



Asset Management Asset Standard Odour Management Plan

Aylesbury STW

AYLES1ZZ

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0 Document Control & Procedures

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0.3 Document Control

0.3.1 Document Change Request

Whilst Standards are mandatory, it is recognised that one process may not cover every eventuality and a document user may identify an improvement that does not compromise the objectives of the procedure; in this instance a change request against the Standard should be raised.

Information exchange is essential in supporting continuous improvement of the Standards, and a common document and data change request process is provided via the "TAPS" application available via the TW Portal. Within TAPS "Service Catalogue" menu option there are links and instructions for raising change requests for a variety of subjects.

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It is a business requirement to comply with standards. Compliance issues will be escalated to the relevant governance group for further action as appropriate.

For further information/advice, please e-mail: am.standards@thameswater.co.uk

Owner Review Requirements

Document to be reviewed when any changes are made to the site or processes

Local Review Requirements

Site Manager should be informed when handwritten amendments are made to this document

Revision No	Reason for Revision	Prepared by	Approved by	Date
1	Creation of OMP into new Standard format	[REDACTED]		October 2013
2	Creation of OMP into new Standard format	[REDACTED]		October 2013
3	Update, review and change in Performance Manager	[REDACTED]	[REDACTED]	August 2017
4	IED permit application	[REDACTED]	[REDACTED]	October 2021
4.1	IED permit application resubmission	[REDACTED]	[REDACTED]	November 2023

4.2	Updated Site Plan		November 2024
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0.4 Sign Off

Area Operations Manager	██████████	Date: November 2024
Performance Manager	██████████	Date: November 2024

0.5 Glossary of Terms

TERM	DESCRIPTION
AD	Anaerobic Digestion
BNR	Biological Nutrient Removal
CHP	Combined Heat and Power
CSM	Customer and Stakeholder manager
DEFRA	Department for Environment, Food and Rural Affairs
DWF	Dry Weather Flow
EA	Environment Agency
EHO	Environmental Health Officer
EMS	Environmental Management System
EPR	Environmental Permitting Regulations
FFT	Full Flow to Treatment
H4	Environment Agency - How to comply with your permit – H4 Odour Management, March 2011
ICA	Instrumentation Control & Automation
IED	Industrial Emissions Directive
OCU	Odour Control Unit
OMC	Operational Management Centre
OMP	Odour Management Plan
PFT	Picket Fence Thickener
PM	Performance Manager
PS	Pumping Station
PST	Primary Settlement Tank
Receptors	Sensitive receptors are any fixed buildings or installations where odour annoyance may occur, such as residential homes, schools, hospital, offices, shops or garden centres. Open areas such as playgrounds and public footpaths should also be listed where these are known to have been affected by odour
SAP	Thames Water's enterprise resource and planning system
SCADA	Supervisory Control And Data Acquisition
SOM	Site Operating Manual
STC	Sludge Treatment Centre

STW	Sewage Treatment Works
TM	Team Manager
TCM	Technically Competent Manager
UWWTD	Urban Waste Water Treatment Directive

1 Introduction

This Odour Management Plan (OMP) forms part of Aylesbury STW Best Operating Practice and is a constituent part of the Environmental Management System (EMS). A key related document is the Site Operating Manual (SOM) – this document can be found on Thames Water’s database SharePoint, within the EMS pages.

The purpose of this OMP is to define how the potential and actual generation of odour from Aylesbury STW are identified, and how, as far as is reasonably practicable, they are controlled and recorded. It is primarily a management guide; detailed operational procedures are contained within the SOM.

Changes to OMP procedures are captured in the SOM as part of the periodic reviews of this document. The Odour Management Plan is to be used by all personnel involved in site operations.

The effectiveness of the odour control measures will be reviewed annually or sooner if any of the following occur:

- If the site in question acquires any other permitted activity with the potential to increase the risk of odour off site.
- When significant changes are made to the site which may affect odour, e.g. capital spend.
- As a result of a change in pattern of odour complaints, increase in public concern and as soon as possible after a significant incident.
- When the site management changes.
- If there is a material change in relevant regulations or guidance.
- If there is an odour release incident
- If a contingency measure is triggered

This OMP is an operational document that has been developed following a review of the potential risk areas for odour release. It details operational and control measures appropriate to the reduction or elimination of the impact of odours from wastewater treatment works. It provides detail to allow operators and maintenance staff to understand the operational procedures for both normal and abnormal conditions.

This OMP was updated in 2021 to incorporate appropriate odour control measures for activities that will be newly regulated under an Environmental Permit issued under the Environmental Permitting (England and Wales) Regulations 2016 (EPR), following the principles transposed through the Industrial Emissions Directive. This follows the reinterpretation of the Industrial Emissions Directive in exclusion of UWWTD activities - meaning that anaerobic digestion (AD) on a Sewage Treatment works now needs an Environmental Permit.

The Odour Management plan has been structured to distinguish between the two regulatory regimes, which are fully described in the Site Information chapter. The wastewater treatment process is covered by the Urban Wastewater Treatment Directive (UWWTD). The Environmental Permit for the Sludge Treatment Centre (STC) covers various process including but not limited to, the AD process, combustion of biogas in the CHP plant and the storage of resulting sludge. This OMP responds to

odour risks from both UWWTD and STC permitted processes (referred to as the Sludge Treatment Centre Permit).

This OMP is stored electronically on SharePoint within the EMS page.

Relevant Guidance

Where this Odour Management Plan relates to STW activities regulated under the Urban Waste Water Treatment Directive (UWWTD) this OMP may still draw upon elements of best practice taken from H4 but this should not be inferred as H4 being applicable to these activities.

The following guidance has been used to inform the contents of the OMP where it related to activities regulated under EPR through Sludge Treatment Centre Permit. This guidance does not apply to UWWTD activities:

- Environment Agency - How to comply with your permit – H4 Odour Management', March 2011 (H4)
- 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 (Waste Treatment BAT Conclusions)

The OMP format used is in line with that adopted for other Thames Water sites.

2 Site Information

2.1 Location and Receptors

Site Address:

Aylesbury STW
Rabans Lane
Aylesbury
Buckinghamshire
HP19 8RT
What 3 words ref: editor.headed.casual
EPR Permit number to be included when issued

Aylesbury STW lies to the south-west of the Main line railway to the Midlands, 500m from the A41 on the northern western fringes of the town. The site treats an approximate Population Equivalent of 130,000.

The site serves Aylesbury town and outlying villages such as Aston Clinton, Bierton, Broughton, Buckland, Cheddington, Halton, Hardwick, Long Marston, Marsworth, Tring (rural), Weedon, Wendover, Weston Turville, Wilstone, Whitchurch and parts of Stoke Mandeville.

Receptors

The nearest receptors are given in Table 2.1 and have been marked on site location map in Figure A of Appendix 4:

Table 2.1 Location of potentially sensitive receptors.

Receptor Number	Receptor Address	Receptor Type	Approximate distance to the nearest site boundary (m)	Direction from the site.	Receptor Sensitivity
1	Adjacent to access road	Residential	On boundary	South	High
2	Aylesbury Household recycling centre	Industrial	On boundary	East	Medium
3	Rabans Lane Industrial Esate	Light industrial	On boundary	East & SE	Medium
4	Residential area surrounding Dickens Way	Residential	50	East	High
5	Residential area surrounding Avalon Street	Residential	200	North	High
6	Industrial areal surrounding Brunel Road	Light industrial	400	SE	Low

7	Residential area surrounding Arcott Way	Residential	400	SE	High
8	Aylesbury Football Club	Recreational	500	NE	Low
9	Residential area surrounding Belgrave Road	Residential	500	NE	High
10	Residential area surrounding Paradise Orchard	Residential	600	NE	High
11	Aylesbury Vale Parkway	Train station	600	NW	Medium
12	Residential area surrounding Russet Street	Residential	700	North	High
13	Broadfields Retail park	Light industrial	700	East & SE	Low
14	Thomas Hickman School	School	725	NE	High
15	Putlowes Drive	Residential	750	NW	High
16	Aylesbury Vale Academy	School	900	North	High
17	Quarrendon Leas Park	Recreational	950	NE	Low
18	Sainsbury Local	Light Industrial	1000	North	Medium

19	Residential area surrounding Meadowcroft	Residential	1000	East and NE	High
20	Whaddon Hill Farm	Residential	1000	South	High
21	St Mary's C of E School	School	1200	SE	High
22	Residential area surrounding Coldharbour Way	Residential	1300	SE	High
23	Meadowcroft Community centre and Open Space	Recreational	1400	NE	Low
24	Gatehouse Industrial area	Light industrial	1400	East & SE	Low
25	Green Ridge Primary Academy	School	1600	North	High
26	International Slate supplies	Light Industrial	1600	NW	Medium
27	Education facilities surrounding Conventon Road	School	1600	East	High
28	Fairford Leys Park and Football pitches	Recreational	1650	SE	Low
29	Eythrope Pavillion	Manor House/Garden	1700	SW	Medium

30	Old Rectory Cottage	Residential	1800	NW	High
31	Sheepcote Hill Farm	Residential	1850	West	High
32	Hartwell House and Spa	commercial	2000	South	High
33	Residential area surrounding Cromhamstone	Residential	2000	South	High

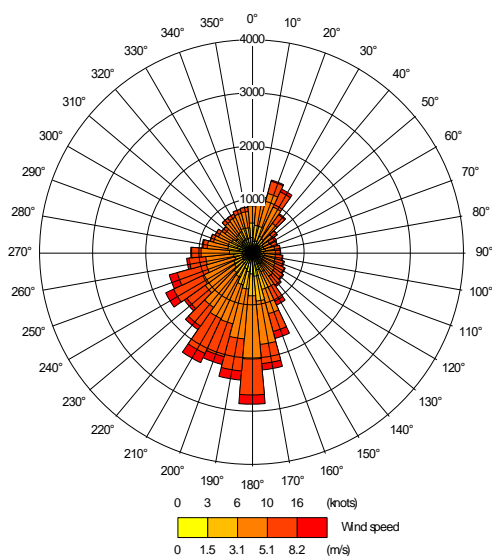
2.2 Off-site sources of odour

Buckinghamshire Council operate a Household Recycling Centre adjacent to the northern eastern boundary of the site which may have the potential to generate odour.

2.3 Wind Rose and Weather Monitoring

RAF Benson meteorological station (approximate location NGR E 462586 N 191079) is located approximately 28.5 km southwest of the site and is considered the closest most representative meteorological monitoring station to the site. Data is recorded at the meteorological station in hourly measurements and the figure below presents the relationship between the frequency and speed of wind from compass point directions for the combined years 2016 – 2020. The figure illustrates the predominant wind direction to be southerly, which means receptors north of the site would have the highest probability of experiencing potential increases in odour emissions.

Figure 2.31: RAF Benson meteorological station 2016-2020



There is no on-site weather station at Aylesbury. Weather on site can be reviewed if complaints are received or during periods of abnormal operations. The internal 'Weather' SharePoint site provides adverse weather information, and the UK Met Office website can also be used.

2.4 Site Layout and Treatment Processes

For site plans, see appendix 4. Further details of the site layout and treatment processes are given in the following sections of the Site Operating Manual and are therefore only given summary attention in this OMP:

Section	Description
1	Governance & Control
2	Location, key layout plans and diagrams. Site services, including power, water, drainage, SCADA and ICA. Consent details, process overview, chemical and waste handling.
3	Detailed description of each treatment process, including sludge and odour control.
4	Maintenance
5	Plant control, monitoring, and logging.

2.5 Process Description

2.5.1 UWWTD activities

Inlet Works

- Flow enters the inlet pumping station from 3 x gravity mains and a cess station.
- The **Inlet Pumping Station** consists of one duty variable speed pumps plus a two duty/ assist and an additional forth standby pump
- The inlet works consists of 3 x mesh screens. The screenings are processed by 3 x conveyors followed by 2 x Spirac Megawashers and deposited in a skip for disposal off site.
- **Grit** is removed using a **Dorr Detritor** and deposited in another skip.
- Three pipes discharge works liquors (including SAS) into the channel.
- In the channel downstream of the grit Detritor there is a Ferric Sulphate dosing point that is used for **P (Phosphorus)** removal.

Storm Water

- The Inlet PS contains 6 x storm pumps that pump excess flow to 6 x Storm tanks.
- The storm tanks fill sequentially from tank 6 then 1 to 5.
- The overflow from the storm tank passes to a storm plot and then to a storm outfall that is separate to the final effluent outfall.
- Storm tanks 1 and 2 each have 2 amajet mixers that are controlled by level that keep the solids in suspension, soon to be superseded by an automatic storm cleansing system.
- Storm water gravitates back to the Inlet PS number 2 (IPS2).

All 6 tanks return storm water automatically when the flow to treatment drops below 450l/s.

Primary Treatment

- The main inlet pumps feed 3 no. Circular PST's with half-bridge scrapers.
- The sludge thickens to around 3% and is removed from each tank by a dedicated progressive cavity pump operated on timer.
- The PSTs are desludged in sequence, and the sludge is discharged to the Raw Sludge Tank.

Secondary Treatment

- Secondary treatment uses the BNR (Biological Nutrient Removal) process in a diffused air activated sludge plant and an oxidation ditch, which reduces the 'P' (Phosphorous) level as well as providing conventional treatment.
- The settled sewage is mixed with RAS (Returned Activated Sludge) and passes through Anoxic and Anaerobic zones before being divided between a diffused air activated sludge plant and an oxidation ditch.
- Flow from the 3no. PSTs (Primary Sedimentation Tanks) meet in a distribution chamber (MH 201) before continuing on to the Anoxic and Anaerobic zones in the secondary treatment process, which have been built onto the activated sludge plant.
- The oxidation ditch contains 3x surface aerators, one of which run continuously, the other two are controlled by DO levels.
- There is a Ferric Sulphate dosing point that feeds into the channel before the PST distribution chamber. This is used for phosphate removal to meet the current environmental consent levels. Flow from the aeration lanes and oxidation ditch merge then enters a distribution chamber that feeds 4 x **Final Settlement Tanks**.
- The final tanks have bridge scrapers equipped with sludge blanket detectors, and each FST has a Mallard for scum removal.

Tertiary Treatment

- TT consists of 6 Disk Filters.
- The outfall discharges to the River Thames.

2.5.2 Sludge Treatment Centre activities

The STC treats both indigenous sludges and imported sludges. Indigenous sludge is generated from the incoming flow to the STW, which passes to the Primary Settlement Tanks and through the aerobic treatment process under the UWWTD. Indigenous sludges from the main flow are then drawn off for thickening and blending in Primary Sludge Thickening Plant or SAS Thickening Plant. Imported sludge, arriving at the site, via a separate offloading point, from other works goes through sludge screens and is discharged into the Sludge Blending Tanks where it mixes with indigenous primary sludge. All such imports are subject to appropriate waste pre-acceptance and acceptance checks, prior to acceptance.

Liquors from thickening processes are returned via the site drainage system to the works inlet. Thickened primary sludge and SAS is pumped to the open, above ground Digester Feed Tank.

The STC includes an offloading point for permitted imported waste, consisting of cess, septic tank and similar sewage related wastes, at the entrance of the STW. Wastes are imported via tanker and incoming vehicles are directed to the offloading point, which is an impermeable surfaced area, equipped with sealed drainage and kerbing to reduce the risk of spillages. Incoming tankers park in the offloading area, and hook up to the offloading point, using the site supplied flexible hose pipes to prevent misconnection issues. The offloading then proceeds in line with Thames Water waste acceptance procedures.

Discharged wastes are passed from tankers to the inlet in a mixture with the sewer delivered urban waste water to the treatment processes on site.

From the Digester Feed Tank, sludge is transferred to one of the two above ground Primary Digester Tanks and the sludge undergoes anaerobic digestion over an appropriate number of days. Both Primary Digester Tanks are externally clad with insulation and fitted with pressure relief valves for safety but are of different design and construction.

Following treatment over an appropriate number of days within the Primary Digester Tanks, digested sludge is transferred to one of five above ground, steel, uncovered Secondary Digester Tanks which operate in series. Following digestion, sludge is transferred to a Digested Sludge Buffer Tank, enabling sludge to be pumped to the Sludge Dewatering Plant. Digested sludge is held in the Secondary Digester Tanks for an appropriate retention time to ensure that the required level of pathogen kill is achieved and in order to comply with the digested sludge cake output quality requirements.

