London Borough of Hounslow

Mogden Sewage Treatment Works

TW Site Inspection

Date of inspection: 14th December 2017	
Attendees: Mr Steven Maunders (London Borough of Hounslow) and Mr Dimitrios Kalmantis (Thames Water)	
LB Hounslow Observation	**Thames Water Action / Response**
<u>Storm Water Storage Tanks (SWST)</u> **Tank 1A** – Tank full – Amajets 2 & 3 in operation. **Tank 1B** – Tank full – All Amajets in operation. **Tank 2A** – Tank full – All Amajets in operation. **Tank 2B** – Tank full – All Amajets in operation. **Tank 3A** – Tank full – All Amajets in operation. **Tank 3B** – Tank full – All Amajets in operation. **Tanks 4A, 4B, 5A & 5B** which are covered and odour controlled were all empty - unable to gauge condition as lighting system still not working. **Tank 6A** – Tank full – All Amajets in operation. **Tank 6B** – Tank full – All Amajets in operation.	

Tank 7A – Tank full – All Amajets in operation.

Tank 7B – Tank full – All Amajets in operation.

Tank 8A – Tank full – All Amajets in operation.

Tank 8B – Tank full – All Amajets in operation.

Feed Channel - The level of effluent in both feed channels was very high – approximately 5-10% from maximum level - no local odour.

Complaints

The Council directly received no complaints by telephone in the preceding week.

The Council directly received no complaints by email in the preceding week.

The Council received no complaints by email from MRAG.

Thames Water controller advised that they had received no direct complaints in the preceding week.

Odour Monitors

The odour readouts (H_2S) for all of the monitors, which were providing data at time of inspection:

Monitor 1	0.005	ppm	13:07
Monitor 2	0.009	ppm	12:41
Monitor 3	0.000	ppm	13:07
Monitor 4	0.007	ppm	13:07
Monitor 5	0.007	ppm	13:07
Monitor 6	0.009	ppm	13:07

Monitor 7	0.007	ppm	13:08
Monitor 8	0.009	ppm	13:08
Monitor 9	0.009	ppm	13:09
Monitor 10	0.008	ppm	13:09
Monitor 11	0.009	ppm	13:09
Monitor 12	0.008	ppm	13:09
Monitor 13	0.006	ppm	13:09
Wind Speed	0	mph	
Wind Direction	225°		

Sludge Screening House

Shutter doors closed at time of inspection – no local odours.

Imported Sludge

Ten imports of 35m³ daily for preceding seven days.

Odour Log (Thames) - Photocopies of log entries taken

Thursday 7th December 2017
AM – Cool with Sun, heavy cloud and rain.
All OMU's in use.
Observations: "Monitor No.8 spiked at 14:50 (?) but < 15 mins duration (max 0.017ppm)."
Actions: None noted.
PM – Cold.
All OMU's in use.
Observations: "Monitor 3 spiking – see odour investigation form (below). Monitor 8 – one spike 21:33-22:03 peaked @ 0.019ppm."
Actions: "Area investigated. No odour detected. PAS area checked. Digester Bell height low."
Odour Investigation Form
Monitor: OCU3 **Time:** 23:15
0.023ppm - 19:06 -19:24

0.023ppm - 22:24 - 22:54 0.016ppm – 23:06 – 23:19 **Odour Noticed/Description:** Old West/E Battery inlets checked. No odours detected. **Operational Issues Observed:** OCU11 running but discharging 300ppb according to instrumentation. **Action Taken:** No action taken. Defect to be raised to ensure PH and MV parameters are in range. On OCU11 chemical dosing. **Friday 8th December 2017** **AM** – Cold with Sun and heavy cloud. All OMU's in use. **Observations: "**Odour monitor No.3 spiked 3 times. All < 15 mins duration (max 0.029ppm) 06:25 – 06:38, 07:55 – 08:08, 10:40 – 10:53. Monitor No.4 spiked @ 15:21 < 15 mins duration (max 0.016ppm) Monitor No.8 spiked @ 17:18 < 15 mins duration (max 0.024ppm). **Actions**: None noted. **PM** – No observations noted. All OMU's in use. **Observations:** "Monitor No.11 showing odours from 10:07 - 11:05 PM. Digester Area checked and all OK (0.016ppm (!)" **Actions:** None noted. **Saturday 9th December 2017** **AM** – Cold with Sun and heavy cloud. All OMU's in use. **Observations:** Monitor No.5 spiked @ 07:05 but < 15 mins duration (max 0.030ppm) & 07:35 but < 15 mins duration (max 0.022ppm) & 08:05 but < 15 mins duration (max 0.018ppm). Monitor No.3 spiked @ 11:41 & 12:26 both times < 15 mins duration (max 0.043ppm). Monitor No.5 spiked @ 14:21 but < 15 mins duration (max 0.027ppm) & 15:21 but < 15 mins duration (max 0.018ppm). Monitor No.8 spiked @ 13:05 but < 15 mins duration (max 0.015ppm)." **Actions**: "Area checked. No odour sources found." **PM** – No observations noted. All OMU's in use.	

