MOTT MACDONALD

SW IED Site Condition Report - Aylesford

Issue and Revision Record

Revision	Date	Originator	Checker	Approver	Description
A	30/03/21	H Dixon	S George	A Manns	For client comment
B	24/05/21	H Dixon	S Stone	A Manns	For client comment
C	22/06/21	G Peel	S Stone	A Manns	Final draft

Document reference: | 790101_MSD_SCR_AYL |

Information class: Standard

Document purpose:

A Site Condition Report (SCR) provides information regarding the condition of the land and groundwater at permitted sites at particular points in time throughout its permit history. It is an on-going record of the potential and known contamination risks before a permit is granted, whilst activities are carried out under a permit and at the time of surrounding the permit.

The SCR will be submitted as required for Form B2/C2, Question 5b and will be completed following the Environment Agency's Environmental permitting: H5 Site condition report guidance (2013)[1]. The template structure is directly from the Environment Agency's H5 Site Condition Report word template.

For all new permits **sections 1 to 3** will be completed.

For sites that are currently permitted **section 1 to 7** will be completed, updating sections from the previous Site Condition Report where available.

Section 8 to 10 are not to be edited; these address surrender of the permit at a later date.

[1] https://www.gov.uk/government/publications/environmental-permitting-h5-site-condition-report

MOTT MACDONALD

1.0 SITE DETAILS	
Name of the applicant	Southern Water
Activity address	Aylesford Water Treatment Works and Sludge Treatment Centre Bulls Lane, Aylesford, Kent, ME20 7DA
National grid reference	TQ 71989 59496

Document reference and dates for Site Condition Report at permit application and surrender	Site Condition Report: 790101_MSD_SCR_AYL Date of Permit Application: TBC Date of Surrender: TBC

Document references for site plans (including location and boundaries)	See 790101_MSD_SiteLayoutPlan_AYL for relevant plans and figures.

2.0 Condition of the land at permit issue	
Environmental setting including: • geology • hydrogeology • surface waters	**Land use** The site is located to the north east of the town of Aylesford. It currently hosts the Aylesford Wastewater Treatment Works (WWTW) and Sludge Treatment Centre (STC). The first evidence of sewage treatment works on site is shown in 1909 historic mapping, with a significant expansion from 1973. The River Medway is found adjacent to the west of the site, with Aylesford Solar Park located adjacent to the north east. To the east, there is a large surface water body which follows the site boundary, with agricultural fields immediately to the south. Several heritage assets are found to the south of these fields, including The Friars Aylesford and Aylesford Carmelite Priory. Just south of the Medway, an area of industrial and residential land use surrounds Aylesford Train Station, with the M20 immediately south. **Geology** Superficial Geology The east of the site lies upon an area of Alluvium formed up to 2 million years ago during the Holocene, consisting largely of soft to firm consolidated, compressible silty clay, but may also include layers of silt, sand, peat and gravel. This is associated with the River Medway. The central and eastern areas of the site are underlain by pockets of River Terrace Deposits from the quaternary period, comprising sand and gravel with lenses of silt, clay or peat. No artificial

ground is shown to be on site or within 250m, however a limited thickness of made ground likely underlies the site associated with phases of development.

Bedrock Geology

The site lies upon the Folkestone Formation ranging from the Aptian to Albian Age. The base is taken from contact with silty clay or clayey silt of the Marehill Clay Member (Sandgate Formation). The upper boundary is taken from the upward disappearance of the Gault Formation. The parent unit is defined as the Lower Greensand Group. The bedrock formation comprises medium and coarse-grained, well-sorted cross-bedded sands and weakly cemented sandstones.

Underlying the Sandgate Formation are the Hythe Formation (interbedded sandstone and limestone), Atherfield Clay Formation (mudstone) and the Weald Clay Formation (mudstone).

Structural Geology

There are no faults found within the area.

Hydrogeology

The bedrock aquifer underlying the site is designated as a Principal Aquifer. The Alluvium is classified as a Secondary Undifferentiated aquifer in the west of the site, whilst the River Terrace Deposits in the east are classified as a Secondary A aquifer. The bedrock Principal Aquifer and superficial Secondary A aquifer are classed as highly vulnerable.

Most of the site lies within Source Protection Zone 3 (total catchment), with a small area to the south of the site boundary within Source Protection Zone 2 (outer protection zone).