Digested sludge is then transferred to the Sludge Dewatering Plant where the sludge is subject to dewatering and is conveyed to the open cake pad for storage pending removal from the site under the Sludge Use in Agriculture Regulations 1989 (SUiAR), and in accordance with the Biosolids Assurance Scheme (BAS). Dewatering liquors are returned via the site drainage system to the works inlet.

Biogas from the Primary Digester Tanks is captured and transferred to the site Biogas Storage holders. Any moisture from the generated biogas drains back to the head of works via the liquor return pumping stations. The Biogas Storage holders and Primary Digester Tanks are fitted with pressure release valves (PRVs) as a safety precaution in the event of over pressurising the system.

The biogas is taken from the Biogas Storage holders for combustion in a CHP engine, generating electricity for use both within the site and for export to the grid, and heat to maintain Primary Digester Tanks temperature. In the event that additional heating is required for the Primary Digester Tanks, biogas may be used in the onsite boilers to provide heat to the Primary Digester Tanks. In the event there is excess biogas, i.e. more than the CHP or boilers can utilise, or in the event that the CHP and boilers are unavailable, there are two ground mounted emergency flares. These are utilised under 10% of the year or less than 876 hours per year. The CHP is currently operated under RPS 109, which would be superseded by this permit.

This OMP includes the import of treated, dewatered, sludge cake from other works, for temporary storage on the site cake pad pending offsite recovery. All such imports will be subject to appropriate waste pre-acceptance and acceptance checks, prior to import, including checking that the incoming cake complies with the requirements of both SUiAR and BAS prior to import. Cake will be offloaded in an empty bay, so as to be stored separately to indigenous sludge cake. The waste stream is the same as that arising from the treatment of sludge within the Aylesbury STC with the same characteristics, composition and eventual end use – application to land. As such, the infrastructure which is acceptable for use for site cake is appropriate for the imported material.

All imported cake is stored for the shortest time practicable, the duration depending on factors such as prevailing weather and availability of the landbank.

3 Site Management Responsibilities and Procedures

3.1 Site Roles

Figure 3.1 - Site Roles

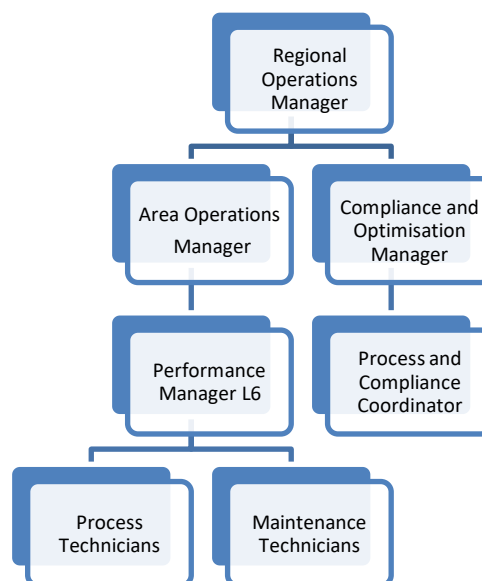


Table 3.1 - Tasks and Responsibilities

Role	Tasks and Responsibilities
Regional Operations Manager	Responsible for the overall performance of STW in this region
Area Operations Manager	Responsible for overall performance of the STW in the area, including assessing the scope of, and updating the OMP as it is implemented.
Performance Manager	Responsible for overall performance of the STW and will be responsible for <ul style="list-style-type: none"> • odour control and management at the site • day to day implementation of the OMP • assessing the scope of, and updating, the OMP as it is implemented. • dealing with customer complaints • day-to-day operation of the STW • ensuring Thames Water staff undergo appropriate training
Technically Competent Manager	Hold the required WAMITAB qualification to support the activities on site under EPR, ensuring permit conditions are complied with.
Maintenance and Process Technicians	Day to day duties include maintaining and operating process equipment.
Customer and Stakeholder Manager (CSM)	Responsible for managing liaison with all external customers and stakeholders in liaison with customer centre, escalation team, local govt. liaison team etc.
Compliance and Optimisation Manager	Responsible for process investigations and technical assistance.
Process Compliance Coordinator	Reports to Compliance and Optimisation Manager. Responsible for process monitoring, improvement and troubleshooting.
Duty Manager	The duty manager is centrally based (off-site) and is responsible for event management across the business.
Customer Centre	Responsible for receiving all customer calls, logging them and passing them to the appropriate operational departments.

The site operates 24hrs per day and is manned from 7:30am – 3:30pm on a normal working day and can be attended by standby staff out of working hours.

3.2 Key Contacts

Role	Name	Email address	Phone Number
Area Operations Manager	██████████	████████████████████	██████████
Performance Manager	██████████	████████████████████	██████████
Technically Competent Manager	██████████	████████████████████	██████████

Role	Name	Email address	Phone Number
Customer and Stakeholder Manager	[REDACTED]	[REDACTED]	[REDACTED]
Customer Centre	Aylesbury STW	customer.feedback@thameswater.co.uk	0800 316 9800

See also Thames Water Website – www.thameswater.co.uk

3.3 Operator Training

All Technicians/operators have received training appropriate to their grade including Introduction to Sludge Processes which includes an element of training and assessment in the control of odour.

Staff working on site undergo a site induction that is carried out by the Performance Manager. The site induction includes direction to the presence and location of the various operational procedures which include the SOM and the OMP. In addition, Site Tech 1's undergo a specific programme of training which covers management of activities on site.

All training records are currently held on Learning on Tap where they are accessible by the site Performance Manager and individual members of staff.

4 Odour Critical Plant Operation, Monitoring and Management Procedures

Odour prevention and reduction is achieved at Aylesbury through at least an annual review, or sooner as mentioned in Section 1, of the Odour Risk Assessment, Odour Improvement Plan and Odour Management Plan. In combination with the maintenance and monitoring carried out on site mentioned in sections 4 and 5.

Through our Odour Management Plans and maintenance procedures, the primary focus is on effective process control to minimise the risk of off-site odour nuisance. Similarly, our site-based frontline Wastewater Treatment Operations team are focussed on effectively managing the on-site process.

4.1 On Site Odour Sources, Critical Issues and History

There are a number of pumping stations in the catchment which currently dose to reduce odours at the inlet of the works. These are:

- Cheddington South End
- Marsworth
- Watery Lane Marsworth
- Weedon
- Long Marston

The site has had 1 formally recorded odour complaints in 2022, down from four complaints in 2021, and nine in 2020.

An Odour Risk Assessment of the activities at Aylesbury and mitigation under normal and abnormal conditions is given in Appendix 1

An Odour Improvement Plan is included as Appendix 2.

Critical Odour Issues, Emergency Response and Mitigation Measures are summarised in Table 4.3 to 4.7.

4.2 Identification of Odour Critical Plant

4.2.1 Odour Risk Assessment

An Odour Risk Assessment has been carried out upon review of the OMP and a copy is included in Appendix 1. The Odour Risk Assessment is not a 'one-off' exercise but an on-going process. It is constructed in the following manner:

- Each part of the treatment process is considered under different operating modes – e.g. normal, failure, abnormal: system overload, summer conditions, maintenance etc.
- The nearest customers to the particular odour source are identified.
- The likely frequency and duration of occurrence for each eventuality is identified.
- A score is assigned to the severity (0 – 5) of odour under each operating mode.
- A score is assigned to the probability (0 – 5) of causing an odour nuisance for each operating mode.
- Multiplying the severity of odour and probability of causing an odour nuisance generates a 'Current Odour Emission Risk' score. Between 0 (zero risk) and 25 (maximum risk), this is used to decide where mitigation should be applied in the short term, and determine where in the longer term enhanced improvement measures are required. Where improvements are identified as necessary (i.e., where suitable mitigation measures are not already in place), entries are made onto the Odour Improvement Plan.
- The need for operational mitigation, enhanced measures and customer communication is stated and brief details given.

Items scored in the Odour Risk Assessment with a risk score greater than 10, are classified as Odour Critical Plant, and where existing operational mitigation measures are not sufficiently robust, will have Improvement Plans generated to address the odour issues. The Odour Improvement Plan for Aylesbury STW is included in Appendix 2.

4.2.2 Potential Odour sources

The following list of potential UWWTD odour sources been identified during the risk assessment:

- Inlet sewers and reception wet well
- Cess reception, discharge, wash down and drainage
- Storm and balancing tank
- Screens and screen conditioning Drainage and skip management
- Grit removal equipment
- Flow distribution to primary settlement tanks
- Primary settlement tanks
- Fats, oil grease scum removal system
- Primary raw desludge pumping
- Flow distribution to secondary treatment
- Activated sludge plant lanes and zones
- Final settlement tanks
- Scum removal system
- RAS chambers and pumping
- SAS chambers and pumping
- Tertiary treatment filtration
- Tertiary treatment back wash returns
- Final effluent

The following list of potential odour sources under EPR been identified during the risk assessment:

- Cess reception, discharge, washdown and drainage
- Sludge reception, screening, wash down and drainage
- Primary raw sludge thickening and pumping
- SAS thickening and pumping
- Sludge mixing and blending
- Sludge conditioning return liquors
- Digester feeding, mixing and discharge
- Secondary digestion, mixing and discharge
- Digested sludge buffer tank
- Sludge dewatering centrifuge
- Sludge dewatering liquor return
- Cake pad and drainage
- Vehicle movements and wash down
- Biogas storage
- CHP plant
- Boilers
- Waste gas burners

4.2.1 Waste Storage for Sludge Treatment Centre Permit

Waste is not stored on site prior to treatment through the UWWTD or AD process. A list of the main tanks relating to the sludge treatment process and their associated volumes and retention times is shown below.

Table 4.0 Sludge Treatment Centre Permit Tank Inventory

Tank Purpose	Number	Operational Volume (m ³)	Construction	Average Retention Time
Sludge Blending Tank	2	549	Concrete	6 days
Digester Feed Tank	1	154	Steel	0.75 days
Primary Digester tanks	1	2,094	Concrete	12 days
	1	1,979	Steel	12 days
Secondary Digester Tanks	5	1,436	Steel	10 days
Digested sludge buffer tank	1	1,436	Steel	9 days
Sludge import tank	1	TBC	TBC	<1 day

An inventory of potential odorous materials relating to the Sludge Treatment Centre Permit is shown in Table 4.1 below. Air Emission Points are listed, and the locations shown on the site plan in Figure C of Appendix 4.

Table 4.1 Odorous materials for Sludge Treatment Centre Permit

Odorous and potentially odorous material (any solid, liquid or gas)	Location of odorous materials on site	Maximum quantity on site at any given day	Maximum time held on site (hours or days)	EWC Codes	Type of Emission	Odour potential High Risk / Medium Risk / Low Risk
Cake (including cake imports)	Cake pad	2500 tonnes	60 days	19 06 06	Diffuse	Med/High
Biogas	PRV/Whose valves; gas storage vessel; unburnt methane from CHP engine. See emissions point plan.	NA	Continuous	N/A	Point source	Low
Liquor	Site drainage	Liquor is continuously pumped to head of works	Continuous	16 10 10	Diffuse	Medium/high
Primary sludge	Sludge blending tank; - Primary thickening plant	Refer to Table 4.0 Site Tank Inventory	Retention times for each stage of the process are detailed in Table 4.0	19 08 05	Diffuse	Medium
Surplus activated sludge	Digester feed tank; SAS thickening plant	Refer to Table 4.0 Site Tank Inventory	Retention times for each stage of the process are detailed in Table 4.0	19 08 05	Diffuse	Medium

Odorous and potentially odorous material (any solid, liquid or gas)	Location of odorous materials on site	Maximum quantity on site at any given day	Maximum time held on site (hours or days)	EWC Codes	Type of Emission	Odour potential High Risk / Medium Risk / Low Risk
Secondary digested sludge	Digested sludge buffer tank	Refer to Table 4.0 Site Tank Inventory	Retention times for each stage of the process are detailed in Table 4.0	19 08 05	Diffuse	Medium
Imported Sludge	Sludge import tank	Refer to Table 4.0 Site Tank Inventory	Retention times for each stage of the process are detailed in Table 4.0	19 08 05	Diffuse	Medium
Sludge screening skips	After sludge import tank		Removed by framework contractor	19 08 01	Diffuse	Low

Table 4.2 Odorous raw materials for Sludge Treatment Centre Permit

Raw Material	Odorous	Storage	Mitigation	Odour Risk
Raw sludge polymer Flopam FO5465Af	Not odorous	3.75 tonnes in FIBCs	Stored within a building	Low
SAS polymer Flopam EM640HIB	Mild odour	2,000 litres in IBCs on portable bunds	Contained with lid	Low
Digested sludge polymer Flopam EM640LOB	Mild odour	8,000 litres stored in IBCs on portable bunds	Contained with lid	Low
Antifoam Flofoam H16	Mild odour	1,000 litres stored in an IBC on a portable bund	Contained with lid	Low

Diesel White diesel	Petroleum	10,000 litres in doubled skinned tanks	Contained with lid	Low
Lubricating oils Morris GEO ultra 40	Oil	1,000 litres in clean oil and waste oil double skinned tanks	Contained with lid	Low
Coolant Delo XLC	Solvent	1,000 litres stored in bunded IBC	Contained with lid	Low

Low odour raw materials are chosen for use, as far as practicable.

4.2.2 Odour Critical Plant

The following list of odour critical plant has been identified during the risk assessment:

- **Cess imports**
- **Screenings**
- **Primary Raw Sludge Thickening & Pumping**
- **Cake Pad & Drainage**
- **Vehicle Movements & Wash Down**
- **Liquor Return**

4.3 Odour Control Measures

The SOM referred to above complies with Thames Water's Asset Standards – Operating Standards. It states the operational procedures to be followed in order to maintain and operate plant to agreed company standards. These standards include, where appropriate, procedures for ensuring that generation of odour is kept to a minimum.

Refer to risk assessment in Appendix 1 where these measures are summarised as:-
"Normal Mitigation"

4.3.1 Odour Control Units

There are no Odour Control Units on site.

4.3.2 Site Specific Measures and abnormal events

It is noted that the greater proportion of odour risks at this location are associated with UWWTD assets.

H4 has been used to guide the preparation of this OMP where it relates to activities regulated under the Sludge Treatment Centre Permit. As this guidance does not apply to UWWTD activities, where reference to H4 is made within this document this should not be inferred as H4 being applicable to UWWTD activities. Specific tasks and measures taken in intermittent, abnormal, and emergency events associated with the control of odours at Aylesbury STW are summarised in the tables below:

Table 4.3: Summary of routine odour mitigation tasks for assets under UWWTD

Odour source	Specific odour management tasks	Responsibility	Monitoring	Monitoring Frequency	Trigger for action	Remedial action and timescale
General	Ensure site is kept clean and tidy	Site Tech 1s Team Manager	Visual Inspection	Daily	Spillages or poor house keeping identified	Clean up as soon as possible and no later than the end of the day
	Any spillages to be cleaned up as soon as practicable	Site Tech 1s	Visual Inspection	Daily	Spillage identified	Clean up as soon as possible and no later than the end of the day
	Site odour acceptability	Site Tech 1s	Qualitative assessment	Daily	Unusual odour identified	Investigate source of odour and consider use of odour suppressant
Cess Reception, Discharge, Wash down and drainage Linked tasks specified in Section 2.1 of appendix 5	Wash down facilities available Ensure tankers coupled correctly	Site Tech 1s	Visual inspective	Daily	Tanker seen discharging in appropriate manner. Coupling method presents clear odour risk from loose/incomplete fitting and/or release of liquid. Stop tanking if risk identified on site.	Stop operation and contact Commercial Waste Team
Incoming Sewers & Reception Wet Well	GRP covers over the wet well	Site Tech 1s	Visual Inspection	Daily	Open cover	Close coverers ASAP

Site Drainage	Ensure all site drainage is operating correctly and is not blocked	Site Tech 1s	Visual Inspection	Daily	Blockage identified	Stop operation and contact the commercial waste team
Inlet PS	GRP covers over the wet well	Site Tech 1s	Visual Inspection	Daily	Open covers	Close covered ASAP
	Ensure tankers use close coupled connections to discharge waste at inlet	Tanker driver	Visual Inspection	As required	Tanker seen discharging in appropriate manner. Coupling method presents clear odour risk from loose/incomplete fitting and/or release of liquid. Stop tanking if risk identified on site.	Stop operation and contact Commercial Waste Team
Screens	Ensure screenings washed and dewatered before discharge to skip	Site Tech 1s	Visual Inspection	Daily	Wash water system not operating to full efficiency	Clean spray nozzles/remove any obstructions blinding/hair pinning); check angle/coverage of delivery; check lubrication. High priority for effective function so timescales would be within 2 working days on identification. Replacement of parts could be up to 6 weeks depending on spares availability.