Observations: "Monitor No.4 showing odours. Are round P.H. checked. No odours found. 0.020ppm from 12:04 till 12:59." **Actions:** None noted. **Sunday 10th December 2017** **AM** – Cold with heavy cloud and rain. All OMU's in use. **Observations:** "Monitor No.4 spiked at 13:35 but <15 minutes duration (max 0.020ppm). Monitor No.8 spiked at 13:33 until 13:48 = 15 mins duration (max 0.031ppm)." **Actions:** "Checked areas coming from PAS. Hard to ascertain in this wintery weather - rain/sleet coming down." **PM** – No observations noted. All OMU's in use. **Observations:** "No odour problems." **Actions:** None noted. **Monday 11th December 2017** **AM** – Freezing Cold with heavy cloud and rain. OMU - All OMU's in use. **Observations:** "1-5 – No spikes. 6-13 – no spikes." **Actions:** None noted. **PM** – No observations noted. All OMU's in use. **Observations:** "Monitor 4 11:04 – 12:04 (0.023) Smell from siloxane filter. Monitor 12 12:16 – 01:13 (0.017) Digesters checked all OK. Monitor 8 11:51 – 12:01 (0.019) smell from siloxane filter." **Actions:** None noted. **Tuesday 12th December 2017** **AM** – Freezing with Sun and heavy cloud. All OMU's in use. **Observations:** "OM2 0.103 up & down 14:11 – 15:41 (went to 0?) 0.090 – dropping 15:56 – 16:11 No.? Combi was being unblocked by day workers. No other issues."	

Actions: "Odour investigation around inlet area, no other problems noticed." **PM** – Cold with Sun and heavy cloud. All OMU's in use. **Observations:** "Monitor No.3 flat-lining, Monitor No.2 spiked at 00:54 <15 mins duration (peaked at 0.034ppm)." **Actions:** None noted. **<u>Wednesday 1st November 2017</u>** **AM** – Cold with Sun and heavy cloud and rain. All OMU's in use. **Observations:** "OM13 16:06 – 16:18, No odour source found. No other issues." **Actions:** None noted. **PM** – None noted. All OMU's in use. **Observations:** None noted **Actions:** None noted.	

Sludge Dip Records

Date	West PSTs 1	West PSTs 2	West PSTs 3	West Total	East PSTs	Grand Total
	All units in m^3					
OMP limit	**500**					
08/12/17	0	1050	183	1233	1088	2321
11/12/17	***863**	455	0	1318	152	1470
13/12/17	352	801	305	1458	1785	3243

*****The sludge stock levels for the West side circular primary settlement tank 1 were **not compliant** with the OMP trigger level (500m^3) on **11/12/17** (about which notification was not received) but were compliant on the other dates for which data has been provided. There are no limits for the East side primary settlement tanks as these are covered and odour controlled. Thames is required by the terms of the abatement notice agreed in 2005 to notify LBH on the next working day of any such exceedance and notify LBH within three working days of any appropriate remedial measure taken within three days.

Explanation to the high levels of sludge in PST1 on 11/12/17: TW advised that the sludge readings are not true readings for sludge in the West Side PSTs 1. Thames Water advised that there is clean water being pumped to the head of the circular PSTs (West Side) and into circular PST 9. The force of this water entering PST 9 is casing the thin layer of sludge within the tank to be blown up and mixed throughout the tank (mixing blanket). When the tanks are dipped for sludge they are encountering it at a much higher level due to this mixing. Thames Water has to record when they encounter sludge as part of their procedures and this is why they believe they consider they have the false higher readings. Another reason why they believe these are false positives is due to the flow out of the PST. If the levels of sludge present in the tank are correct they would expect to see flows at 40l/s however they have flows of 60l/s with current levels. Thames Water advised they would have flow like this with lower levels of sludge in the tank and therefore they do not believe it is an issue and would also not be an odour issue.

Thames Water advised that they have a Picket Fence Thickener (PFT) on site that is used to settle sludge. A layer of sludge settles out at the bottom of the tank and a band of water/supernatant forms on top. This water is collected from the top of the tank and was previously returned by a drainage system to the PSTs 1-8 on the East Side of the works. Thames Water advised that they currently have construction work in the PFT area, which has demolished some equipment in the area and have found that some of the drainage system now floods. To prevent the flooding they have turned on a pumping station, which now returns the PFT water to the circular PSTs 9-12 rather than the rectangular ones (1-8).

Thames Water advised that since doing this it has periodically caused the circular PST (9-12) sludge stocks to be reported high because the water is unclear, which triggers the equipment used to measure the depth of the sludge in the PSTs.