Hydrology and flooding

The River Medway flows south east to north west around the southern/eastern area of the site. The River enters the North Sea via the Medway Estuary, over 10km to the north. Field drains are present to the west of the site, although it is not clear if these run into the River Medway. There are a further 21 Ordnance Survey Water Network lines within 250m of the site.

The Site is located within an area with potential for groundwater flooding to occur at the surface. The southern boundary of the Site is located within an area with potential for groundwater flooding of property situated below ground level.

The Site is almost entirely located within an area designated as Flood Zone 2 for flooding from rivers or the sea, with small areas of the Site within a Flood Zone 3. The Site is considered to be a medium risk for flooding from surface water, corresponding to a chance of flooding each year of between 1 in 100 (1%) and 1 in 30 (3.3%). The discharge of secondary treated sewage effluent Aylesford Wastewater Treatment Works to the River Medway Estuary is permitted under water discharge activity permit reference RP26/73.

Sensitive land use

There is one sensitive land use within 500m of the site. The Medway Estuary – Zone 2 Marine Nature Reserve is found 40m west of the site.

MOTT MACDONALD

Pollution history including: • pollution incidents that may have affected land • historical land-uses and associated contaminants • any visual/olfactory evidence of existing contamination • evidence of damage to pollution prevention measures	**Pollution incidents to controlled waters** There has been one pollution incident to controlled waters within 250m: • Paper Industry – Aylesford Newsprint. 314m west of site. Pollutant: Miscellaneous – Unknown. June 1996. Category 1 – major incident. **Nearby industrial land uses** There are ten active contemporary trade directory entries within 500m, including MOT testing services, road haulage services, filter manufacturers and suppliers and printers. Listed below are contemporary trade directories listed within 400m: • Three Towns Ltd – 318m south west ((NGR 571727, 158999). Office and Furniture Equipment. • Sylvan Joinery – 396m south (NGR 571767, 158913). Joinery Manufacturers. • London Mining Associates Ltd – 369m west (NGR 571422, 159597). Recycling Services. • Imagink – 397m south (NGR 571782, 158910). Printers. **Recorded Landfill and Historic Landfill** There are two historic landfills found within 500m of the site. Aylesford Sand Pit located 118m south east was operational between 1977 and 1993, accepting deposited waste including inert waste. A second historic landfill is found 340m east, also operational between 1977 and 1993, accepting deposited waste including inert, commercial and special waste. **Registered Waste Treatment or Disposal Sites** There is one licensed waste management facility situated 25m north of the site: • Southern Water Services Limited – License was first issued in 1996, last modified in 2010. Site category: Physical Treatment Facilities. There is one registered waste treatment or disposal site on site: • Southern Water Services Limited – Aylesford Water Treatment Works. Site category: Treatment. **Integrated Pollution Prevention and Control** The following integrated pollution prevention and controls are found within 500m of the site and are classed as effective or valid. All superseded permits have been omitted. • London Mining Associates Limited – Aylesford Recycling Facility. 322m west of site. Effective: January 2019. Activity description: recovery or a mix of recovery and disposal of >50 T/D non-hazardous waste. • Aylesford Newsprint Ltd – Aylesford Newsprint Paper Mill. 444m west of site. Effective date: December 2010. Activity Description: Paper, pulp and board – producing paper/board greater than 20T/D. **Local Authority Pollution Prevention and Controls** There are two local authority pollution prevention and controls within 500m:

- Scott Bros Paving Supplies – Tonbridge and Malling Borough Council. Permitted: March 1992. 456m south of site. Description: PG3/1 Blending, packing, loading and use of bulk cement.
- Reed Paper and Board (UK) Ltd – Aylesford Paper Mills. Authority: Tonbridge and Malling Borough Council. Authorised: July 1992. Description: Processes registered under S.0 of the Alkali Act 1906 and S.5 of the Health and Safety at Work Act 1974.

Mining and quarrying

Risk of coal mining in the area is deemed negligible as no coal deposits are present. There is one man-made mining cavity located 919m east of the site. There are four recorded BGS Mineral Sites within 250m, associated with historic quarrying:

- Aylesford Quarry, 90m north east. Historic opencast, current status: ceased. Commodity – silica sand.
- Aylesford Quarry, 116m north. Historic opencast, current status: ceased. Commodity – sand and gravel.
- Aylesford Quarry, 165m east. Historic opencast, current status: ceased. Commodity – sand.
- Aylesford Quarry, 231m north east. Historic opencast, current status: ceased. Commodity – sand.