	Any blockage to be cleared and service resumed as soon as practicable	Site Tech 1s	Visual Inspection	Daily	Impaired screen function for any reason	Attention to blocked screens is immediate/asap on detection since will have significant impact on subsequent process. Timescales of remedial tasks such as repairs to screen brushes would be 2 to 8 hours; full replacement over 6 weeks duration. Screens replaced according to wear but within every 7 years typical.
	Ensure skips are covered and removed from site as soon as practicable. Full skips are not to be stored on site	Site Tech 1s	Visual Inspection	As required	Skips over two thirds full	Covers to be fitted at point of identification. Full skips aim to be removed within 1 week by Biffa.
Grit Removal Linked tasks specified in Section 2.5 of appendix 5	order replacement early. Repeat order once a week daily checks and clean down	Performance Manager	Visual Inspection	Weekly	Skip identified that is not covered or not watertight. Skips over two thirds full are always prioritised for emptying given potential for odour.	Covers to be fitted at point of identification. Full skips aim to be removed within 1 week by Biffa.
Storm Tanks Linked tasks specified in Section 2.6 of appendix 5	Storm closed return and automatic washdown system.	Performance Manager	Visual Inspection	As required	Failure of automatic washdown system	Manual clean where required

PSTs Linked tasks specified in Section 3 of appendix 5	Scrapers should be regularly checked and maintained to ensure they are working effectively, and any blockages cleared. If scraper fails, follow procedures in SOM.	Team Manager	Visual Inspection	As required	Scraper failure	If could not be resolved immediately escalation call to M/E. and seek funding for refurbishment would be needed within 90 days
PSTs ctd.	Ensure there is appropriate scum removal in place and working correctly	Site Tech 1s	Visual Inspection	Daily	Scum board function compromised by excess material.	Removal of accumulated material in scum boards within 3 working days – if mechanical or blockage, a tanker/jetter will be needed and this should be done on a weekly basis
	Ensure fat traps are regularly cleaned and blockages removed	Site Tech 1s	Visual Inspection	As required	Fat trap blockage	Removal of accumulated material in traps to timescales as above.
	Monitor sludge blanket depths. If levels exceeded report to Team Manager and de-sludge affected tank	Site Tech 1s	Blanket level detector	Daily	Sludge blanket exceedance Need to keep below 0.5m to keep solids feeds to drum thickener between 1 and 2%.	De-sludge affected tank and report to Site Manager. Manually dip on daily basis. After consultation, decision to increase de-sludging or take out of service and drain would be made within 2 weeks

	Identify any gassing or septicity issues by regular monitoring and prevention of the build-up of solids.	Site Tech 1s	Visual Inspection	Daily	Site can be affected by blocked desludging valves or failed desludging pumps and this will result in increased sludge blanket and rising sludge	Site Manager to investigate with solutions within days/a few weeks depending on whether repairs or replacements.
	Ensure any tank drained down is hosed out as soon as practicable to remove any sludge	Site Tech 1s	Visual Inspection	As required	Residual sludge identified after tank drain down	Manual clearance by hose following identification
Anoxic zone	Checked for failure of mixers & scum build-up.	Site Tech 1s	Visual Inspection	Daily	Rotation mixers not functioning correctly	Investigate root cause; most likely corrective action is tripped motor, and a job needs to be raised on SAP for M/E within 5 working days
Aeration lanes Linked tasks specified in Section 4.1 of appendix 5	Ensure dissolved oxygen maintained at the correct levels	Site Tech 1s	Continuous recording on SCADA plus daily spot measurement	Daily	Low DO alarm within 60 minutes of any problem with blowers which would generate an immediate call out to the tech 1.	If could not be resolved immediately escalation call to M/E. Spare blower would cut in but funding for refurbishment would be needed within 90 days

Final effluent	If tanks are taken out of service ensure once drained that they are hosed down	Site Tech 1s	Visual Inspection	As required	Residual sludge identified after tank drain down	Manual clearance by hose following identification
SAS chambers and pumping Linked tasks specified in Section 10 of appendix 5	Daily site rounds checking pumping conditions	Site Tech 1s	Visual Inspection	Daily	Spillage identified	Clean as soon as possible
RAS chambers and pumping Linked tasks specified in Section 10 of appendix 5	Daily site rounds checking pumping conditions	Site Tech 1s	Visual Inspection	Daily	Check pump operation, alarms and tank/ well levels	If could not be resolved immediately escalation call to M/E. for lifting and inspection. If further work required funding for refurbishment would be needed within 90 days
Scum removal	Daily site rounds Any spillages to be cleaned up as soon as practicable	Site Tech 1s	Visual Inspection	Daily	Spillage found	Clean up as soon as possible and no later than the end of the day
Fat oils and grease removal system	Daily site rounds Any spillages to be cleaned up as soon as practicable	Site Tech 1s	Visual Inspection	Daily	Spillage found	Clean up as soon as possible and no later than the end of the day

Final settlement tanks Linked tasks specified in Section 5 of appendix 5	The FSTs are equipped with a scum removal system, fitted with a scraper and automatically desludged under normal operations.	Site Tech 1s	Visual Inspection	Daily	Scraper not working properly or Scum accumulation	Repair scraper or scum system
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Table 4.4: Summary of routine odour mitigation tasks for assets under Sludge treatment centre permit

Odour source	Odour and offensiveness L/M/H	Specific odour management tasks	Responsibility	Monitoring	Monitoring Frequency	Trigger for action	Remedial Action and timescale
Sludge reception, screening, washdown and drainage Linked tasks specified in Section 1 of appendix 6	Sludge (M)	Wash down facilities available Ensure tankers coupled correctly	Site Tech 1s	Visual inspection	Daily	Spillage identified	Clean up ASAP no later than the end of the day
Cess Reception, washdown and drainage Linked tasks specified in Section 2.1 of appendix 5	Strong sewage (H)	Wash down facilities available Ensure tankers coupled correctly	Site Tech 1s	Visual inspection	Daily	Spillage identified	Clean up ASAP no later than the end of the day
Skip management		Change skips regularly	Site Tech 1s	Visual inspection	Daily	Skip over two thirds full	Removal of skips to be identified daily

							and removed from site within 3 days
Primary raw sludge thickening and pumping	Sludge (M)	Daily site rounds	Site tech 1s	Visual inspections	Daily	Spillage found	Clean up no later than the end of the day
Sludge Blending & Mixing Linked tasks specified in Section 3 of appendix 6	Sludge (M)	Regular transfers	Performance Manager	Visual	As required	Poor dry solids performance trend from monitoring daily data	Investigate route cause with both operations and M&E teams. Fix circa 90 days if refurb required
Anaerobic digesters Linked tasks specified in Section 6 of appendix 6	Earthy (M)	Ensure correct operation of biogas handling, including gas bag and flare stack to avoid operation of PRVs	Performance Manager	CHP, gas volumes, digester temperature	Continuous	Complete bio-gas inspections. Check reports on the associated valves and arrange any follow on work required	Arrange follow up work required. Funding requests to be made and work completed in approx. 90 days
		Any blockage to be cleared as soon as practicable.	Performance Manager	Visual Inspection	As required	Spillage identified	Clean up ASAP no later than the end of the day
Secondary digesters Linked tasks specified in Section 7 of appendix 6	Earthy (M)	Status of tank is checked and logged daily as part of routine monitoring, as per daily sludge rounds.	Performance Manager	Visual inspection	Daily	Check performance data and daily sludge round completion	Sludge round completed and data collected no later than the end of the day
Centrifuge Linked tasks specified in Section 13 of appendix 6	Earthy, ammonia (M)	Enclosed with own cover. Regular clean up.	Performance Manager	Visual Inspection	Daily	Spillage identified	Clean up ASAP no later than the end of the day

Digested sludge buffer tank	Earthy (M)	Clear spillages	Performance Manager	Visual Inspection	Daily	Spillage identified	Clean up ASAP no later than the end of the day
Thickening and dewatering plant	Earthy (M)	Clear spillages	Performance Manager	Visual inspection	Daily	Spillage identified	Clean up ASAP no later than the end of the day
		Repair breakdowns		Visual Inspection	As required	Spillage identified	Investigate route cause with both operations and M&E teams. Arrange specialist contractor for repair circa 20 days if refurb or parts required
Cake Pad and drainage Linked tasks specified in Section 17 of appendix 6	Earthy (M)	General housekeeping Cake in storage forms a crust after a day or two reducing risk of odour. No additional turning or handling during cake storage Imports subject to pre-acceptance checks.	Site Tech 1s	Visual inspections	Daily	Wash away any lying liquor and check drainage for blockages	Clean up no later than the end of the day
Vehicle movement and wash down Linked tasks specified in Section 16 of appendix 6	Earthy (M)	Covered wagons, keep movements to a minimum and clean as and when	Site Tech 1s	Visual inspections	Daily	Dirty access/roadway to cake pad	Stop vehicles and arrange for immediate wheel wash
Sludge liquor	Sludge (M)	Remove blockages	Performance Manager	Visual Inspection	As required	Spillage identified	Clean up ASAP no later than the end of the day

Return liquor pumping station	Ammonia (M)	Regular checks on pumps. Empty and clean tank.	Performance Manager	Visual Inspection	Daily	Foam or crust on top of the well	M&E inspection required to lift pumps and check correct operation
CHP Linked tasks specified in Section 9 of appendix 6	Biogas (L)	Regular maintenance and monitoring	CHP Team/Performance Manager	As described	As required	Flare failure	Repair flare for biogas system
Boilers Linked tasks specified in Section 8 of appendix 6	Biogas (L)	Health checks	Performance Manager	As described	As required	Visual Identification/Alarm raised.	Raise job on SAP. Job allocated to Tech 1s for review within c.8 hours. If cannot be resolved, escalate to Site Manager
Waste gas burner Linked tasks specified in Section 8 of appendix 6	Biogas (L)	Service	Performance Manager	As described	As per asset standards	Time based/Performance based	Liaise with contractors.

Table 4.5: Intermittent, abnormal, and emergency events for assets under UWWTD

Process stage	Event	Status	Ops mitigation	Expansion of TWUL operational response to odour under Int/Ab/E events	Odour risk after mitigation
Cess reception wash down and drainage	Spillage	Ab	Clean up ASAP	Raise a job for the LMC to organise a tanker to	High

				attend the spill within 8 hours	
Inlet pumping station	Blocked pipe	Ab	Tankers would not be allowed to tip at Aylesbury	Tech 1 will clear. If blockage requires a tanker then the LMC will organise one	Low
Primary Settlement Tanks	Blockage, breakdown. Process downstream.	Ab	Empty tanks, repair,	Take tank out of service. For repair	Medium
Storm Tanks	First flush, Crusting, Warm weather	I	Storm closed return and automatic washdown system.	Increase rate of return to treatment, when we are able without affecting the process	Medium
Inlet screens	Blockage, breakdown	Ab	Regular maintenance	Blockages dealt with on identification. Ab/E: Loss of 2 of the 3 screens would be significant for process operations	High
Screenings and grit skips	Accumulation of skips	Ab	Remove as soon as possible.	2 rag skips Ab: Skips only accumulate due to presence of liquids. Ramps and tankering used as	Medium
Primary Raw Desludge Pumping	Pump failure	Ab	Repair. Standby available. Clean down ASAP.	Ab: Constantly monitor desludging system to avoid failures	Medium
Fats oils and grease system	Blockage/breakdown.	Ab	Empty tanks and repair	Ab: Constantly monitor the scum build-up to avoid failures	Low
activated sludge plant lanes	Aeration failure			Ab: Constantly monitor scum and crust build-up to avoid failures	

Final settlement tanks	Scraper failure	Ab	Repair	Ab: Constantly monitor scum and sludge build-up and check weather forecast to be prepared for accepting increased flows	Low
Scum removal system	Failure of mallards	I	Repair	Ab: Constantly monitor scum removal system to avoid failures	Low
RAS & SAS chambers and pumping	Failure of pumps	Ab	Replacing failed pumps ASAP and use duty standby pumps	Ab: Maintain pumps to avoid sudden failures	Medium

Table 4.6: Intermittent, abnormal, and emergency events for assets under sludge treatment centre permit

Process stage	Event	Status	Ops mitigation	Expansion of TWUL operational response to odour under Int/Ab//E events	Odour risk after mitigation
Sludge reception screening wash down and drainage	Spillage	Ab	Clean up ASAP	Clean ASAP as per spills procedure	Medium
Cess reception wash down and drainage	Spillage	Ab	Clean up ASAP	Clean ASAP as per spills procedure	High
Primary sludge tanks	Pump failure, blockages, breakdown. Process downstream.	Ab	Unblock; Repair; Resolve process.	Tanker cleaned up ASAP.	High
Sludge Conditioning – thickening and pumping	Blockage, breakdown. Process downstream.	Ab	Unblock; Repair; Resolve process.	Tanker cleaned up ASAP.	Low
Sludge Blending & Mixing	Blockage, breakdown. Process downstream.	Ab	Unblock; Repair; Resolve process.	Clean ASAP as per spills procedure	Medium

Digester Feeding, Mixing & Discharge	Overflow due to blockage	Ab	Unblock	Tanker cleaned up ASAP	Medium
Secondary digesters	Spillage Operator error	Ab	Clean up spillage	Tanker cleaned up ASAP	Medium
Liquor Return	Pump failure. Long retention time. Crust formation and disturbance.	I	Repair. Empty and clean tank.	Tanker cleaned up ASAP. Arrange for the inspection/repair by M&E resource of suitable contractor	High
Centrifuge	Blockage, breakdown	Ab	Repair and resolve problem	Tanker cleaned up ASAP. Arrange for the inspection/repair by M&E resource of specialist contractor	Medium
Digested sludge buffer tank	Blockage, breakdown	Ab	Repair and resolve problem	Tanker cleaned up ASAP	
Cake Pad & Drainage	Cake moved about pad.	I	Keep movements to a minimal	Monitor levels and arrange collections	Medium
Sludge Blending & Mixing	Blockage, breakdown. Process downstream.	Ab	Unblock; Repair; Resolve process.	Tanker cleaned up ASAP	Low
Biogas system	Venting, damaged gas vessel or valve/pipework	Ab	Use flare stack and repair	Arrange for specialist contractor	

Table 4.7: General Intermittent, abnormal, and emergency events

Incidents and emergencies	Event	Status	Ops mitigation	Expansion of TWUL operational response to	Odour risk after mitigation
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				odour under Int/Ab//E events	
Fire	Failure of fans or sludge building	E	Use of SHTs for storage of sludge. Tanker from site		Low/ Medium
Severe weather	Transport of sludge from site inhibited resulting in back up of sludge in site resulting in additional odour release from tanks and PSTs	E	Event unlikely as there is provision for 70days storage on site plus additional storage in the existing sludge holding tanks		Low
Flooding	Flooding causing process or equipment problems	E	Not an identified problem at Aylesbury. Site incident procedures would be followed.	Pumps/tankering arranged through LMC	Low
Illness/absence of key staff	Accumulation of sludge/loss of odour control etc.	E	Task allocation is independent of individual staff.		Low
Power cuts	Loss of power to fans leading to loss of odour control	E	Emergency power generation for critical activities until power restored.	Greatest risk in persistent inclement weather where temporary external power outages might constitute the most likely externally generated risk. Recourse to temporary generators.	Low
Other incidents	Transport of sludge to land inhibited for other reasons leading to back up of sludge in site resulting in additional odour release from tanks and PSTs	E	Provision for 70days storage on site plus additional storage in the existing sludge holding tanks. Transport to other STWs if necessary		Low

4.3.3 Spillage

Spillages significant enough to cause odorous emissions will be cleared as soon as practicable. The person discovering the spillage will inform site management, who will utilise resources as required to clear it

Spill response guidance is also available in the Pollution Prevention Essential Standard at [Environmental Management System - Pollution Prevention \(sharepoint.com\)](#).

