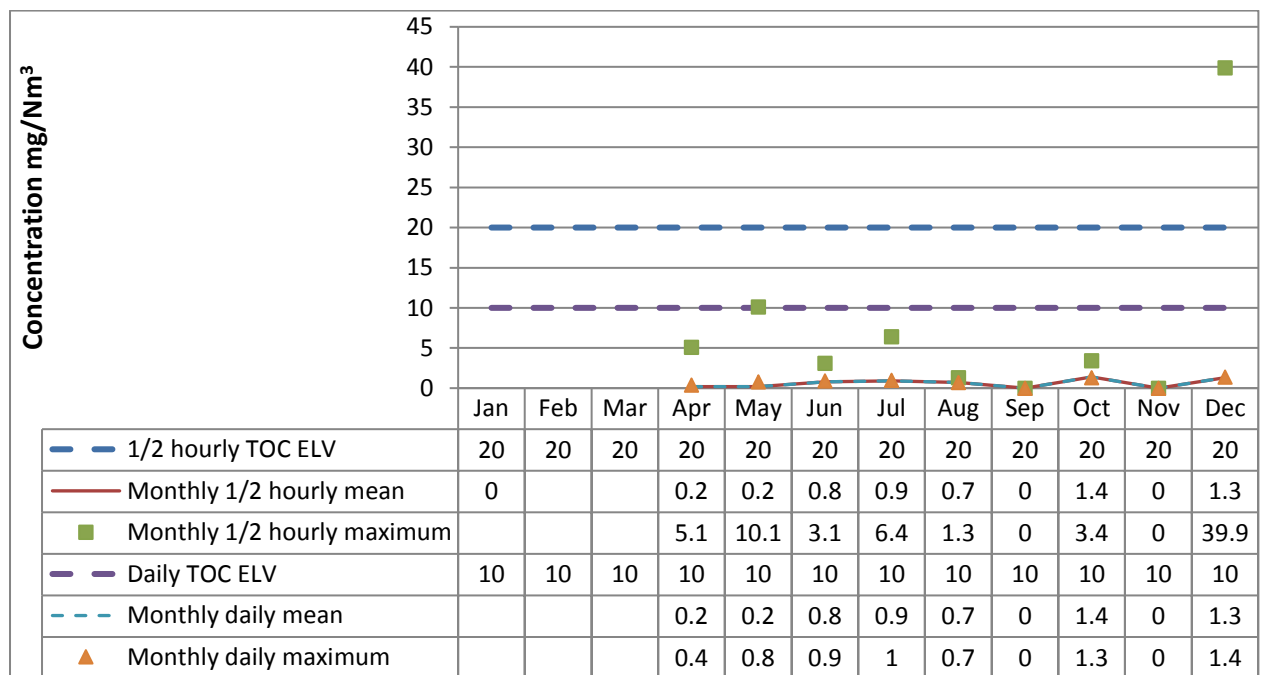
#### Line 2 – Sulphur dioxide



#### Line 2 – Oxides of nitrogen

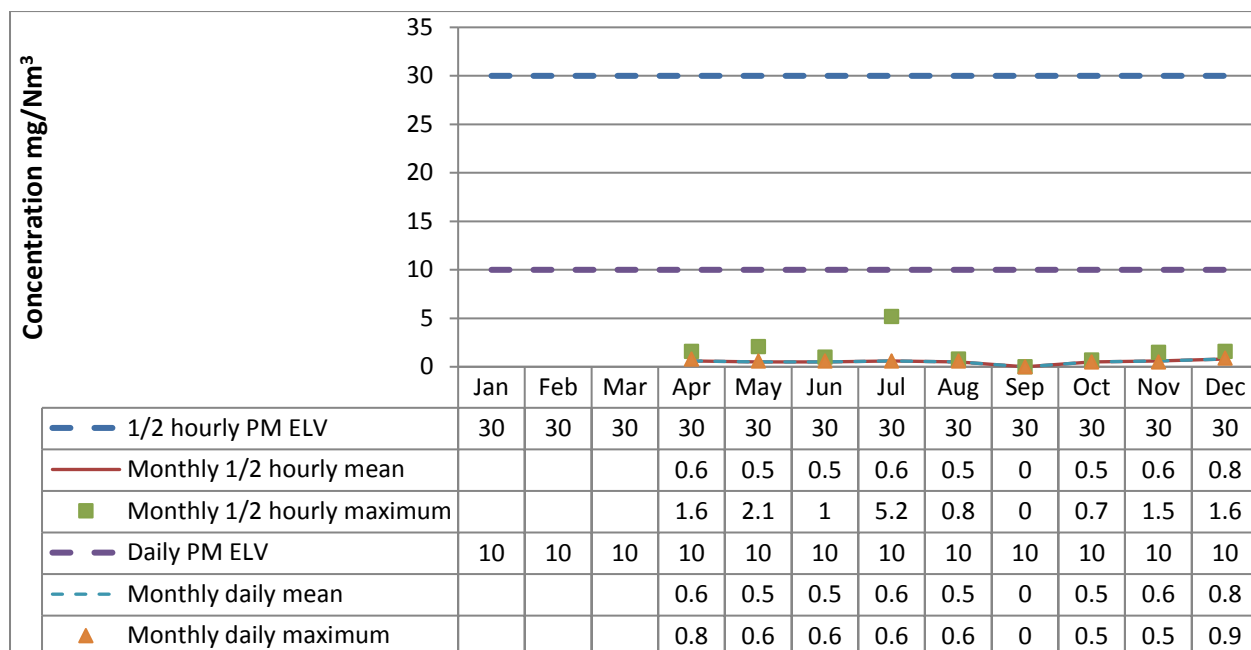


Line 2 – Total organic carbon

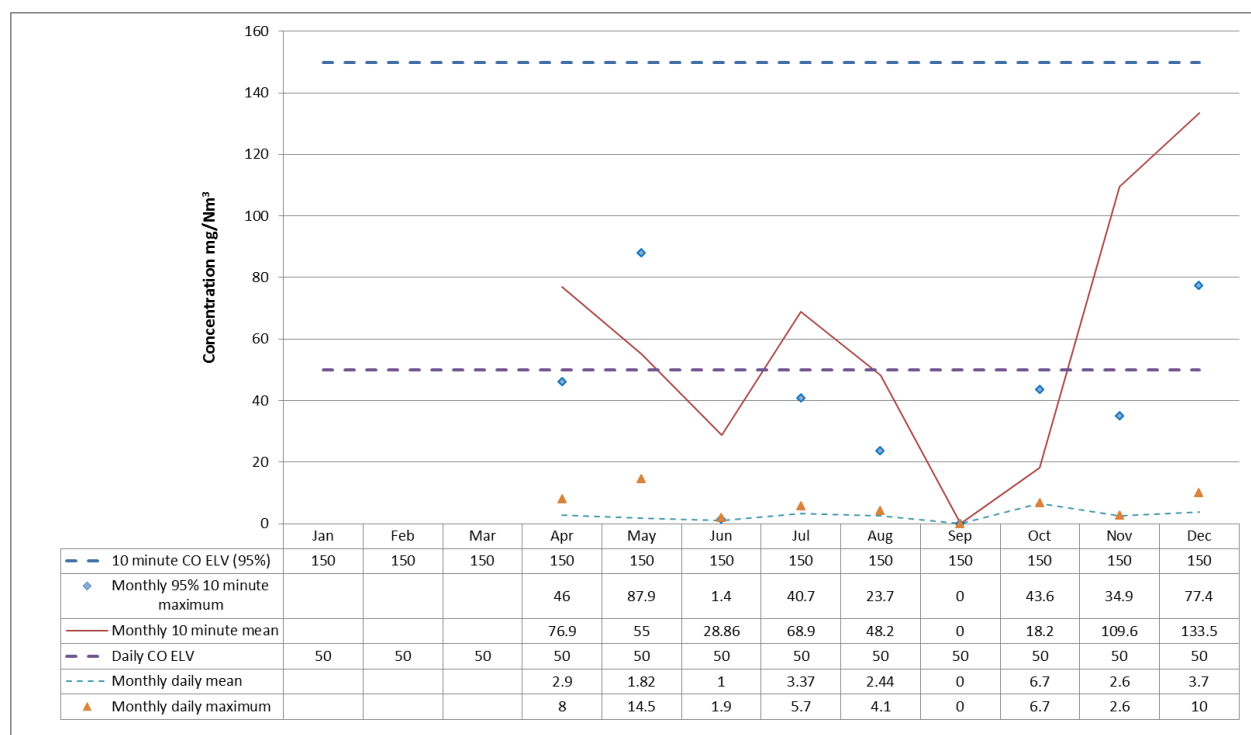


Line 2 – Particulates





Line 2 – Carbon monoxide



## 4.2 Summary of periodic monitoring results for emissions to air

The table below shows the results of periodically monitored substances.