Historical Land use

- The site presents largely agricultural land until 1896 where historic mapping shows A tramway to the north and east of the site, with sand pit found adjacent. A spring is also located adjacent to the tramway.
- The first evidence of a sewage works is found in 1908 mapping, with embankments found to the east and north of the site separating the sewage works from the sand pit and tramway.
- The sewage works are shown to have expanded to the east by 1938, with nicopits extending further east. A raised embankment is shown to the most north-easterly point of the site in 1958. A dual carriageway is shown to the south of the site. Cottages are also found to the north west of the site.
- Additional corporation cottages are found in 1962 mapping to the south west of the site. To the west, there is a long pond extending from the south to the north of the site.
- Large extension and replacement of sewage treatment works infrastructure is found in 1973 historic mapping. This is expanded west between 1973 and present day to present the current site footprint.

Radon

The site is within a lower probability radon area (less than 1% of homes are estimated to be at or above the action level).

Contaminants of concern

Soil Chemistry

The following soil concentrations are found in the area, as detailed in the Envirocheck Report:

- Arsenic: <15mg/kg to 15-25mg/kg;

	• Cadmium: <1.8mg/kg; • Chromium: 60-90mg/kg; • Lead: <100mg/kg; and • Nickel: 15-30mg/kg. <u>Contaminants associated with current and historic land use</u> The following contaminants are of concern regarding the industrial activities stated above, in addition to the current use of the site: • total petroleum hydrocarbons (TPH); • polycyclic aromatic hydrocarbons (PAH): • heavy metals and inorganics; • pathogens; • asbestos; • polychlorinated biphenyls (PCBs); • chlorinated solvents and phenols; and • volatile and semi-volatile organic compounds (VOC/SVOC). There may also be ground gases present, likely comprising CO_2 and CH_4.
Evidence of historic contamination, for example, historical site investigation, assessment, remediation and verification reports (where available)	**<u>Site walkover</u>** A site visit was conducted on 12 October 2020. A summary of the findings are as follows: • This site does not accept hazardous waste. There is capacity for treating hazardous waste but it has not been used for over 9 years. • Non-hazardous waste treatment capacity is 272.6m^3/day. Commercial tankered waste is also accepted. • Sludge is accepted from several satellite sites when cannot be taken by another site. Satellite sites include Ulcombe, Wateringbury, Pembury, Speldhurst, Horsmonden, Penshurst, Linton, Ditton, Stoke, East Peckham, Hadlow, Stonehill Road Egerton, Northfleet, Tonbridge, Leeds, Edenbridge, Whitewall Creek. • T21 exemption is in use on site. • No cake is imported. Cake produced on site is stored in seven cake bays on site, previously drying beds so water does not drain properly. Generally in a poor state of repair with cracks in hardstanding and drainage issues. Further cake treatment is seasonally dependent e.g. liming. • The site uses potable water, around 2% of which is used for offices and polymer makeup. • The site uses one gas oil fuelled generator and import from grid. There are two mobile generators stored but not used on site. • The site has one Combined Heat and Power (CHP) plant which is not sufficient for site demands. CHP does not export to grid. At time of visit, CHP was not working so 1 flare a day was in use. • No noise abatement required on site due to location of site away from sensitive receptors. • Odour control using a specialist unit to treat air and OCU in thickener area and commercial tankered waste tanks. No suppression sprays used. Two

	carbon filters on site. Odour control units serviced annually by AGS, with sniff tests undertaken daily. • Rats and seagulls are a problem at the site yet general housekeeping and pest control traps are in place to minimise issues. • Site is in a generally tired state, with replacement infrastructure required and large areas of cracking within hardstanding. **Site data** No known previous ground investigation or monitoring has been undertaken at the site. Cracks hardstanding across site, including cake bays, may lead to leachable contaminants being present in the subsurface, but this has not been confirmed. **Planning applications** A search of the Tonbridge and Malling Borough Council planning portal was conducted on the 23rd March 2021. Only two planning applications dating to 1965 were found relating to the deposition of dry sewage to sand pits to the north and west of the site. None of the applications had conditions relating to contamination.
Baseline soil and groundwater reference data	No reference data is currently available for the site.
Supporting information	Sources used in the production of this SCR: • Landmark (2020), Envirocheck Report – Aylesford, ref: 275056037_1_1. • British Geological Survey, GeoIndex www.bgs.ac.uk consulted March 2021. • British Geological Survey, Borehole Scans www.bgs.ac.uk consulted March 2021. • Magic Map http://magic.gov.uk/ consulted March 2021. • Site walkover notes – Aylesford (Appendix A). • Southern Water (2020) Operating Plan for Aylesford WTW/STC.