4.4 Routine Monitoring

Overall plant performance is assessed daily as part of the generic Site and Sludge Rounds, which apply to Thames Water large STW sites, and have been included in appendices 5 and 6, respectively.

The objective of these are to ensure that treatment processes, including odour control, are checked for effective operation as per the SOM. Any of the checks that result in performance of the process outside of the limits defined in the SOM or a fault being detected will require an Operator to change the process to bring the plant back into acceptable limits or the faults need to be logged and reported for follow up maintenance/repair.

Various process parameters are monitored using a combination of online instruments (to measure flows, temperatures, pressures, levels); samples that are taken to our UKCAS accredited laboratories, or run through sampling tests at the on-site laboratories (%DS, pH, alkalinity, ammonia).

The online instruments all have signals that are taken back to the site SCADA system and these 'alarm' if the readings are outside pre-set trigger points. Similarly, laboratory analysis samples will have expected ranges, which if outside of these, a notification is sent to the site process controllers.

In all instances that parameters are out of 'range', the operational teams will carry out an investigation to understand the cause and initiate corrective actions. If the reasons are not obvious, the process optimisation team is contacted to evaluate further.

Additionally, each week the various recorded parameters are recorded in the site Cockpit reports to look at trends. These are used to establish if there are gradual changes in performance over time so that early intervention can be carried out.

A range of process parameters are subject to routine monitoring or checking to ensure that the digestion process is operating optimally so that the required sewage cake output quality is achieved.

- pH: At a conventional digestion site such as Aylesbury the processes is maintained around pH 7 but within the range 6.72 – 7.6 (this is % dry solids and digester load dependant) for healthy operation.
- alkalinity: Levels dependant on feedstock characteristics (primary sludge: surplus activated sludge (SAS) ratio). Conventional digestion typically, 3,500 - 5,000mg/litre range.
- temperature: minimum target of 38°C. This is maintained within the range 36-40°C.

- HRT (hydraulic retention time): minimum target is 15-days, there is no upper limit. Retention times shall not be less than 12-days during plant outages to keep the product pathogen kill efficiency control.
- OLR (organic loading rate): see table below - this is dependent on the primary/SAS ratio. Aylesbury fits into the first row of the table.
- Dry solids feed: see table below, Aylesbury has a target of 6%DS, but this can vary between 3-8%DS and impacts the HRT.

Type of Digestion	0%- 35% SASx	36%- 45% SAS	46%- 50% SAS	51%- 55% SAS	>55% SAS	Max Feed %DS
MAD* in Conventional Digestion	3	2.5	2	1.75	n/a	6
MAD after Pre-pasteurisation	4.5	4	3.5	3	n/a	7
MAD after Acid Hydrolysis	4.5	4	3.5	3	n/a	7
MAD after Thermal Hydrolysis	7	6.5	6	5.5	5.5	14

* mesophilic anaerobic digestion

X surplus activated sludge, arising from the UWWTD treatment route.

- VFA (volatile fatty acid) concentration: There is no specific range for VFAs as it depends on the feedstock. It is used as an indicator of digester health rather than a process control. The production of organic acids depends on the volume of solids fed to the digester. The typical range for VFAs in a primary digester is between 50 and 800 mg/L. When VFA concentrations climb above 1000 mg/L, the digester could be overloaded or experiencing other problems.
- Ammonia - Ammonia concentrations of 50 to 1000 mg/L are beneficial, but ammonia levels of 1500 to 3000 mg/L (pH greater than 7.4) could be inhibitory but not always. An ammonia concentration higher than 3000 mg/L for prolonged period is toxic.
- VFA to Alkalinity ratio: Very important parameter to monitor for digestion process. The VFA to alkalinity ratio of below 0.4 is good and above this threshold value means diminishing alkalinity and low pH i.e. sour digester content. As long as this ratio is maintained higher VFA, and alkalinity digester content can be acceptable, and the digestion process is deemed healthy. Anaerobic digestion process is always controlled based on holistic parameters but not based on single parameter.

Sniff Testing

Sniff testing has been incorporated into our Odour Improvement Plan (Appendix 2). This is to allow time to ensure that the most effective sniff testing can be carried out using personnel not sensitised to smells on site.

The procedure will be undertaken in response to complaints or if a risk of odour nuisance at sensitive receptors is expected and/or has been substantiated.

- Sniff testing will be carried out at by someone not routinely based at site, who are less sensitised to odour produced on site.
- Assessing potential odour sources within the Urban Waste Water Treatment (UWWT) and Sludge Treatment Centre (STC) processes and attempt to trace the odour to its source.
- The procedure and recording form which will be used can be found in appendix 7 of the OMP

Details of routine monitoring tasks are included in the Site Operating Manual.

Further details of routine monitoring tasks are included in the Site Operating Manual.

4.5 Record Keeping

Records of routine monitoring, site and sludge inspection rounds and sludge blanket checks are kept on SAP . Records of skip management, which collect wastes generated from UWWTD activities, and any spillages and remedial actions are held in the ELogbook. Sludge blanket levels are recorded on run charts and electronically via the Cockpit.

There is a SCADA system on this site.

4.6 Emergency Response and Incident Response Procedures

Emergencies such as fire, flood and severe weather are managed by Thames Water's Business Resilience and Security team. The processes employed can be found on Thames Water's portal intranet site and are entitled: 'Security and Emergency Risk Management Process' and 'Event Management Procedure'. These are company confidential documents and therefore, are not included in the Appendices of this document.

Hazard reporting and accidents are all recorded on the Health and Safety software database SpheraCloud (<https://sphera.com>) and monitored by Thames Water's Health, Safety & Environment team.

In the event of power failure, the site will run on island mode for critical plant.

Absence of key staff should not affect the running of Aylesbury STW, as Tech 1s from other sites can be called upon to cover, if required.

Tables 4.3 to 4.7 respond to the identification of relevant triggers and actions to minimize odour. Monitoring of odour release to atmosphere for wider sludge treatment assets is constrained by sludge containment (say versus an open composting operation), the lack of a confined emission point and the episodic nature of odour release and exposure.

Irrespective of such constraints, our Operations Team and odour contractor have recommended consideration of the following techniques either proactively (so accompanying planned or reactive works with known odour risk) and in an investigative capacity attached to an incident:

- (a) Targeted use of 'Jerome' hydrogen sulphide analysers
- (b) Targeted use of sniff tests ('calibrated nose')

(c) H₂S measurements of stored materials where septicity is either present, or the material is at risk of septicity from continued storage especially in the open air, for example, prior to de-watering where measurements of sulphide & dissolved O₂ would inform a condition assessment. Quantities and storage times precipitating a need for such assessments. This recommendation is being raised with the Area Process Scientist.

(d) Inclusion of temporary odour suppressants/misting agents and continued access to process critical spares (odour minimisation by early intervention).

(e) Further expansion of odour risk within site incident planning (this is already referenced in Tables 4.4, 4.5 & 4.6 under relevant Intermittent; Abnormal Operation & Emergency scenarios)

(f) Temperature assessment in secondary digestion tanks on the basis that increased temperatures give greater potential for volatilisation of odours

(g) For PSTs, asset condition (wear/damage) would consider odour risks where assets are taken offline

(h) Telemetry/alarming of whessoe valve releases – there is an existing phased project within TWUL to enhance this at our sludge locations

5 Maintenance and Inspection of Plant and Processes

5.1 Routine Maintenance

5.1.1 General Requirements

Site staff have a schedule to ensure routine maintenance for key mechanical items. In addition, a dedicated maintenance team provide additional support for more specialised equipment, e.g. regular calibration of Dissolved Oxygen probes.

In addition to the routine operational tasks, planned preventative and defect maintenance of plant is carried out. Plant which may have an impact on odour release is assigned an appropriate criticality rating to ensure effective performance is maintained. Plant assessed to be odour critical is listed in Section 4 above.

All maintenance procedures are detailed in the SOM, and when carried out is captured on the corporate system SAP, which generates work requests for the various activities for the treatment process assets at the appropriate frequency

5.1.2 Maintenance of Odour Control Units

There are no Odour Control Units on site.

5.1.3 Maintenance Records

Records of routine monitoring, site and sludge inspection rounds and sludge blanket checks are kept on SAP. Records of skip management, which collect wastes generated from UWWTD activities, and any spillages and remedial actions are held in the ELogbook. Sludge blanket levels are recorded on run charts and electronically via the Cockpit.

5.2 Fault Reporting

Faults identified during routine inspections are reported to the Performance Manager who assesses criticality before entering the task into the job scheduling system for allocation to an appropriate person to a timescale appropriate to the criticality.

5.3 Emergency Repairs

24-hour maintenance cover is available at the discretion of the Performance Manager or Duty Manager, with planned follow up.

Less urgent repairs are assessed for criticality and dealt with during normal working hours.

6 Customer Communications

6.1 Customer Odour Complaints Process

Customer contacts regarding Aylesbury STW will be made via the Customer Services Centre, Operations will investigate and take appropriate action. Complaints may also be received from the local council and Environment Agency.

Customers / residents are encouraged to communicate with local Thames Water Operations via the Customer Centre to report if they are noticing odour from Aylesbury STW, to ensure that all contacts are recorded and actioned. Customers have 3 main options to report complaints to Thames Water:

1. Thames Water Website – “Report A Problem” at <https://www.thameswater.co.uk/contact-us/report-a-problem/report-a-problem-online>.
2. Email - customer.feedback@thameswater.co.uk with the subject ‘Aylesbury Sewage Treatment Works’
3. Telephone - Customer Services 0800 316 9800

If the customer / resident would prefer to contact Surrey Heath Borough Council or the Environment Agency, their contact details are as follows:

Buckinghamshire Council
Telephone: 01296 585605.

Environment Agency - 0800 80 70 60

Customer contacts regarding Aylesbury STW that are received directly on site are responded to by the local Operations team. The Performance Manager, at the earliest opportunity, will inform the Customer and Stakeholder Manager (CSM) of the contact details in order that they can ensure the complaint is captured and recorded at the customer centre.

Complaints received via Customer Services Centre:

- Complaint information is logged electronically by the Customer Services Centre.

- An action is raised to Waste Operations Control Centre (WOCC) who contact the CSM by telephone and email the complaint information to both the CSM and Performance Manager
- The Performance Manager and CSM will review the complaint and take action to investigate (see section 6.3)
- The CSM is responsible for contacting the customer and updating them on the outcome of the investigation.
- Any problems are noted and remedial work actioned. An update of action taken and feedback given to the customer is emailed to the WOCC by the CSM.
- The WOCC update the electronic complaint report and it is closed down.

Complaints received via email or post:

- Complaint information is logged electronically by Customer Relations and allocated a Case Manager.
- The complaint is emailed to the CSM who reviews the complaint and investigates with the Performance Manager (see section 6.3).
- Actions taken are emailed back to the Case Manager who updates the electronic system and updates the Customer.

Complaints received via Customer Centre out of normal working hours

- For a large number of calls, or serious concerns, the Out of Hours Coordinator will be contacted to respond.
- For all other calls Aylesbury STW site management will investigate and respond the next working day.

6.2 Customer Communication Plan

The Customer Communication Plan in Appendix 3 identifies how and when contact will be made with customers and stakeholders in relation to stable, abnormal and emergency site operation.

6.3 Investigating a complaint

Upon receiving a complaint Thames Water have 24 working hours to respond to the customer with an update. Within these 24 hours, the CSM will contact to the Performance Manager who will carry out an investigation to determine whether the odour source is coming from the Thames Water site. If the odour is decided to be from the Thames Water site, then the root cause is investigated.

Should the source of the odour be confirmed as coming from the Thames Water Operations then the Performance Manager will review all activities currently taking place on site, including any maintenance, cleaning, and non-standard activities to identify the root cause, and ensure appropriate mitigation measures are in place.

If the Performance Manager cannot identify the source of the odour, but complaints persist, the CSM will ensure the customer who made the complaint is contacted, and obtain further details. These details include their address in relation to the site location, the time of occurrence and for how long. If odour problems continue to persist, Thames Water may even ask the customer to keep a detailed odour diary to ensure their issue can be fully addressed.

The root cause investigation may include site walkaround checks, which look for irregularities such as spillages / open doors and hatches, ensuring appropriate measures as detailed in table 4.3-6 are in place. It may also include off-site visits to the Customer location.

When the root cause of the odour is found, the Customer will be updated with an explanation and provided with a timescale for its resolution. Furthermore, the situation is assessed for hazards to determine any possibility of health risk to the local community.

To ensure any limitations regarding everyday staff becoming desensitised to the odour, if site odour complaints persist with no result in locating its source, personnel who do not spend prolonged time on a single site, such as the Area Operations Manager, will participate in the walkaround checks.

6.4 Notification of Operations with Potential to Cause an Odour Problem

Where operations may impact on local residents, notification will be made to the Customer Centre who will log the details on their Bulletin Board. This will be used to provide information directly to customers who call with queries. Letter drops may also be used.

The Environmental Health Officer of Surrey Heath Borough Council 01276 707100 will be contacted directly if there are risks of odour generation (e.g. digester cleaning, tank cleaning or process issues). NOTE: This will only take place on known sensitive sites where Local Authorities and the EHO are already involved.

If notified by the Environment Agency that the activities are giving rise to pollution outside the site due to odour, Thames Water shall investigate and carry out a review of the OMP and appropriate measures if deemed necessary.