Substance	Emission limit value	Results			
		Q1	Q2	Q3	Q4
		Line 1/2	Line 1/2	Line 1/2	Line 1/2
Mercury and its compounds	0.05 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>	0.0005 / 0.0003mg/m <sup>3</sup>	0.0004 / 0.0009 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>
Cadmium & thallium and their compounds (total)	0.05 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>	0.003 / 0.0008 mg/m <sup>3</sup>	<0.0009 / <0.0009 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>
Sb, As, Pb, Cr, Co, Cu, Mn, Ni and V and their compounds (total)	0.5 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>	0.11 / 0.02 mg/m <sup>3</sup>	0.04 / 0.16 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>
Dioxins and furans (I-TEQ)	0.1 ng/m <sup>3</sup>	N/A ng/m <sup>3</sup>	0.006 / 0.003 ng/m <sup>3</sup>	0.13 / 0.003 ng/m <sup>3</sup>	N/A ng/m <sup>3</sup>
Hydrogen Fluoride	2 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>	0.07 / 0.06 mg/m <sup>3</sup>	0.60 / 0.77 mg/m <sup>3</sup>	N/A mg/m <sup>3</sup>

### 4.3 Summary of monitoring results for emissions to water

There are no emissions to water from the process [other than clean surface water].

## 5.0 Summary of Permit Compliance

### 5.1 Compliance with permit limits for continuously monitored pollutants

The plant met its emission limits as shown in the table below.

Substance	Percentage time compliant during operation	
	Half-hourly limit	Daily limit
Particulates	100 %	100 %
Oxides of nitrogen	99.99 %	100 %
Sulphur dioxide	100 %	100 %
Carbon monoxide	99.99 % 95% of 10-min averages	100 %
Total organic carbon	99.99 %	100 %
Hydrogen chloride	100 %	100 %

### 5.2 Summary of any notifications or non-compliances under the permit

Date	Summary of notification or non-compliance	Reason	Measures taken to prevent reoccurrence
13/04/2018	PLC – Lid not closed	Seal not delivered by supplier – H&S risk to put lid on without seal	Supplier changed
21/06/2018	Emergency vent on fermenter 1	Contractor intervention on the CHPs	Increase supervision of this works activity

### 5.3 Summary of any complaints received and actions to taken to resolve them

Date of complaint	Summary of complaint	Reason for complaint including whether substantiated by the operator or the EA	If substantiated, measures to prevent reoccurrence
09/01/2018	A bad smell coming from the plant on Haversham Road. He also claims the plant has given him Hay Fever.	Unlikely, there were no actions at this time due to no odour present when it was visited. The plant was fully operational at the time with all systems ok.	PJ visited Haversham Road. There was no odour present at the time.
06/02/2018	Dust.	Unlikely, PW visited the owners to discuss their complaint.	No further action
06/02/2018	Strong smell. It was reported as being so bad, that Speedline had to send their employees home.	Unlikely, PJ visited GL Switchgear on 15/08/17 and discussed the complaint. They informed me that the odour was coming from the Serco yard and had been since before MKWRP was built.	The plant was checked fully, and no operational issues could be found.
06/02/2018	A strong odour	Possible, There were no actions at this time due to no odour present when the area was visited. The plant was fully operational at the time with all systems ok.	The plant was checked fully, and no operational issues could be found.
12/04/2018	Strong waste smell and absorbic acid smell	Unlikely, There is no action to take as we have visited the area and there was no site odour present. There was a 'muck spread' type odour that was intermittent. This is odour is not from the facility.	The plant was checked - limited ops currently. Exchange on AD completed today. X2 sniff tests undertaken nothing of note worth escalating. Further off-site tests taken. Unit 7 odours on industrial estate. Inconsistent odours from waste vehicles
20/04/2018	Strong smell & Flies. Offensiveness 5 out of 6	Unlikely, There is no immediate action required as PW visited the area and there were no flies present.	Additional sniff test organised following morning test - no offensives or persistent odour recorded. Offensiveness not above 1. NW wind direction and low wind speed. Away from site & receptor- activities on site not likely to be creating additional odours as reported back by Principle Ops Manager
20/04/2018	Strong offensive odour (No description) 6/6	Unlikely, There is no immediate action required as PW visited the area and there were no flies present.	Additional sniff testing organised - external to site. Fed back to EA. No change in conditions
30/04/2018	Strong offensive odour - Waste 5/6	Unlikely, There were no actions at this time due to	Review of weekends operation & performance