3.0 Permitted activities

Overview of site processes	Aylesford WWTW/STC currently serves a population of 123,781 in and around Maidstone. The site comprises the following components: – Primary Settlement Tank with desludge pump – Washwater system – Grease separator – Grit removal system

	– Balancing tanks – Screens – Biofilters – Humus tanks – Secondary settlement desludge pumps – Centrifuge (2 No. day feed tanks), conveyor and seven cake bays – Odour plant – Sludge reception tanks – Digesters – two primary and two secondary – Strain press feed pumps – Gas oil generator, CHP plant All site drainage returns to head of works. Currently Aylesford accepts indigenous sludge, imported liquid sludge, cess, and commercial tankered wastes. Imported sludge is received in 1 No. sludge reception tank (135m^3). Indigenous sludge and imported liquid sludge are screened via 2 No. strain presses and are then stored in 2 No. screened sludge storage tanks (480m^3 total). The sludge is then thickened by 2 No. drum thickeners and stored in 2 No. thickened sludge storage tanks (480m^3 total) which feed 2 No. conventional mesophilic anaerobic digesters (1,772m^3 each). Digested sludge is stored in 2 No. post-digestion sludge storage tanks (2,300m^3 total) prior to being dewatered by 2 No. centrifuges. Dewatered digested cake is then stored in 7 No. cake storage bays (six of these bays are operational, the remaining is not routinely used) before being transported off-site approximately twice per year for agricultural use. Biogas produced from the two digesters will be transported to one gas holder. The biogas produced will then be burnt in the existing CHP engine and 2 No. duty/standby boilers to produce electricity and heat for use on site. The current waste biogas burner (or flare) will be retained and available to burn excess gas.
Permitted activities	Southern Water Aylesford Water Discharge Environmental Permit: RP26/73: The site is permitted to discharge secondary treated sewage to the Medway Estuary under the above water discharge activity permit. Southern Water Aylesford Waste Environmental Permit: • Permit Reference EPR/DP3998HH – Issued in 1996, amended in 1998, 2002 and most recently in 2010 to remove permission for the acceptance of hazardous waste types. – This permit currently covers the acceptance of tankered waste (non-hazardous waste activity). It is this permit that will be varied to add Anaerobic Digestion as a separate activity in compliance with IED. – The permit variation application that was submitted in June 2020 to update this permit to modern EPR format is currently still in the process of being determined by the Environment Agency.

Non-permitted activities undertaken	Waste activities comprising physio-chemical and anaerobic digestion treatment are currently non-permitted activities on site. Anaerobic digestion is to be permitted under the Industrial Emissions Directive under a Bespoke Installation Permit as Anaerobic Digestion is no longer operational under T21 exemptions. Permitted Directly Associated Activities under IED will include waste import, physio-chemical treatment of sludges and storage of indigenous and imported sludges.
Document references for: • plan showing activity layout; and • environmental risk assessment.	• 790101_IED_Permit_Applications_Site_Visit details and risk assessment, Aylesford WTW/STC • Southern Water (2020) Operating Plan for Aylesford WTW/STC • 790101_ERA_AYL (Environmental Risk Assessment) • 790101_MSD_SiteLayoutPlan_AYL • 790101_MSD_Schematics_AYL (Process Flow Diagram)

Note:

In Part B of the application form you must tell us about the activities that you will undertake at the site. You must also give us an environmental risk assessment. This risk assessment must be based on our guidance (*Environmental Risk Assessment - EPR H1*) or use an equivalent approach.

It is essential that you identify in your environmental risk assessment all the substances used and produced that could pollute the soil or groundwater if there were an accident, or if measures to protect land fail.

These include substances that would be classified as 'dangerous' under the Control of Major Accident Hazards (COMAH) regulations and also raw materials, fuels, intermediates, products, wastes and effluents.

If your submitted environmental risk assessment does not adequately address the risks to soil and groundwater we may need to request further information from you or even refuse your permit application.