Appendices

Appendix 1. Odour Risk Assessment



Aylesbury%20STW%20SERV%20Odour%20

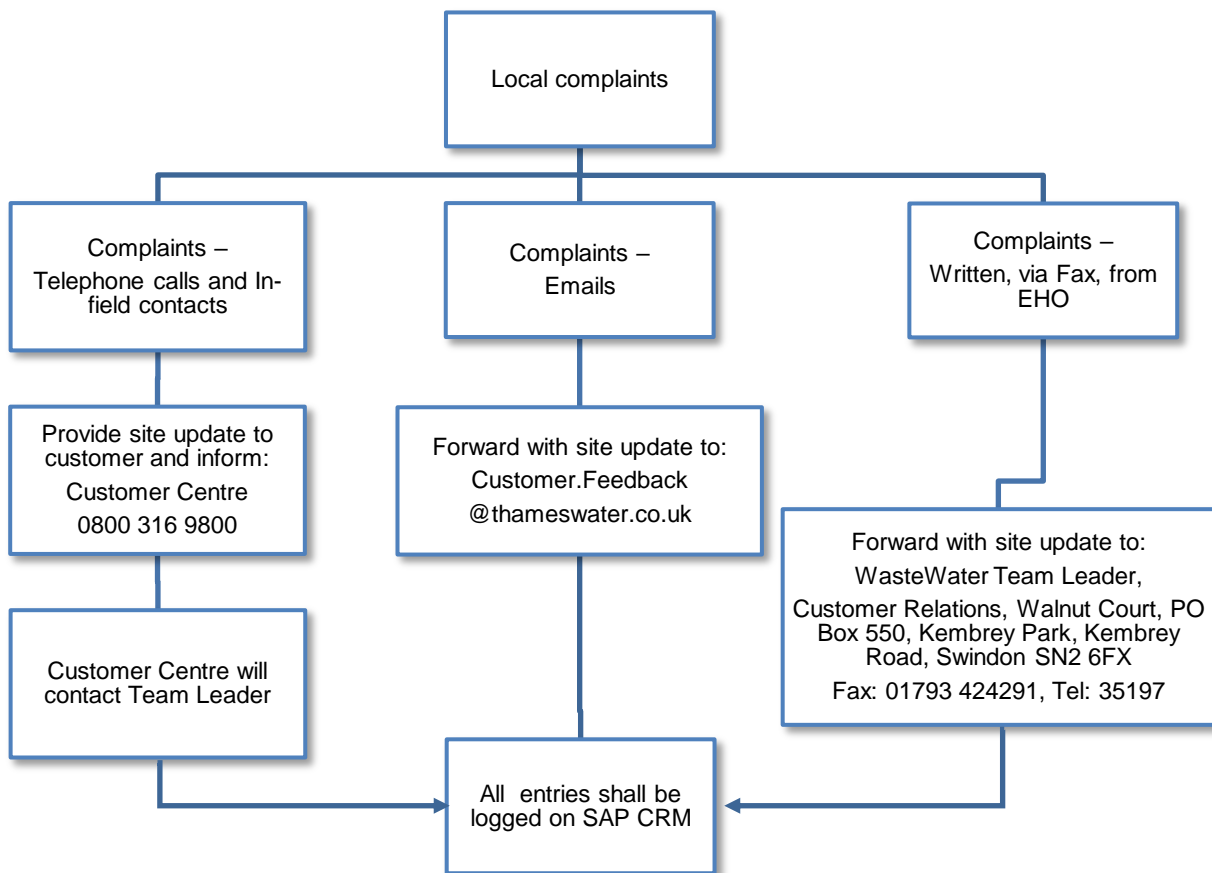
Appendix 2. Odour Improvement Plan

Odour Improvement Plan Aylesbury STW								
Review Date	Oct-23							
Process Stage	Owner	Problem	Risk number	Plan what is required	Actions and who is responsible	Expected difficulties	Measures to mitigate	Timeframe
Press House	Gareth Burton	Old press house, not self cleansing	AMP7	New Press house with self cleansing presses	AMP7	Funding is available, timescales for delivery	Temporary Centrifge, in lorry and odour mitigtged	Mar-24
Cake pad	Gareth Burton	Open cake pad	-	Raise walls of cake pad		timescales for delivery	None	Mar-24
sniff testing	odour specialist	implement sniff testing procedure		implement sniff testing procedure	Procedure written for sniff testing, in order to achieve effective sniff testing personnel needs to be identified to carry out the procedure who are not acclimatised to smells on site.	resource	daily site rounds	6 months from permit issue

Appendix 3. Customer Communications Plan

Complaints Process

All locally received complaints are re-directed to the Customer Centre. Please see below for details.



IMPORTANT NOTE:

Any communications received from the local Member of Parliament or senior council officers need to be forwarded to the Local/Regional Government Liaison person:

Name:	
Telephone:	

Communications

Level 1	Stable operations: Compliant with Operational Asset Standards.			
Communications Approach	Standard regular proactive contact with key stakeholders.			
Stakeholders External	Frequency of Contact	Method of Contact	Aim of Contact	TW Contact/Level
Buckinghamshire Council Environmental Health Department	As required but at least quarterly	Telephone / email / meeting	Update on operational activity on site	Performance Manager and Customer & Stakeholder Manager
Local residents associations (<i>if applicable</i>)	As required but at least annually	Telephone / email / meeting	Update on operational activity on site	Performance Manager and Customer & Stakeholder Manager
Environment Agency	As Required	Telephone / email / meeting	Update on operation activity on site	Performance Manager and Environmental Permitting Team
Stakeholders Internal	Frequency of Contact	Method & Level of Contact	Aim of Contact	TW Contact/Level
Press Office	As required	Report sent out by operations to the business	Update the business on operational activity on site	Duty Manager
Customer Centre (Swindon)	As required	Report sent out by operations to the business	Update the business on operational activity on site	Duty Manager

Level 2	Unstable operations: <ul style="list-style-type: none"> Non-compliant with Operational Asset Standards on one or more sub-processes leading to increased odour risk. 			
Communications Approach	As Level 1 plus: <ul style="list-style-type: none"> Use of Contact Centre Bulletin Boards/Briefing Contact Centre agents/Briefing statement with Q&A prepared for the press office (to use reactively). Monthly discussions with, and quarterly visits from, the EHO. Commence proactive communications with other stakeholders. 			
Stakeholders External	Frequency of Contact	Method & Level of Contact	Aim of Contact	TW Contact/Level
Aylesbury Vale District Council Environmental Health Department	Immediately then monthly	Telephone / email / meeting	Report unstable operation with action plan	Performance Manager and Customer & Stakeholder Manager
Local residents associations (if applicable)	Immediately then monthly	Telephone / email / meeting	Report unstable operation with action plan	Performance Manager and Customer & Stakeholder Manager
Environment Agency	Potential for notification procedure	As required as per notification procedure	As required as per notification procedure	Pollution desk
Stakeholders Internal	Frequency of Contact	Method of Contact	Aim of Contact	TW Contact/Level
Press Office	Immediately then weekly	Q&A prepared for press office by Operations	To enable the press office to deal with queries from the press (reactive only).	Duty Manager
Customer Centre (Swindon)	Immediately then weekly	Telephone / email	To enable the Customer Centre to deal with queries from the press (reactive only).	Duty Manager
Other areas/stakeholders outside Aylesbury STW potentially impacted				
Stakeholder	Frequency of Contact	Method of Contact	Aim of Contact	TW Contact/Level
Local businesses	Immediately then monthly	Telephone / email / meeting	Report unstable operation with action plan	Performance Manager and Customer & Stakeholder Manager

Level 3	Emergency <ul style="list-style-type: none"> Temporary or transient activities not deemed to be compliant with Operational Asset Standards. High risk of odour emitting plant. 			
Communications Approach	As level 2 plus: <ul style="list-style-type: none"> Odour event set up internally (including OOH's cover from OMC (Kemble Court)). Weekly discussions with EHO. Monthly Stakeholder meetings, (internal and external – include MPs, Councillors, schools, businesses etc.). Press release may be required. 			
Stakeholder External	Frequency of Contact	Method of Contact	Aim of Contact	TW Contact/Level
Aylesbury Vale District Council Environmental Health Department	Immediately then weekly	Telephone / email / meeting	Report emergency event with action plan and update with progress	Level 5 Manager (Operations Manager) / Level 4 Manager (Regional Operations Manager)
Local residents associations (<i>if applicable</i>)	Immediately then monthly	Telephone / email / meeting	Report emergency event with action plan and update with progress	Performance Manager amd Customer & Stakeholder Manager
Councillors / MP's for local areas	Immediately then monthly	Telephone / email / meeting	Report emergency event with action plan and update with progress	Level 5 Manager (Operations Manager) / Level 4 Manager (Regional Operations Manager)
Environment Agency	As required as per notification procedure	As required as per notification procedure	As required as per notification procedure	Pollution desk

Stakeholders Internal	Frequency of Contact	Method of Contact	Aim of Contact	TW Contact/Level
Press Office	Immediately then daily	Q&A and press release prepared by press office	To enable the press office to deal with reactive queries from the press and prepare a media strategy if required.	Duty Manager
Customer Centre (Swindon)	Immediately then daily	Telephone / email	To enable the Customer Centre to deal with queries from customers (reactive only)	Duty Manager
Other areas/stakeholders outside Aylesbury STW potentially impacted				
Stakeholder	Frequency of Contact	Method of Contact	Aim of Contact	TW Contact/Level
Local businesses	Immediately then monthly	Telephone / email / meeting	Report emergency event with action plan and update with progress	Process/ Site Manager