		no odour present when the area was visited. The plant was fully operational at the time with all systems ok.	
30/04/2018	Strong offensive odour - Waste	Unlikely, There were no actions at this time due to no odour present when the area was visited. The plant was fully operational at the time with all systems ok.	Additional sniff testing organised - external to site. Fed back to EA. No change in conditions
30/04/2018	Strong offensive odour - Rotting Gassy odour	Possibly, There were no actions at this time due to no odour present when the area was visited. The plant was fully operational at the time with all systems ok.	Additional sniff testing organised - external to site. Fed back to EA. No change in conditions
14/05/2018	Strong offensive odour 5/6 - constant	Possibly, There were no actions at this time due to no odour present when the area was visited. The plant was fully operational at the time with all systems ok.	Substantiated odour complaint of a sweet MSW smell, from what we believe is the second carbon filter from the Mechanical Treatment area. This is planned to be changed 19/05/18. Conducted sniff test offsite with EA and confirmed this was what we believe to be the case.
16/05/2018	All stated smell was strong. Ranged 4 to 6. Two at 8:30-9am and two at 12:30-13.00. Smell described a dead animal or faeces.	Unlikely, investigation completed	Email correspondence - ES
17/05/2018	All stated strong odour. Ranging between 4 and 5 out of 6. Called in approx 11am. Early morning smell	Unlikely, Investigated and completed by SMT	Could be linked to leachate off-take tanker
18/05/2018	Call logged at 7:45 & 8:45. Odour and flies. Flies are bluebottles, Small flies and a new previously unseen fly.	Unlikely, Investigated & completed by SMT	Email correspondence - ES
09/07/2018	Strong odour. Sweet rotting smell. A lot of flies	Unlikely, Investigated & completed by SMT	Email correspondence - ES
17/09/2018	Presence of flies at Jewson's	Unlikely, Investigated & completed by SMT	MD to investigate populations of flies in key areas
05/09/2018	Smell - odour	Unlikely, Investigated & completed by SMT	ES completed investigation
15/10/2018	Smell - odour (waste)	Yes, Investigated & completed by SMT	Passed to Stefan & Eddie - investigated and not substantiated
20/11/2018	Smell - odour (rotting meat)	Investigated & completed by SMT	Investigated by SB and KR. Unsubstantiated
26/11/2018	Odour - strong pungent odour through the day	Investigated & completed by SMT	Investigated - spoken to Operations Team and reviewed site activities. Conducted an on-site sniff test in addition to an off-site test.

## 6.0 Summary of plant improvements

**Summary of any permit improvement conditions that have been completed within the year and the resulting environmental benefits.**

None

**Summary of any changes to the plant or operating techniques which required a variation to the permit and a summary of the resulting environmental impact.**

None

**Summary of any other improvements made to the plant or planned to be made and a summary of the resulting environmental benefits.**

None

## 7.0 Details of any public liaison planned for 2019:

Date and time	Description	Location
If known, otherwise provide an indication with exact date and time to be confirmed		
07/01/2019	Community Group Outreach/Visit	Various Locations
11/01/2019	Youth Group Outreach/Visit	Various Locations
21/01/2019 6pm -8pm	Community Liaison Group (CLG) Meeting	MKWRP
22/01/2019	Educational Group Outreach/Visit	Various Locations
14/02/2019 10am-12noon	Public tour	MKWRP
18/01/2019 10am-12:30pm	Kids Public Tour	MKWRP
28/01/2019 2pm-4pm	Parish Councillor visit	MKWRP
13 <sup>th</sup> Sept to 22 <sup>nd</sup> Sept	Heritage Open Day sessions	MKWRP
Dates to be confirmed	3 Further CLG meetings	MKWRP

If you wish to be involved in the public liaison programme, please contact **Louise Ousley**