4.0 Changes to the activity	
Have there been any changes to the activity boundary?	No
Have there been any changes to the permitted activities?	Due to impending changes in the way the Waste Management industry is regulated by the Environment Agency and Natural Resources Wales, STCs are obliged to apply for Fixed Installation Permits under the Industrial Emissions Directive (IED) and comply with new permit conditions by August 2022. Fixed Installation Permits will amalgamate and supersede all current permits and exemptions under which waste is treated on the STC sites (including Environmental Permitting Regime (EPR), Medium Combustion Plant Directive (MCPD), old style Waste Management Licenses, and T21 exemptions). Activities at Aylesford WTW and STC will continue, as prior to the introduction of the updated and amalgamated permit, although under any new requirements imposed by the permit.
Have any 'dangerous substances' not identified in the Application Site	No prior site condition report (SCR) is known to exist for the site, due to the length of time that the site has been in operation. This SCR presents the condition of the site at the point of the amalgamation of

Condition Report been used or produced as a result of the permitted activities?	the existing permits on site and the introduction of additional requirements relating to sludge processing, as required under the IED. 'Dangerous substances' that are used or produced at the site include: • Gas oil and diesel (generators and boilers) • Lime (sludge treatment before centrifuge) • Polymer – Superfloc C6598 and Superfloc C498HMW (for sludge thickening and centrifuge thickening respectively • Antifoams – Flowfoam 681F • Methane (produced from the digestors and stored in the on-site double membrane gas holder); • Effluent screenings (rag and grit from screening process at inlet works).
Checklist of supporting information	• Site walkover notes – Aylesford (Appendix A) • Southern Water (2020) Operating Plan for Aylesford WTW/STC

5.0 Measures taken to protect land	
Use records that you collected during the life of the permit to summarise whether pollution prevention measures worked. If you can't, you need to collect land and/or groundwater data to assess whether the land has deteriorated.	
Checklist of supporting information	• **Inspection records and summary of findings of inspections for all pollution prevention measures** • **Records of maintenance, repair and replacement of pollution prevention measures**

6.0 Pollution incidents that may have had an impact on land, and their remediation	
Summarise any pollution incidents that may have damaged the land. Describe how you investigated and remedied each one. If you can't, you need to collect land and /or groundwater reference data to assess whether the land has deteriorated while you've been there.	
Checklist of supporting information	• **Records of pollution incidents that may have impacted on land** • **Records of their investigation and remediation**

7.0 Soil gas and water quality monitoring (where undertaken)

Provide details of any soil gas and/or water monitoring you did. Include a summary of the findings. Say whether it shows that the land deteriorated as a result of the permitted activities. If it did, outline how you investigated and remedied this.

Checklist of supporting information	• **Description of soil gas and/or water monitoring undertaken** • **Monitoring results (including graphs)**

8.0 Decommissioning and removal of pollution risk
Describe how the site was decommissioned. Demonstrate that all sources of pollution risk have been removed. Describe whether the decommissioning had any impact on the land. Outline how you investigated and remedied this.

Checklist of supporting information	• **Site closure plan** • **List of potential sources of pollution risk** • **Investigation and remediation reports (where relevant)**

9.0 Reference data and remediation (where relevant)
Say whether you had to collect land and/or groundwater data. Or say that you didn't need to because the information from sections 3, 4, 5 and 6 of the Surrender Site Condition Report shows that the land has not deteriorated. If you did collect land and/or groundwater reference data, summarise what this entailed, and what your data found. Say whether the data shows that the condition of the land has deteriorated, or whether the land at the site is in a "satisfactory state". If it isn't, summarise what you did to remedy this. Confirm that the land is now in a "satisfactory state" at surrender.

Checklist of supporting information	• **Land and/or groundwater data collected at application (if collected)** • **Land and/or groundwater data collected at surrender (where needed)** • **Assessment of satisfactory state** • **Remediation and verification reports (where undertaken)**

10.0 Statement of site condition

Using the information from sections 3 to 7, give a statement about the condition of the land at the site. This should confirm that:

- **the permitted activities have stopped**
- **decommissioning is complete, and the pollution risk has been removed**
- **the land is in a satisfactory condition.**