Appendix 4. Site Drawings

Figure A - Site Location Map with marked receptors from table 2.1

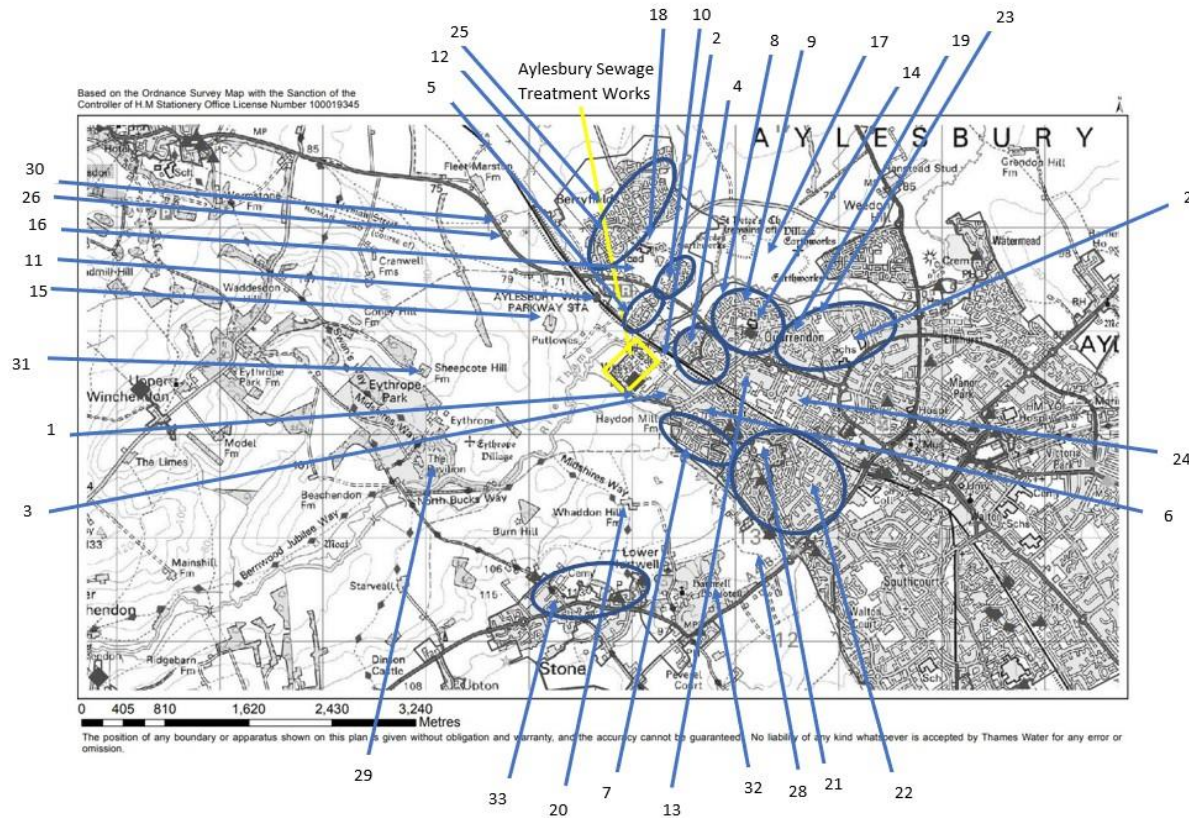


Figure B - Site Plan of Aylesbury STW

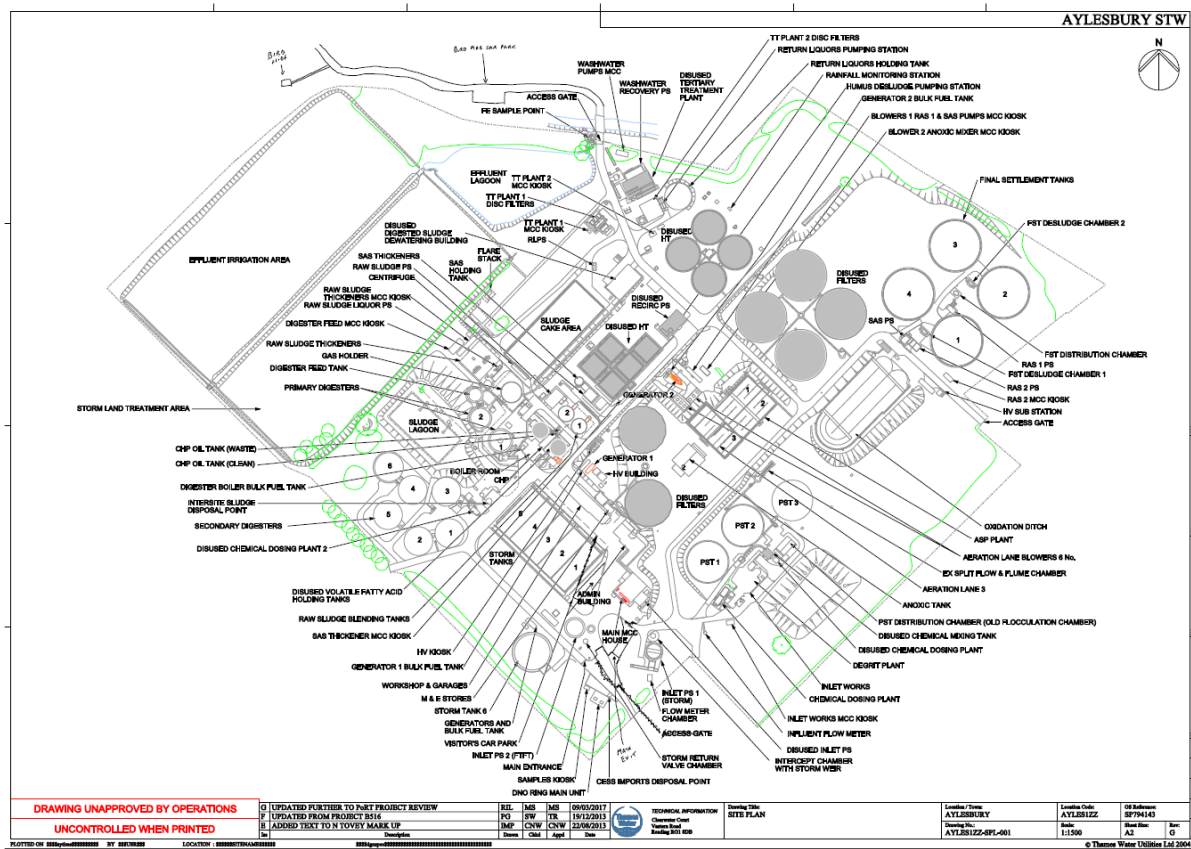


Figure C – Area permitted under Sludge Treatment Centre Permit

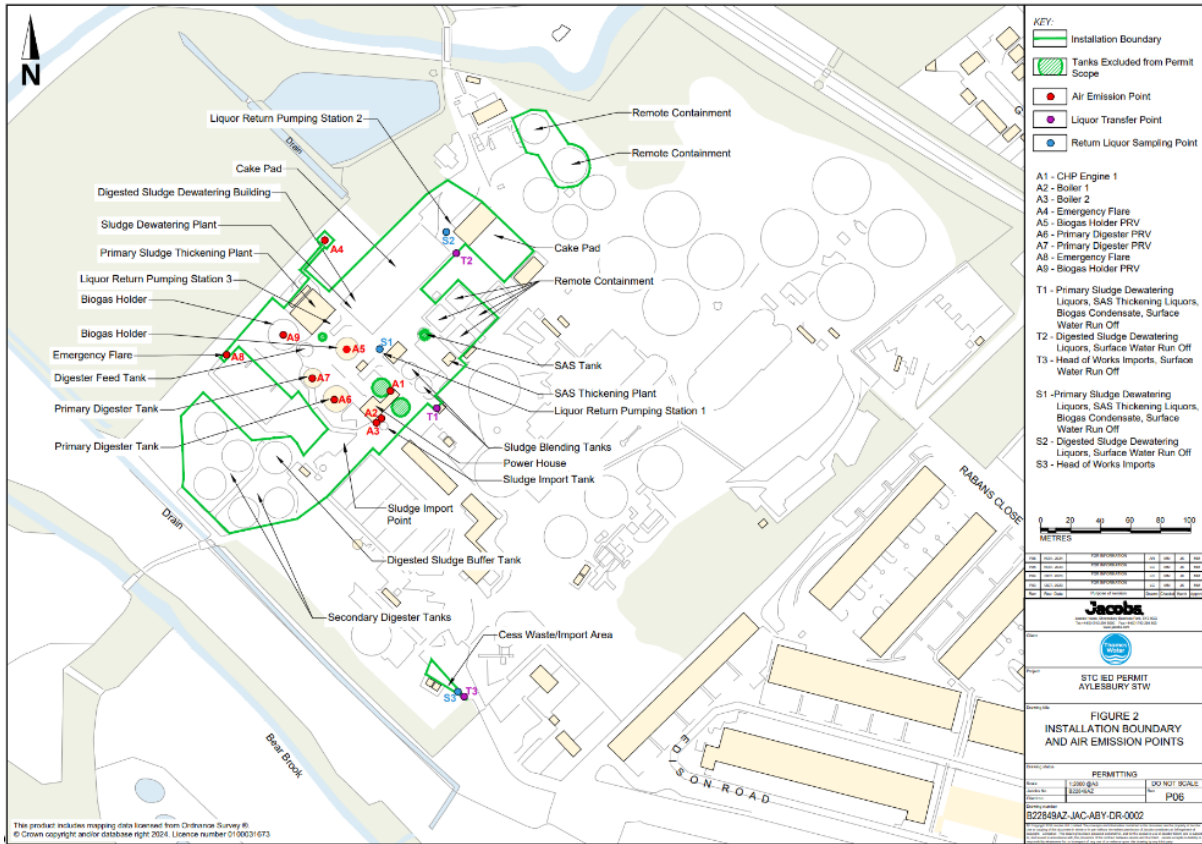
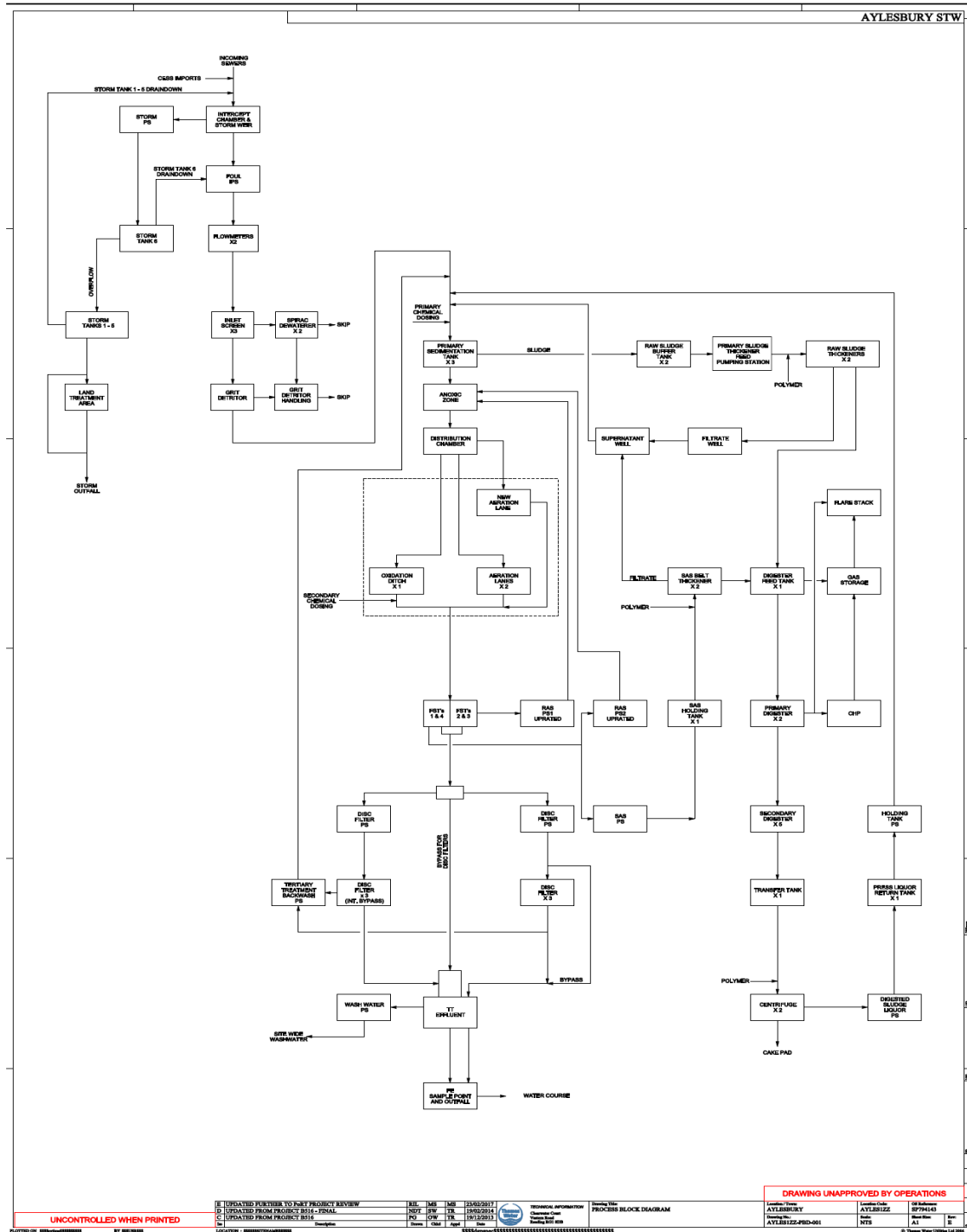
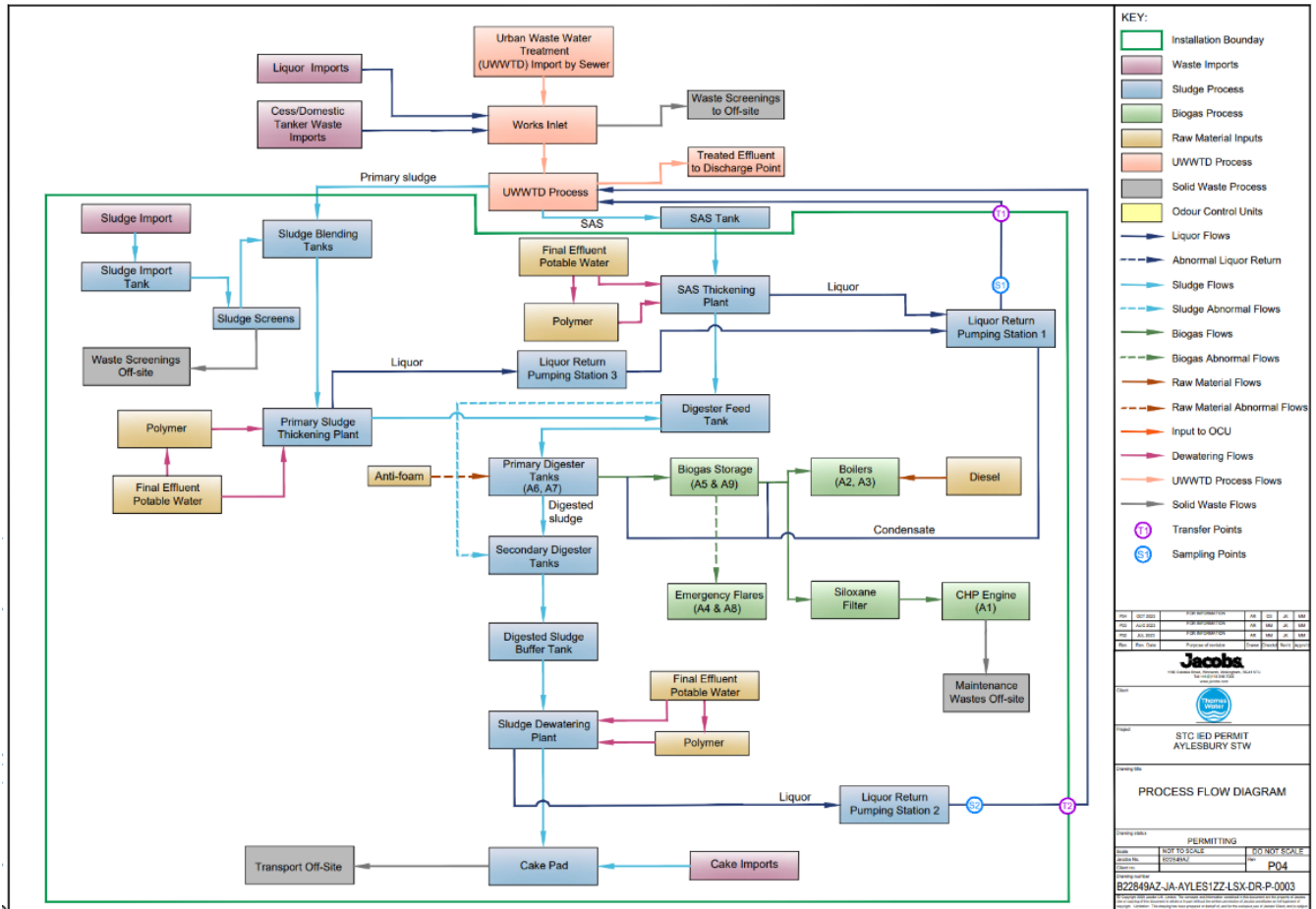


Figure D1 - Process Block Diagram for whole site



UNCONTROLLED WHEN PRINTED		REVISIONS E. UPDATED FOR TIER 1 RISK PROJECT REVIEW D. UPDATED FROM PROJECT RISK - FINAL C. UPDATED FROM PROJECT RISK B. A.		DATE 15/02/2014 15/02/2014 15/02/2014		DRAWING INFORMATION Drawing Code Drawing Title Drawing No.		Drawing Name PROCESS BLOCK DIAGRAM		DRAWING UNAPPROVED BY OPERATIONS Location Name AYLESBURY Drawing No. AYLESB12Z-PBD-001		Title Block AYLESB12Z NTS 8794145 A1 2	
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Figure D2 - Process Block Diagram for EPR assets



Appendix 5. Site Rounds

ID	Instruction	Daily	Weekly
1	Final Effluent		
a)	Check the effluent quality at the sample point. Sample (ammonia, phosphorus, temperature & turbidity) in accordance with SOM. Record in site log book & via Direct Text.	X	
b)	Check final effluent sampling point is accessible. Highlight to manager if need to clean inline monitor, channel/chamber.	X	
c)	Check storm sampling point is accessible. Highlight to manager if need to clean inline monitor, channel/chamber.	X	

ID	Instruction	Daily	Weekly
d)	Visual check on point of discharge to the watercourse if accessible. Check operability of outfall flap valve if fitted.	X	
e)	Check storm discharge point, if shared & if accessible.	X	
f)	Compensation water pumps. Check and clear ultrasonic head of cobwebs etc.	X	
g)	Check data and operation of inline monitor. Check inline monitor installation for damage, take appropriate action where required.	X	
h)	Remove and clean inline monitor probe.		X
i)	Check flow meter & flume is clear of debris. Take appropriate action.	X	
2	Preliminary Treatment	Daily	Weekly
a)	Check Crude sewage appearance. Does it look normal for the site?	X	
2.1	Cess Waste Reception Point		
a)	Note any suspicious activity or discharges as required	X	
b)	Check logger system is operating correctly	X	
c)	Check all pipework is in good condition	X	
d)	Where a macerator is fitted, check operation and oil reservoir	X	
e)	Where a manual stone trap is fitted, clear of accumulated material	X	
f)	Check grit bins are available and stocked with grit for winter	X	
g)	Carry out general housekeeping, remove litter, clear debris, washdown any spillages, empty bins	X	
h)	Ensure all signage is in good condition, clean and legible	X	
i)	Check washdown equipment is operating correctly	X	
2.2	Inlet / storm pumping station	Daily	Weekly
a)	Check Ammeter reading, Too high could indicate a blockage. Too low could indicate an air lock or impeller damage. Where reading is unusual ensure appropriate action is taken.	X	
b)	Check the well level is within the normal operating limits taking into account the flow conditions at the time (such as storm conditions & peak flow to site). If level is too low or high, this could indicate control issues or pumping issues.	X	
c)	Check condition of the wet well. Does it have more than the usual scum or debris floating on top that will indicate the need for a wet well clean?	X	
d)	Check fault light(s) are not on, take appropriate action as required.	X	

ID	Instruction	Daily	Weekly
e)	Check flow rate (where meter is fitted); is it within the normal operating range?	X	
f)	Inspect buildings, kiosks and control/switchgear panels for general condition, damage and that they are securely locked. Clean and tidy the interior of the buildings and/or Kiosks. Remove rubbish from site or if large volume arrange for collection.	x	
g)	Listen for undue pump noise and check for undue vibration by safely touching the lifting chain or guide rail.	X	
h)	Check non-return valve is operating correctly Non return valves prevent water from flowing back through the pump when it is not in operation. If a weighted arm is fitted is it at the usual angle? If it is low and chattering it could indicate the pump is blocked.	X	
i)	Check operation of the ultrasonic level control. Is it reading correctly? Compare the well level with the normal readout from the display. Check hard wired control floats, clean as required. Are floats weighed down with rag or debris preventing them from lifting if the water level rises?	X	
j)	Check pumps, pipelines and couplings for leaks where possible.		X
k)	Start the cleaning cycle manually where required.	X	
l)	Pumps - Log hours run		X
m)	Pumps - Log kWhrs		X
2.3	Screen(s) / macerator(s)	Daily	Weekly
a)	Check inlet channel level is normal taking into account the flow conditions at the time (such as storm conditions & peak flow to site).	X	
b)	Check screen operation and check for screenings carryover. Check for blockages and blinding (hairpinning) on screen panels and remove where necessary. Check for rag rolling or rag balls upstream of the screen and remove where necessary. Check for any grit build up in front of screen	X	
c)	Inspect debris disposal mechanism for correct operation and verify screenings are being removed. Check & clean any obstructions impeding the operation of screen mechanisms.	X	
d)	Check screens bypass is available and clean	X	
e)	Clean area around screen. Check & clean screen panels of any obstructions.		x
f)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action to replace them if needed.	X	

ID	Instruction	Daily	Weekly
	Inspect grease pots and fill them when level is below the standard. Use grease nipples to lubricate required parts of screen.		
g)	Visually check unit and its associated equipment for the following: Safety & security with all panels locked & guards secure and in good condition. Excessive noise or vibration Overheating External damage, leaks, missing fixings Where applicable, ensure main and brush drives turn and that brushes are spinning	X	
h)	Check operation of wash water system for screens Ensure wash water pressure of spray bar is correct. Check the inline filter is present, clean and feeding the spray bars (where applicable). Check the spray bar pattern and clean the spray bar nozzles as required.	X	
i)	Check & clean accumulation of screenings and fat from debris disposal mechanism Check & clean launder chutes and channels for accumulation of grit, sand, rag, fat,	X	
j)	Check the lip, labyrinth or other seals between the screen and the channel wall are making an effective seal.	X	
k)	Visual check on the screenings removal brushes for blinding and wear. Clean the brushes as required. Ensure the brushes are in correct contact with the screen and that screenings are being removed.	X	
l)	Check and clean instrumentation probes, floats and ultrasonic heads (where applicable).	X	
2.4	Screenings handling	Daily	Weekly
a)	Check control system and amps on panel for normal levels / operation, take appropriate action as required. Jumping amps indicates a blockage.	X	
b)	Where installed, visual check for normal operation of macerator. Look for visible blockages/build up on unit, high flows in front of macerator. Listen for unusual noise. Take appropriate action as required.	X	
c)	Where installed, check and empty stone trap.	X	
d)	Clean area around screenings handling units and skips.		X
e)	Check operation of wash water system for screenings handling. Check the inline wash water filter is present, clean and feeding the spray bars (where applicable) Ensure wash water pressure of spray bar is correct. Check the inline filter is present, clean and feeding the spray bars (where applicable). Check the spray bar pattern and clean the spray bar nozzles as required.	X	