Thames Water advised that therefore the current sampling technique is leading to higher levels of sludge being reported in the PSTs. Verification has confirmed the genuine sludge stocks are below the trigger level by using a sludge judge and checking the flowrate from the base of the tanks. Sludge judging will be used daily now to ensure accurate reporting.

Digesters

Digesters 1-4 – Out of use (permanent) – noticeable quantity of water accumulated to the brim of these tanks which is thick with algae – requires draining.

Digester 5 - in use – seal level approx. 1ft below coping stones – seal weak and bubbling.

Digester 6 - in use – seal level approx. 2ft below coping stones – good seal (stones in use)

Digester 7 - in use – seal level approx. 2ft below coping stones – seal

weak and bubbling vigorously – ongoing spill from tank requiring clean-up. **Digester 8** – in use – seal level approx. 2ft below coping stones – seal weak and bubbling – Bell height high – requires draw down of biogas. **Digester 9** - in use – seal level approx. 1ft below coping stones – good seal (stones in use). **Digester 10** – in use – seal level approx. 2ft below coping stones – seal weak and bubbling vigorously – ongoing spill from tank spitting requiring clean-up – Bell height high – requires draw down of biogas. **Digester 11** - in use – seal level approx. 3ft below coping stones – seal weak and bubbling. **Digester 12** - in use – seal level approx. 2ft below coping stones – seal weak and bubbling – Bell height high – requires draw down of biogas. . **Digester 13** - out of use – empty and clean – contractor on site undertaking maintenance. **Digester 14** - in use – seal level approx. 1ft below coping stones – good seal (stones in use). **Digester 15** - in use – seal level approx. 1ft below coping stones – seal weak and bubbling. **Digester 16** - out of use – empty and clean – contractor on site undertaking maintenance. **Digester 17** - in use – seal level approx. 3ft below coping stones – seal weak and bubbling. **Digester 18** - in use – seal level approx. 3ft below coping stones – good sea – ongoing spill from tank spitting requiring clean-up **Digester 19** - in use – seal level approx. 4ft below coping stones – seal weak and bubbling.	

Digester 20 - in use – seal level 4ft below coping stones - seal weak and bubbling. There was evidence of anti-foaming agent in use and TW advised that this is applied daily to all of the digesters that are operational. 2x full, 5x partially filled & 3x empty tanks of anti-foaming agent seen positioned throughout area. Installation of "auto-dosing" for anti-foam agent to all digesters operational – currently using 2-3 tanks weekly.	
GENERAL **Final Settlement Tanks East Side of Works** The 8 circular tanks previously used as PSTs are now being used as final tanks (71-78). Tank 71 drained down and out of service. **East Side Screen House** All small doors closed. Roller-shutter door now replaced – open as contractors on site undertaking works to screens. **Skips** 1x large open general waste skip outside Screen House. 1x full small grit skips on North/East of site by grit house – covered with "heavy duty" yellow tarpaulin 2x empty small grit slips. Ongoing maintenance to this plant requiring over-pumping of grit. 1x large open skip – empty and uncovered located on Service Road by FST's 71-78. 1x enclosed general waste skip on Service Road by Power House. On the West side there was one large open skip containing general waste (timber). **Pasteurisation Plant**	

The pasteurisation plant is in service and fully operational.

West side primary settlement tanks (PST)

Rectangular PSTs – no issues.
Circular PST's 9, 10, 11 & 12 all in use.

West Side Aeration Lanes (Old)

Battery C aeration feed channel approximately 30% obstructed – requires jetting.

New Works (West Side)

Feed Channel for Aeration Lanes 20 - 25 approximately 20% obstructed – requires jetting.
Approximately 50% of tanks have "fluffy" coverage across surface – improved since previous inspection. Quantity of physical detritus in tank that has bypassed screener has decreased significantly. Sprinkler head performance has been improved (cleaned/pressure increase).

Odour Control Unit (OCU) performance monitoring – (14/12/17)

Plant	Reading (ppm)	Action Level (ppm)	Compliant
Main pumping station inlet	0.00 0.00 0.00	Unknown	Unknown
Main pumping station outlet	0.00 0.00 0.00	0.2	Yes
East OCU	0.00 0.00 0.00	0.05	Yes

West inlet OCU	0.00 0.00 0.00	0.05	Yes
Sludge reception inlet	No Data	Unknown	Unknown
Sludge reception outlet	0,00 0,00 0.00	0.8	Yes
Thickening plant inlet	No data	Unknown	Unknown
Thickening plant outlet	0.00 0.00 0.00	0.6	Yes
Transfer PS inlet	No Data	Unknown	Unknown
Transfer PS outlet	0.00 0.00 0.00	0.6	Yes
New West inlet (OCU 11)	0.00 0.00 0.00	0.5	Yes
OCU 12 (Pasteurisation Plant)	0.00 0.00 0.00 0.008	0.5	Yes