MOTT MACDONALD

Site Visit Record

A. Site Walkover Record

Project	**100419175 Southern Water IED permits**
Site	Aylesford WTW / STC, Bull Lane, Aylesford, Kent, ME20 7DA
Visit Date	12/10/2020
Attendees	S George (Mott MacDonald) A Glenister (Southern Water – Area Permitting Coordinator – Sussex) C Dunkeld (Southern Water – Environmental Permitting Technical Coordinator) J Burr (Southern Water – Site operative)
Notes	Weather: cold with light rain

1 Purpose

Due to impending changes in the way the Waste Management industry is regulated by the Environment Agency, Sludge Treatment Centres (STCs) are obliged to apply for Fixed Installation Permits under the Industrial Emissions Directive (IED) and comply with new permit conditions by August 2022. Fixed Installation Permits will amalgamate and supersede all current permits and exemptions under which waste is treated on the STC sites (including Environmental Permitting Regime (EPR), Medium Combustion Plant Directive (MCPD), old style Waste Management Licenses, and T21 exemptions).

Mott MacDonald have been awarded the contract to assist Southern Water with technical surveys and compiling information. A site visit was therefore undertaken to Aylesford Water Treatment Works (WTW) and STC with the aim of collecting information relevant to the permit, and understanding the operation and condition of the site.

2 Key findings

This section summarises the key findings of the visit, which were collated from visual inspection of the site and infrastructure during the walkover, and from discussion with the site operatives.

General	
Operational contact details for the application forms	Neil Semple (Southern Water - Field Performance Manager) Neil.Semple@southernwater.co.uk 07880258479
No of site staff (day and shift operators etc)	Technically 4 but only ever 3 on-site (07.00-18.00 MF, 7-3S/S)

Hazardous waste treatment capacity (tonnes per day)	Some capacity (unknown) in tank near day tanks but none ever accepted so infrastructure now would need maintenance before using. Not used for >9 years. Assume to be none
Non- Hazardous waste treatment capacity (tonnes per day)	272.6m3/day (based on the capacity of the digesters)
Total waste storage capacity (tonnes) for each site Annual waste throughput (tonnes each year) for each site	Total throughput = 272.6m3/day Technically 250m^3 per day through digesters (2x125m^3), however only ever reaches about 170m^3 per day otherwise puts too much strain on equipment and leads to more failure.
Types of waste to be requested to be listed on each permit to authorised to be accepted at the site (EWC codes)	A complete list of accepted types is included in document reference 1790101_MSD_Main_AYL – Appendix A
How many years is each permit expected to be required for?	Permanent
Sludge import	
How many tankers per day?	Max 100,000 gallons/week (= 454,609L = 455m^3) for commercial tankered trade waste. Usually 200m3/day x6 days/w (approx. 10 tankers/day) Max 250m3/day
Sludge imported from other satellite sites? How many?	Yes. All in local area when sludge unable to be taken by another site. Ulcombe; Wateringbury; Pembury; Speldhurst; Horsmonden; Penshurst; Linton; Ditton; Stoke; East Peckham, Hadlow; Stonehill Road Egerton; Northfleet; Tonbridge; Leeds; Edenbridge; Whitewall Creek
Does the site accept trade waste (commercial tankers)?	Yes – including biological liquids eg Nikwax, blood
Where are the tankers unloaded, and is there any odour control?	Odour control on commercial tankered waste reception tanks, (balance tanks on plan) Scrubber
Exemptions	
What exemptions are used on site? Typically SW have T21, D5 and S1. Do they know what these are for?	T21
Cake storage	
Is any cake imported? If so, how/where unloaded?	No

Where is cake stored? How is cake stored? E.g. Cake bays, silos, directly into skips etc	Cake bays for maturation then collected for sale
How many cake bays are there on site?	7 (#7 not in use). In the old drying beds which isn't ideal as water doesn't drain away properly so stops sludge drying. Hardstanding cracked. Works proposed to improve – mainly drainage – walls not discussed
How is cake moved to the cake bays (enclosed truck etc)? How frequently is cake moved around the site?	Wheel loader from conveyor tip to bays. Daily – filled with data entered to spreadsheet
Is the cake treated further after the centrifuge e.g. liming of cake within cake bays?	Seasonal – weather dependent – may have to lime in bay
When cake is within the bay, is the cake turned/disturbed at all? How often? Why?	No other than liming
How is cake removed from the site? How often? Over what timeframe? e.g. 2 weeks constantly	As soon as bay compliant – roughly twice/year
What is the condition of the cake bays? Eg condition of base, height of walls? Does this sufficiently contain the cake? Are there any known issues?	Not ideal
Water usage	
What sources of water does the site use? E.g. potable, secondary washwater, other process water etc What proportion/% of the site's water usage is from this source? E.g. 2% potable water for polymer make-up and drinking, 98% primary or secondary wash water for other i.e. cleaning etc? What is it used for e.g. poly make-up, washing down etc?	Potable – offices, poly makeup (centrifuge and thickeners) ~2% Final effluent – carrier waterod