ID	Instruction	Daily	Weekly
f)	Check screenings product quality and quantity, Check level of screenings in skip and change skip when full.	X	
g)	Check operation of auto drain.		X
h)	Where installed check operation of the trough desludge system. Check for grit build-up in trough - hose out where required.		X
i)	Visual check on condition and operation of brushes (ensure trough is being cleaned). If blinding occurs regularly have wear on screw brushes checked.		X
j)	Check screw conveyor and brushes for wear and central running.		X
k)	Clean and check mesh for blinding and hairpinning.		X
2.5	Grit removal	Daily	Weekly
a)	Check mechanical plant is operating correctly. Check equipment– Compressor, Rake, Detritor & Pista grit.	X	
b)	Check manually de-gritted constant velocity channels for build-up of grit, take appropriate action as required.	X	
c)	Check inflow and outflow for normal rate of flow and correct distribution.	X	
d)	Check volume, dryness and quality of grit produced.	X	
e)	Remove rag from the areas around baffles and mechanical equipment	X	
f)	Log manual de-gritting operations where required.	X	
g)	Log abnormal grit volumes.	X	
h)	Clean grit channel as required. Check grit build up in inlet channels and clean out if necessary.		X
i)	Check operation of wash water system and check the inline filter is present, clean and feeding the spray bars (where applicable)	X	
j)	Check aerated grit channels for air flow and bubble pattern (where applicable).	X	
2.5	Skips	Daily	Weekly
a)	Check skip capacity is adequate, and inform contractor when skip is full.	X	
b)	Rake skip where required.	X	
c)	Remove excess water if there is a facility to do so.	X	
d)	Ensure only prescribed material is in the skip. Remove any materials not prescribed.	X	
2.6	Storm separation and treatment	Daily	Weekly
a)	Check Flow To Full Treatment penstock is set at correct level.	X	
b)	Check storm return system is operational, manually return storm contents where required.	X	

ID	Instruction	Daily	Weekly
c)	Check storm tanks cleaning system, check level sensors, check tanks are clean and empty outside of storm conditions.	X	
d)	Check and clear storm screens where required. (automatic clearance and manual clearance linked to safe system of work)	X	
e)	Check screens bypass is available and clean	X	
f)	Check and clear/replace any outlet screening sacks		X
g)	Check separation weirs and clean where required.		X
h)	<u>During storm</u> check that the flow to treatment is normal. (Treating Flow To Full Treatment)		X
i)	Log abnormal flows. Log storm discharge flows. Log storm flows in dry weather conditions.		X
j)	Log storm events.		X
k)	Remove any debris in the system.		X
l)	Storm LTA – Visually check area is clean and operating within site parameters. Remove any debris.		X
m)	Storm LTA – Check for short circuiting during operation. Inspect banks for leakage		X
2.7	Flow measurement	Daily	Weekly
a)	Check site is within flow permit (treating Flow To Full Treatment before going to storm). Check that flow is going through site as expected.	X	
b)	Check flow meter and flume and clean where required	X	
c)	MCERTS – Log & record flow meter readings	X	
d)	Check EDM (Event Duration Monitor) sensor is clean and weir is free of debris	X	
3	Primary Treatment- Primary Settlement Tanks	Daily	Weekly
a)	Check and log sludge level by dipping tanks (Mon/Wed/Fri)	X	
b)	Check bridge/scrapper operation	X	
c)	Check de-sludge pump(s) and timer for normal operation	X	
d)	Check scum boards for breaks or carry under	X	
e)	Check scum trap for normal operation and clean/hose out	X	
f)	Check settled sewage quality (visual check only)	X	
g)	Check stilling chamber for rag, clear as necessary	X	
4	Secondary Treatment		
4.1	Secondary Treatment – Activated Sludge	Daily	Weekly

ID	Instruction	Daily	Weekly
a)	Check air filters indicators for normal readings. Check blower control panel. Check the blowers for normal operation. Check there are no illuminated fault lights.	X	
b)	Check and record dissolved oxygen (D.O) readings, where probes are installed.	X	
c)	Sample, measure and record Mixed Liquor Suspended Solids (MLSS) /RASS concentration and sludge settleability (Stirred Specific Volume Index) (SSVI), (Monday/Wednesday/Friday)	X	
d)	Vent condensate from air lines		X
e)	Check SAS pump(s) are operating correctly	X	
f)	Check and record sludge return from the final settlement tanks (RAS rate)	X	
g)	Check D.O probe and / or timers are carrying out the correct control functions. Aeration control function.	X	
h)	Check flow distribution to aeration lanes if more than one lane present	X	
i)	Log changes to RAS rate, Log flows (where meters are fitted), Log KWh, Log SAS Rate.	X	
j)	Check and record bubble pattern and size of the bubbles	X	
k)	Check mixers for rotation in anoxic (un-aerated) zones	X	
l)	Check recycle pumps are running, as required (Biological Nutrient Removal -BNR plants)		X
m)	Check redox monitor is operating correctly (BNR plants)		X
n)	Check VFA / liquor return (BNR plants)		X
o)	Check and record rate and frequency of SAS removal	X	
p)	Withdraw the D/O probe from the tank and remove clean		X
4.2	Secondary Treatment – Biological Filters	Daily	Weekly
a)	Visually check for correct flow distribution across the filter (radial distribution)	X	
b)	Keep filter surface clear of all debris and any significant moss or weed growth. Deal with ponding as appropriate.	X	
c)	Where recirculation is installed, check for normal operation at the correct flow rate	X	
d)	Check all air vents and under drains are clear and not flooded	X	
e)	Clear distribution arm orifices and or weir plates of debris	X	
f)	Remove end caps and rod/flush arms - clear debris from open channel arms	X	

ID	Instruction	Daily	Weekly
g)	Check for appropriate flow distribution between filters to suit filter size	X	
h)	Check operation of distributor arms (uniform speed of rotation)	X	
i)	Check for leakage at the centre column seals and end caps. Short circuiting etc.	X	
j)	Check rotation timer. Check alignment of rotation alarm sensor and target plate	X	
5	Secondary Settlement – Humus Tanks / Final Settlement Tanks	Daily	Weekly
a)	Check correct operation of desludging pump(s) or valve(s)	X	
b)	Check scraper/bridge operation where installed	X	
c)	Check and log blanket level with portable blanket meter where detectors not fitted. (Monday, Wednesday, Friday)	X	
d)	Check tank surface for buildup of floating debris. Visually check effluent quality over the weir for solids carry over	X	
e)	Check RAS pump(s) are operating correctly (FSTs only)	X	
f)	Check Bellmouth and de-rag where required	X	
g)	Check effectiveness of weir brushes, chains, “other systems” where fitted	X	
h)	Check scum boards for breaks or carry under	X	
i)	Check scum removal system for correct operation, clear any fouling where necessary	X	
j)	Check flow of recirculation bleed back/constant draw off where used	X	
k)	Check operation of fixed blanket detectors and alarms		X
l)	Check operation of Mallard pump by test running in hand, where installed		X
m)	Clear overflow weirs and launder channels of any build-up that will affect the tanks or effluent performance	X	
6	Chemical Dosing	Daily	Weekly
a)	Check that chemical is discharging, rather than dosing pump running dry (any nozzles blocked?)	X	
b)	Check chemical storage tank level - reorder as required. Log level in storage tank, Log discharge rate.		2 days a week
c)	Check for excessive vibration in the dosing pump		2 days a week
d)	Check the level in the internal bund and empty as required. Report any abnormalities.		2 days a week
e)	Visual check for leaks on tanks and visible chemical lines		2 days a week

ID	Instruction	Daily	Weekly
f)	Check the trace heating system		2 days a week
g)	Check external storage tank bund for rainwater and/or chemical. Empty as appropriate.		X
7	Tertiary Treatment		
7.1	Low Head Sand Filter	Daily	Weekly
a)	Check smooth movement of bridge, unusual sounds and vibrations, and abnormal flow patterns	X	
b)	Check water level in each filter, compare with other units and relate to flow rate, and last backwash	X	
c)	Check unit isn't in bypass	X	
d)	Check for evidence of chemical leaks	X	
e)	Check cleanliness of carriage & filter area	X	
f)	Check sodium hypochlorite level in the bridge tanks where fitted and fill from bulk tank	X	
g)	Check sodium hypochlorite bulk tank level	X	
h)	Check the amount of sand in the wash water	X	
i)	Check the colour of the backwash water	X	
j)	Check the correct amount of hypochlorite is being dosed	X	
k)	Check water level in each filter, compare with other units and relate to flow rate, and last backwash	X	
l)	Log backwash timer settings and head loss	X	
m)	Log flows and flow rate, where meters are fitted	X	
n)	Clean the level sensor head		X
o)	Log clarity of feed (compare with final effluent)	X	
7.2	Disc Filter	Daily	Weekly
a)	Log backwash pressure	X	
b)	Check frequency of backwash is within correct range		X
c)	Check bypass is not working during normal operations	X	
d)	Check depth in and out of the drum for normal operation	X	
e)	Check drum is rotating in correct mode and sounds normal	X	
f)	Check all ancillaries are operating normally	X	
g)	Log flows and flow rate where meters are fitted	X	
h)	Sample and record turbidity on feed (compare with final effluent)	X	
i)	Inspect inside filter for large pieces of debris		X
j)	Check for accumulation of weed in backwash trough		X

ID	Instruction	Daily	Weekly
k)	Check and clean backwash water strainer.		X
l)	Check for soundness of mesh panels by lifting inspection panels		X
m)	Check wash water pressure and nozzles for normal operation		X
8	Raw Sludge Holding & Thickening		
8.1	Sludge Holding Tanks	Daily	Weekly
a)	Check mixing regime is correct	X	
b)	Log levels in tank(s)	X	
c)	Decant liquors	X	
d)	Check tank(s) for ragging and blockages and clear or remove (where safe access is possible)	X	
e)	Check that holes on sludge cage(s) are clear where fitted, Clean sludge cage(s) dewatering holes (where safe access is possible)	X	
f)	Log tanker movements and compare with schedule	X	
g)	Ensure any crust build up does not interfere with any control equipment/alarm floats	X	
8.2	Picket Fence Thickener	Daily	Weekly
a)	Check fence is rotating & “stop, look, listen,” for mechanical issues.	X	
b)	Check weir overflow quality and the surface of the unit. Clear any buildup of debris	X	
c)	Log blanket measurements / pump timers	X	
d)	Sample from discharge pump (run manually if necessary) and assess product quality. Sample, analyse and record % dry solids entering the PFT. Sample, analyse and record % dry solids out (Monday, Wednesday, Friday)	X	
e)	Check control system is operating normally	X	
f)	Log any changes to settings or duty	X	
g)	Log sludge flows in (where meters fitted) and out	X	
h)	Visually assess the dry solids & flow entering the PFT	X	
i)	Log hours run meters	X	
j)	Remove buildup of debris on the rake	X	
8.3	Belt Thickeners	Daily	Weekly
a)	Check for good floc formation. Check sludge on the top belt and assess the conditioning of the sludge. Check belt drainage and filtrate quality	X	
b)	Check product quality & quantity. Check condition of hopper	X	
c)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action.	X	

ID	Instruction	Daily	Weekly
d)	Sample, analyse & record % Dry Solids on feed and sludge/cake (Monday, Wednesday, Friday)	X	
e)	Check sludge feed rate and log	X	
f)	Check poly dosing system. Log polymer usage, note each bag change/delivery. Make adjustments to optimise	X	
g)	Ensure wash water pressure is available at a minimum of 6 bar	X	
h)	Clean belt steering paddles and check they are functioning correctly	X	
i)	Clean hopper level probes and check they are functioning correctly	X	
j)	Wash Station - Check formation of spraying fans, rotate internal brush to clean spray nozzles. (Minimum twice daily)	X	
k)	Visual Check - Hydraulic Power Pack - Check oil level and top up using clean equipment and fresh oil as required, maintain as close to full level as possible. Oil level must not be allowed to fall below 3/4 as this will cause serious damage	X	
l)	Jet wash clean the belt filter.	X	
m)	Use low pressure water hose to clean complete machine, frame, rollers and hoppers.	X	
n)	Check condition of Belt Filter for blinding / blockages / good filtration	X	
o)	High pressure steam clean the belt from underside.		X
p)	High pressure steam clean complete machine, frame rollers and hoppers avoiding all electrical and instrumentation equipment		X
q)	Check condition of Belt Filter for wear i.e. Creasing / condition of seam to avoid failure / breakage and damage to other components		X
8.4	Drum Thickeners	Daily	Weekly
a)	Check for good floc formation. Check sludge feed rate. Check product thickness (visually). Check filtrate quality	X	
b)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action.	X	
c)	Sample for % dry solids analysis and record (Monday, Wednesday, Friday)	X	
d)	Check spray bar nozzles to ensure they are clear and spraying correctly. Check spray bar wash water pressure	X	
e)	Clean probes in discharge hopper, hose down and carry out cleaning duties	X	
f)	Log polyelectrolyte used – each drum/bag change	X	
g)	Log sludge inlet flow meter, monitor throughput	X	
h)	Check & clean flocculator tanks		X

ID	Instruction	Daily	Weekly
i)	Check appearance of mesh, adjust cleaning and cleaning pause intervals if necessary.	X	
j)	Clean dry solids monitors sensors		X
k)	Clean foot valves on washwater suction lines		X
l)	Clean mechanical filter on washwater booster set		X
m)	Clean washwater booster secondary screen in channel		X
n)	Jet/remove fat deposits from thickened sludge discharge pipework		X
o)	Log hours run		X
9	Odour Control	Daily	Weekly
	Tasks for all Odour Control Units		
a)	Check covers, hatches and doors are closed	X	
b)	Confirm duty fan running and standby fan availability	X	
c)	Check damper position to ensure they have not been tampered with	X	
d)	Check ductwork for any signs of damage or leaks	X	
	Specific tasks for Biofilter OCU		
e)	Check the spray pattern from the irrigation nozzles and clean nozzles where required. (If possible)	X	
f)	Check for free discharge of effluent water to drain	X	
g)	Check for free discharge on any condensate removal points	X	
	Specific tasks for Chemical Scrubber OCU		
h)	Check water softener availability, check salt reservoir level, and top up if required.	X	
i)	Check stocks in bulk chemical tanks and reorder if required – tanker delivery	X	
j)	Check that the Redox and pH are within the agreed range – on dosing skid	X	
k)	Check duty and standby dosing pumps are available for each bulk chemical	X	
l)	Check the duty scrubber liquor recirculation pump is running and the standby is available in auto	X	
m)	Check that there is free drainage of scrubber blow-down liquor to drain	X	
n)	Check differential pressure gauges are within design range (if fitted)	X	
o)	General check for leaks in the scrubber liquor recirculation and dosing system – raise follow on work if any defects are identified	X	

ID	Instruction	Daily	Weekly
	Specific tasks for Carbon OCU		
p)	Examine ductwork for any signs of damage or leaks and check trapped condensate drains are free flowing. If a manual drain valve is provided, operate the valve until the flow of condensate ceases and leave valve in closed position.	X	
q)	Check differential pressure gauge for over-pressure (if provided) – indicates media fouling	X	
10	On Site Pumping	Daily	Weekly
a)	Pumping System(s) (Drainage, Interstage, Washwater, Recirculation, Return Liquors etc.) operating correctly?	X	
b)	Check Ammeter reading - too high could indicate a blockage. Too low could indicate an air lock or impeller damage.	X	
c)	Check the well level is within the normal operating limits - taking into account the flow conditions at the time. If level is too low or high, this could indicate control issues or pumping issues.		
d)	Check condition of the wet well- does it have more than the usual scum or debris floating on top that will indicate the need for a wet well clean?		
e)	Check fault light(s) are not on	X	
f)	Check flow rate (where meter is fitted); is it within the normal operating range?	X	
g)	Check for undue pump noise and vibration by safely touching the lifting chain or guide rail.	X	
h)	Check non-return valve. Non return valves prevent water from flowing back through the pump when it is not in operation. If a weighted arm is fitted, is it at the usual angle? If it is low and chattering it could indicate the pump is blocked	X	
i)	Check operation of the ultrasonic level gauge. Is it reading correctly? Compare the well level with the normal readout from the display.	X	
j)	Check pumps, pipelines and couplings for leaks. Check for visible leaks.	X	
k)	Start the cleaning cycle manually where required	X	
l)	Pumps - Log hours run	X	
m)	Pumps - Log kWhrs	X	
n)	Check hard wired control floats - are floats weighed down with rag or debris preventing them from lifting if the water level rises.	X	
o)	Washwater Pumping - Check the pipe line pressure from a gauge (where installed) on the pressure vessel or the pipe line manifold. Possible indication of strainer blockage	X	