Is specifically potable water required for any of the site processes? (e.g. poly make-up)	
Does the site get water from other sources? Abstraction from river etc? How much is permitted to be abstracted/day/hr etc? What is it used for e.g. poly make-up, washing down etc?	No – N/A
Generators	
Are there any generators on site?	Yes – 1 fuelled by gas oil – not currently able to supply sufficient power to site so needs upgrading. – this AMP (Also 2 mobile generators (diesel powered) in the stores.- not used at the site)
How many and what size (MW)? What are they used for e.g. primary/secondary. Site running, exporting power to grid?	Follow up
Do they export to grid or import from grid to run the site?	Just import
What are their fuel sources? E.g. diesel, biogas, other source	Gas oil
How many hours per year do they operate?	MST every 6 months for 1 hr = 10 hours max
Any monitoring undertaken? If so, what for and what are the standards used?	6 monthly servicing
CHP engines	
How many CHPs on site?	1 CHP (not currently working – been repaired since visit) and possible replacement as not sufficient
What size (MW)? What are they used for e.g. primary/secondary. Site running, exporting power to grid?	Follow up No export to grid
Are the CHP's adequate for the amount of gas produced by the site?	No
Are there any flares? If so how often is the flare used? E.g. during emergency or maintenance of the engines or all the time?	1 flare – currently being used more than usual as issues with CHP. 1/day

What storage volume of gas can be held at one time	Max 490m^3 in gas holder
Any monitoring undertaken? If so, what for and what are the standards used?	Follow up - Veolia
Is operation of the CHPs temperature sensitive? If yes, what is their optimum temperature range? Is there a temperature above/below which they will not operate?	No – follow up
Noise	
Please describe any noise mitigation measures on site.	No noise abatement needed on site as no sensitive receptors nearby to noisy areas eg centrifuge.
Other abatement?	No
Have any noise assessments been undertaken on the site?	No
Have there been any noise complaints?	No
Any monitoring undertaken?	No
Odour	
Please describe any odour mitigation measures on site e.g. processing of imported sludge immediately, odour control hoses for tankers, water suppression sprays, enclosed processes, doors to buildings kept closed, buildings under negative pressure?	Specialist unit treating air OCU in thickener area and commercial tankered waste balance tanks No suppression
What is the odour control system used – specific to locations on site? Bio-scrubbers/carbon filter etc? What is the media used? Which processes are odour controlled? How and when is the odour control maintained/inspected to ensure they remain effective?	Carbon filters x2 Serviced by AGS - annually
Is odour monitored? If so how?	Yes, sniff tests at site boundary during daily walkaround
Is there a site specific odour management plan?	Southern Water Air Quality Management Plan (out of date – needs updating)

Any odour complaints?	No
Other abatement?	
Pests	
Does the site experience pests and if so what are they (birds, vermin etc)? If so how often?	Yes – rats, seagulls,
What measures are in place to prevent pests?	General good housekeeping
What measures are in place to remove pest issues?	Pest control - traps
Raw materials and resource efficiency	
What raw materials are used on site? List all including diesel, poly, lime etc What are they used for? Try to get the proper chemical name as well as what it is referred to.	Poly – sludge thickening – stored in IBC – Superfloc C6598 – 4x1T IBC/month = 4000kg/month – 6 stored on site - Cationic Polyacrylamide (emulsion) Poly – centrifuge thickening – Superfloc C498HMW – 3x 750kg bags – 5 stored on site (powder) Diesel – generators – stored in designated tanks – 3500L – 3500L/year Diesel STC - 17,000L (for mobile pumps, telehandler) – 50L/week. Gas oil – boilers – Therma35 – admin building 3500L – 3500L/2months in winter then not used until following winter – same for STC mess room but refilled once per year Antifoam – flowfoam 681F -2x IBC /year – only ever one on site Lime – brought on site as needed (10x1T bags stored at one time for liming)
How and where are they stored? Bunded, stored undercover etc? Are they in IBC's, bags, tanks etc?	
What is the storage capacity of tanks, IBC's etc, how many on site?	
How much is stored on site at any one time?	
How often are they replaced?	Poly IBC lasts about 1-2.5 weeks
Describe the basic measures for improving energy efficiency of the activities carried out on site	Optimisation – ask Richard Ridgeway
Describe the use of water across the site, any water saving measures	Recirculation of final effluent back into system.