ID	Instruction	Daily	Weekly
p)	Washwater Pumping - Check operation of surge vessels (where installed).	X	
q)	Washwater Pumping - Check the strainers. If necessary, put automatic strainers in manual clean and inspect the manual strainers where local conditions allow.	X	
r)	Washwater Pumping - Check automatic filters are operating correctly	X	
11	Distribution Chambers	Daily	Weekly
a)	Inspect all weirs and brush clean. Remove any debris, scum, algal growth, blanket weed, grit, etc. from the chamber. Check flow split is correct.	X	
b)	Ensure any rag is removed, especially from around the penstocks, gate valves and their spindles. Ensure none of this passes over the weir.	X	
c)	Check that all valve, penstock and weir operating positions are correctly set.	X	
d)	Check chamber for any visible leaks	X	

Appendix 6. Generic Sludge Round Checks

	Instruction	Daily	Weekly
1	Liquid Sludge Import Facilities	Daily	Weekly
a)	Check sludge logger device is fully operational	X	
b)	Check that the pattern of imports is in line with site requirements/agreement with tanker operators.	X	
c)	Check general area is clean and tidy	X	
d)	Check reception tank for rag/grit build up		X
2	Sludge Screen	Daily	Weekly
a)	Check sludge screen operation	X	
b)	Check screened sludge quality	X	
c)	Check / clean moisture sensor	X	
d)	Visually check unit and its associated equipment for the following: Safety & security with all panels locked & guards secure and in good condition. Excessive noise or vibration Overheating External damage, leaks, missing fixings	X	
e)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action to replace them if needed. Inspect grease pots and fill them when level is below the standard. Use grease nipples to lubricate required parts of screen.	X	
f)	Carry out checks on cold weather operation systems before frost sets in	X	
g)	Check screenings quality & quantity		X
h)	Check general area is clean and tidy		X
i)	Check washwater is operating correctly during period of sludge discharge Ensure wash water pressure of spray bar is correct. Check the inline filter is present, clean and feeding the spray bars (where applicable). Check the spray bar pattern and clean the spray bar nozzles as required.		X
j)	Clean steel probes on rotamat screen		X

	Instruction	Daily	Weekly
3	Sludge Buffer & Blending Tanks “Sludge Blending Tank” refers to a tank, into which more than one type of sludge is fed, requiring mixing: normally immediately prior to sludge digestion or dewatering. It may on some sites be referred to as a sludge holding tank or digester feed tank.	Daily	Weekly
a)	Check that mixer is operating correctly. Mixers are normally inhibited if the sludge level falls below a set level to protect the impellor, pump or blower.	X	
b)	Check for signs of stratification or poor mixing and rectify where necessary	X	
c)	Check pH and if less than 5 attempt to reduce septicity and freshen sludge	X	
d)	Check for ragging and blockages and clear or remove (where safe access is possible)	X	
e)	Check amps on mixer motor		X
f)	Check tank control system		X
4	Sludge Treatment Inter Process Pumping	Daily	Weekly
a)	Check Ammeter reading, Too high could indicate a blockage. Too low could indicate an air lock or impeller damage. Where reading is unusual ensure appropriate action is taken.	X	
b)	Check flow rate (where meter is fitted); Is it within the normal operating range?	X	
c)	Check the well level is within the normal operating limits taking into account the flow conditions at the time. If level is too low or high, this could indicate control issues or pumping issues.	X	
d)	Check operation of the ultrasonic level gauge. Is it reading correctly? Compare the well level with the normal readout from the display.	X	
e)	Listen for undue pump noise and check for undue vibration by safely touching the lifting chain or guide rail.	X	
f)	Check pumps, pipelines and couplings for visible leaks	X	
g)	Check non-return valve is operating correctly Non return valves prevent water from flowing back through the pump when it is not in operation. If a weighted arm is fitted is it at the usual angle?	X	

	Instruction	Daily	Weekly
	If it is low and chattering it could indicate the pump is blocked.		
5	Pasteurisation	Daily	Weekly
a)	Check batch rates according to sludge levels	X	
b)	Check digester temperatures in relation to pasteurisation plant	X	
c)	Check hmi panel	X	
d)	Check operation of biotherm reactor aeration blower package.	X	
e)	Check heat exchanger performance	X	
f)	Check digested sludge buffer tanks	X	
g)	Check blended sludge buffer tanks	X	
h)	Check operation of biotherm reactor mixer	X	
i)	Check operation of heat exchanger mixer	X	
j)	Check operation of scum cutter	X	
k)	Check pump and valve operation	X	
l)	Log and record flows, pressures and temperatures	X	
m)	Check % ds of feed sludge to pasteurisation plant (Monday, Wednesday, Friday)	X	
n)	Check, remove and clean temperature probe		X
6	Primary Sludge Digestion	Daily	Weekly
a)	Check sludge discharge to limpet chambers, where installed. Clear any blockages	X	
b)	Check digester feed system is working Clear any blockages	X	
c)	Check digester heating system is working & temperatures are within HACCP range.	X	
d)	Check digester mixing system is operating correctly	X	
e)	Log digester temperatures (HACCP) Log inlet and outlet temperatures of each boiler Log inlet and outlet temperatures of sludge and water in heat exchangers	X	
f)	Log sludge feed volumes into each digester and establish the retention time (HACCP)	X	
g)	Check operation of sludge and water recirculation pumps Check pumps, pipelines and couplings for leaks where possible.	X	

	Instruction	Daily	Weekly
h)	Monitor water supply where glycol is not used to heat exchanges that are exposed to elements, Ensure water is drained when heat exchanges are not in use.	X	
i)	Log use of secondary fuel within boilers.	X	
j)	Sample sludge into and out of digester. Analyse and record % dry solids. (Monday, Wednesday, Friday.) Analyse and record % volatile matter. (3 times a week Monday – Thursday)	X	
k)	Check digesters for foaming on the top.		X
l)	Remove grit from base of digester if facility is provided. Do not leave grit removal operation unattended and ensure valve is fully closed before leaving task.		X
m)	Sample, measure and record pH of digested sludge		X
7	Secondary Sludge Digestion	Daily	Weekly
a)	Check mixing system, for short-circuiting or separation, Mix before transfer to the next process, where facilities exist	X	
b)	Decant supernatant liquor when required	X	
c)	Log status of each tank	X	
d)	Record number of day's storage	X	
8	Biogas Handling, Storage, & Utilisation.	Daily	Weekly
a)	Check all condensate traps manually and drain or top up if necessary. This check is required twice daily in prolonged periods of warm weather. Check automatic u-tubes visually, to ensure that there are no gas leaks or freezing Check automatic drain traps working correctly. Use manual drains if automatic drains not working, report defects	X	
b)	Check glycol pressure relief valve and ensure liquid level visible in sight glass	X	
c)	Check pressure/vacuum relief (whessoe) valves are not passing biogas. Listen for gas passing, note any unusual smell, visual check of valve.	X	
d)	Check for genuine operation of flare stack / waste gas burner, e.g. chp is at full power and there is excessive gas make	X	
e)	Check and record dehumidifier temperature	X	

	Instruction	Daily	Weekly
f)	Log gas volumes: produced, flared, to chp, to boilers	X	
g)	Sample, monitor & record methane composition of biogas	X	
h)	Manually check gas isolation valve handle operation by closing & opening valve.		X
9	CHP & Biogas Power Management	Daily	Weekly
a)	Check automatic drain traps working correctly. Use manual drains if automatic drains not working, report defects	X	
b)	Check for genuine operation of flare stack / waste gas burner, e.g. CHP is at full power and there is excessive gas make	X	
c)	Check glycol pressure relief valve and ensure liquid level visible in sight glass	X	
d)	Check & log hours run	X	
e)	Check & log kwh exported (where relevant)	X	
f)	Check & log kwh generated	X	
g)	Check & log kwh used on site	X	
h)	Check & log use of secondary fuel	X	
i)	Check & log gas used	X	
j)	Check & log heat liberated from engine, heat dumped, heat liberated from boilers	X	
k)	Check & log engine temperatures and pressures, by exception	X	
l)	Check & log gas stream for methane composition		X
m)	Check automatic u-tubes to ensure that there are no gas leaks or freezing		X
n)	Check pressure/vacuum relief (whessoe) valves are not passing biogas. Listen for gas passing, note any unusual smell, visual check of valve.	X	
10	Liquor Treatment	Daily	Weekly
a)	Check return liquors and return rate	X	
11	Chemical Dosing	Daily	Weekly
a)	Check that chemical is discharging, not just dosing pump running (any nozzles blocked?)	X	
b)	Check chemical storage tank level - reorder as required	X	
c)	Check for excessive vibration in the dosing pump	X	

	Instruction	Daily	Weekly
d)	Check the level in the internal bund and empty as required	X	
e)	Check for leaks on visible chemical lines	X	
f)	Check the trace heating system	X	
g)	Check external storage tank bund for rainwater and/or chemical. Empty as appropriate.		X
h)	Check the correct amount of chemical is being delivered for the conditions		X
i)	Check storage tank can take delivery before delivering		X
12	Sludge Dewatering – Belt Press	Daily	Weekly
a)	Check poly dosing system, Log polymer usage, note each bag change/delivery, Make adjustments to optimize	X	-
b)	Check sludge feed rate and log	X	
c)	Check sludge on the top belt and assess the conditioning of the sludge, Check belt drainage and filtrate quality	X	
d)	Check product quality & quantity, Check condition of stockpile	X	
e)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action.	X	
f)	Ensure wash water pressure is available at a minimum of 6 bar	X	
g)	Clean belt steering paddles and check they are functioning correctly	X	
h)	Clean hopper level probes and check they are functioning correctly	X	
i)	Wash station - check formation of spraying fans, rotate internal brush to clean spray nozzles. (minimum twice daily)	X	
j)	Visual Check - Hydraulic power pack - check oil level top up using clean equipment and fresh oil as required, maintain as close to full level as possible. Oil level must not be allowed to fall below 3/4 as this will cause serious damage	X	
k)	Jet wash clean the belt filter.	X	
l)	Use low pressure water hose to clean complete machine, frame, rollers and hoppers.	X	
m)	Check condition of belt filter for blinding / blockages / good filtration	X	
n)	Steering flaps - check condition and correct operation for activation of the hydraulic steering mechanism and check for wear and replace as required	X	

	Instruction	Daily	Weekly
o)	Sample, analyse & record % dry solids on feed and cake, (Monday, Wednesday, Friday)	X	
p)	High pressure steam clean the belt from underside.		X
q)	High pressure steam clean complete machine, frame rollers and hoppers avoiding all electrical and instrumentation equipment		X
r)	Check condition of belt filter for wear i.e. Creasing / condition of seam to avoid failure / breakage and damage to other components		X
13	Sludge Dewatering – Centrifuge	Daily	Weekly
a)	Check condition of stockpile, Check quality of product	X	
b)	Check kwh, amps and hours run	X	
c)	Check poly dosing system	X	
d)	Check quality of centrate	X	
e)	Check sludge feed rate, Check quality of product in feed	X	
f)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action.	X	
g)	Log hours run	X	
h)	Log kwh hours run	X	
i)	Log polymer usage, note each bag change/delivery	X	
j)	Log sludge flow rate	X	
k)	Log volume of cake produced	X	
l)	Make adjustments to get optimum throughput, product quality and poly dosing	X	
m)	Sample, analyse & record % dry solids on feed and cake (Monday, Wednesday, Friday)	X	
14	Poly Make Up, Storage, & Dosing – Liquid	Daily	Weekly
a)	Poly make up storage & dosing – liquid - check supply of polymer held in IBC; Top up, replace, order as appropriate	X	
b)	Liquid - check dosing pumps & settings	X	
c)	Liquid - check dilution water is available	X	
d)	Liquid - clean up any spillages of liquid	X	
e)	Liquid - log usage of polymer i.e. IBCs level	X	
f)	Liquid - log settings of dosing pumps	X	

	Instruction	Daily	Weekly
g)	Liquid - log type of polymer	X	
h)	Liquid - check polymer flowmeter pressure – if above 3 bar clean filter and mixer		X
i)	Liquid - check made up solution appears ok	X	
j)	Liquid - check bunded area for spillages	X	
15	Poly Make Up, Storage, & Dosing – Powder	Daily	Weekly
a)	Dry powder - check dosing pumps & settings	X	
b)	Dry powder - check supply of polymer held in silo; Top up, replace, order as appropriate	X	
c)	Dry powder - check bunded area for spillages	X	
d)	Dry powder - check dilution water	X	
e)	Dry powder - check dry room / silo is heated, dry and doors are closed	X	
f)	Dry powder - check made up solution appears ok	X	
g)	Dry powder - check polymer is dry and flowing, look at screw drive and discharge to wetted head – “JETWET”	X	
h)	Dry powder - clean up any spillages	X	
i)	Dry powder - log settings of dosing pumps	X	
j)	Dry powder - log type of polymer, check using correct polymer.	X	
k)	Dry powder - log usage of polymer i.e. bags used	X	
l)	Dry powder - check polymer flowmeter pressure – if above 3 bar clean filter and mixer		X
16	Sludge Cake Transfer	Daily	Weekly
a)	Visually check auto lubrication systems (grease pot) are functioning correctly, take appropriate action.	X	
b)	Check conveyor rollers & keep clear	X	
c)	Check drive bearings for wear & operation	X	
d)	Check electric trip wire emergency stop wire	X	
e)	Keep general area clean. Clear up any spillages	X	
f)	Check belt condition	X	
17	Sludge Cake Storage	Daily	Weekly
a)	Ensure silo not filled above 70% capacity.	X	

	Instruction	Daily	Weekly
	Inform Bio-recycling of any changes to sludge production.		
b)	Keep general area clean to minimise odour	X	
c)	Log & record each storage pad bay activity and status if applicable	X	
d)	Check wheel wash is operational	X	

Appendix 7: Odour sniff testing protocol:

Purpose

Sniff testing is conducted to assist in managing odours to prevent or minimise the risk of adverse odour impact offsite.

Frequency

The procedure is to be undertaken in response to complaints or if a risk of odour nuisance at sensitive receptors is expected and/or has been substantiated.

Pre-requisites for the assessor

The assessment is undertaken by a member of staff trained in the procedure. The assessment in response to complaints will be carried out by someone not based on site. The member of staff will normally be office based rather than operations based. This means that their senses are less likely to become affected by any site odours.

Assessors must comply with the following:

- They should not consume strongly flavoured food or drink (this includes coffee) at least half an hour before conducting the assessment.
- They should not smoke at least half an hour before conducting the assessment.
- They should not consume confectionary or soft drinks must be avoided for the duration of the assessment.
- Scented toiletries including perfume, deodorant or aftershave should not be applied less than an hour before conducting the assessment.
- If the assessment requires travelling between locations in a vehicle, this vehicle must not contain deodorisers / air fresheners.
- If the assessor has a cold, sore throat, or sinus trouble they should not conduct the assessment.

Prior to the commencement of the inspection, the operator shall check the weather data including the wind direction, wind speed, temperature and rainfall.

Odour complaint investigation

Where possible, odour complaints will be actively investigated by an assessor. Timely receipt of a complaint is essential if such investigations are to have any value.

At each location the following procedure is undertaken:

- a. The assessor will stand facing the wind and breathe deeply, for a period of 3-5 minutes.
- b. The following information is recorded using the odour monitoring form.
 - i. Time, wind speed and direction, temperature, precipitation.
 - ii. The type of any odour(s) detected.
 - iii. The intensity of any odours detected on a scale of 0 to 6.
 - iv. The persistence of the any odours detected i.e. constant or intermittent.
 - v. The likely source of any odours detected (e.g. a specified onsite IED source, a specified non IED sources, offsite odour source, etc).
 - vi. Any abnormal conditions on site that may account for the odour e.g. broken duct, open door, unusual operation, spillage etc.

The pre-requisites for assessors and monitoring approach are as defined in the sniff testing procedure with the following exceptions:

- The first assessment should be conducted at the complainant's location.
- If site odours are detected, the assessor shall move back towards the site, assessing potential odour sources within the Urban Waste Water Treatment (UWWT) and Sludge Treatment Centre (STC) processes and attempt to trace the odour to its source.
- On site operations shall also be reviewed to identify any abnormal site operations or activities that could be responsible for elevated odour levels.
- The sensitivity of the offsite location to odours should be recorded as a comment.

The findings of the investigation should be reported back to the Thames Customer Services Centre so that feed-back can be provided to the complainant.