Describe waste avoidance and waste recovery measures. Describe how waste is disposed, by whom.	Recycling, triad, feed loading in digesters, FE use for poly makeup (looking at doing)
Digesters	
How many digesters on the site?	2 primary, 2 secondary (not used)
Digester capacity	Each primary = 1,772m^3
Any Whessoe valves? How many? Any temperature sensitivity observed in the Whessoe valves? (previously we have heard of Whessoe valves freezing below -5^{o}C)	2 per primary digester = 4
Any monitoring of tanks/gas? Is there an alarm system attached to the Whesso valves (inform SCADA when operational)?	Gas quality monitored
What is the ground like surrounding the tanks? E.g. permeable gravel, concrete etc	Hardstanding surround to digesters
Underground pipework? Known condition?	Likely but unknown condition
Drainage	
Where do the drains go? E.g. Head of the works	Drainage from site roads leads to pit to north of boilerhouse which then re-enters inlet.
Is site adjacent to a river or stream?	River Medway along western edge of site. Lake to east.
Is the whole site bunded	Much of it is, however hardstanding in poor state of repair. Repairs to roads being quoted for – likely to be partially done this year
Are there any cracks in the pavement	Yes – see photos
Please describe the drainage surrounding the cake storage bays and whether run off from there is also captured by the drainage system.	Surface drains around bays/foul drains Back to inlet
Has there been any flooding on site? When, how frequent, how severe has flooding been. Has the flooding lead to untreated wastewater being discharged to the watercourses due to high volume of water	No

exceeding the storm storage capacity?	
Are there any isolation valves, penstock etc operational that can isolate flows? If so where and in what circumstances are these used?	Isolation valves for infrastructure – maintenance activities No penstock
Abnormal conditions – extreme high temperature, flooding	
How large is the site's stormwater storage capacity? OR how much retention time do the storm storage tanks allow? Have there been any issues in the past with direct discharge to the watercourse when stormwater storage capacity has been exceeded, occurring repeatedly?	Balancing tanks – once full, all flows to tanks stop – don't overflow 3579.63m3 combined volume
Is the access route to the site (main road access) at risk of flooding? Has it flooded previously? Are there alternative access routes?"	2 access routes Flood gates on one of the access roads (admin building road) – maintained by EA
Does the site operate any temperature-sensitive processes? E.g. do any of the biological treatment processes have optimal operating temperature ranges? Does the AD plant or anything else have optimum temperature range for operation	Digesters – 34-39oC
Has the site experienced any issues related to high temperatures in the past – e.g. any odour control issues? Or Potable water availability issues during drought?	No
Waste generation	
What wastes are generated by the site?	WEEE, metal, general recyclates, black bag waste, waste oil Grit and screenings collected in skips. Wastes generated by contractors their responsibility
How is it stored?	WEEE area in garages, metal skip and general recycling bins outside the main site office. Grit and screenings in skips associated with relevant infrastructure. Waste oil stored in bunded area in garages

	All removed by external contractor when required.
Other	
Planned AMP7 schemes for the site that may impact the permit application?	Possible new CHP and generator on-site.
Has any ground investigation/monitoring been undertaken on the site eg for planning permissions? Are there any available monitoring boreholes?	Not to knowledge
What is the general site infrastructure like? Any areas of concern?	General poor condition/aging with concrete showing signs of age and cracks in hardstanding across site.
Any positive interventions?	No
Age of site? Are any infrastructure enclosed?	Approx 1960s All control panels, some equipment (pumps) in basement
Additional notes and questions	
Centrifuge day tanks (x2) open, cake bays, Site security – No import of cake	

3 Photographs

Key issues:

	Insufficient height walls for stored cake, roadways not kept clean

	Cracked hardstanding in cake bays
	Poor drainage in cake bays
	Unbunded chemicals

	Storage area, some staining on hardstanding
	Condition of digester
	Blocked drains noted on site

B. Landmark Envirocheck Report

Available on request.