Response to Banbury RFI – 21st September 2023

Date:	5 September 2023
Project name:	Thames Water STC IED
Project no:	B22849AZ
Attention:	Naomi Daniel
Company:	Thames Water
Prepared by:	James JK Killick
Document no:	TW_STC_EPR_06a_BBY_RFI

1180 Eskdale Road
Winnersh, Wokingham
Reading RG41 5TU
United Kingdom
T +44 (0)118 946 7000
F +44 (0)118 946 7001
[Website]

We need more information about your application and Underpayment of application charge

Application reference: EA/EPR/PP3409MH/A001
Operator: Thames Water Utilities Limited
Facility: Banbury Sludge Treatment Centre Schedule

Thank you for your revised application received on 13/06/2023. The following is to confirm our conversation of 05 September 2023.

Unfortunately the application payment you sent is incorrect. The correct application charge is £22,008.00. This leaves a balance of £2,034.00 to pay. The outstanding payments are listed below.

- Imported digested sludge cake waste operation charge at 90% reduction £793.00 (charging reference 1.16.12)
- Bioaerosol Risk Assessment charge at £1,241.00 (charging reference 1.19.5 emissions management plan)

I need to ask you for some missing information before I can do any more work on your application. Please provide us with more information to the following questions below. We need to know further information in relation to waste acceptance at head of works, emissions and air modelling data and segregated storage of imported digested cake.

Charges Answer
The TWUL payment team has confirmed that they have processed the payment for £2034 and it is scheduled for payment on the 12.10.2023.

Form B3: New bespoke installation permit

1. Table B3-1b(ii) provides EWC codes for wastes accepted at the head of works import point. Provide copies of waste transfer notes to show the following wastes are accepted, 16 10 02, 19 09 02 and 19 13 08.

2. Table B3-2a Emissions to air, the two smaller auxiliary boilers, boiler 2 and 3 (emission points A3 and A4) have not been assessed or modelled in the air impact and quality

assessments. These boilers need to be assessed and modelled as part of this application. Revise and remodel the air impact assessments including these two boilers.

https://www.gov.uk/guidance/risk-assessments-for-your-environmental-permit
https://www.gov.uk/guidance/environmental-permitting-air-dispersion-modelling-reports

3. Table B3-2a emissions to air lists notes 4 and 5. Confirm if the old CHP engine (A1) is now decommissioned and confirm if the new CHP engine (A15) is now commissioned and operating. It is understood the new CHP engine was due to be operational around 06/2023. The site emissions plan will need to be updated to reflect the old CHP no longer operational, if this is the case.

4. Table B3-2a emissions to air emission points A11 and A12 are now missing. The 2021 application stated there were two existing, pre 2015, diesel generators for testing <50 hours or emergency electricity provision. We are assuming these have been removed as they are not DAA's or associated to the installation activity. Confirm this is the case and update Table B3-2a emission to air points and emissions plan to reflect consequential numbering of emission points.

Answer 1

Please find below confirmation of whether the waste types listed below are currently accepted at Banbury. For ease Thames Water have provided this reply in the same format as earlier applications, together with requested evidence – where applicable.

Please see Annex 1 in this document which includes a redacted copy of example of:

1) an Annual Waste Transfer Note for 'portable toilet waste' to be delivered by a Thames Water customer to Banbury (see page 2) during 2022-2023 issued November 2022.

   Please note the inclusion of 16 10 02 in this application reflects Thames Water's previous communications with the Environment Agency regarding transition to use of EWC 16 10 02 for 'portable toilet waste', replacing use of 'WM3' Chapter 20 codes and enable the acceptance of this waste without relying on RPS 277 published by the Environment Agency (January 2023).

2) An extract from Thames Water's record of inter-site sludge liquors movements – sludge liquors being denoted by the TWUL internal code 'SLQ'.

   Please note Thames Water transport sludge liquors themselves and retain control of this wastes from the Thames Water 'origin' through to delivery at TWUL Banbury STW i.e. there is no 'transfer' of waste between 'waste holders'

Table B3-1b(ii) Waste Accepted at the Head of Works Import Point

Waste Code	Description of Waste	Description currently Accepted
16 10 02	aqueous liquid wastes other than those mentioned in 16 10 01 [note 1]	Yes - Portable Toilet Waste

		Yes – thickening and dewatering liquors, centrate, filtrate liquors imported to site only from other TWUL sites.
19 09 02	sludges from water clarification	No – TWUL request this code at Banbury STW to enable acceptance at Head of Work in a contingency.
19 13 08	aqueous liquid wastes and aqueous concentrates from groundwater remediation	No - TWUL customers have asked if TWUL can accept 'Groundwater' to Head of works. TWUL have therefore included this code to enable acceptance of this stream in the future once a permit has been issued
Note 1 – comprising but not limited to: • Liquors • Waste from a portable toilet waste		

Answer 2

Please see attached Air Quality Assessment, document: J975.01-JE-BANBS1ZZ-100-AS-EN-0086, Rev E.

The dispersion modelling undertaken for this assessment includes emissions from the

- A 1.1MWth biogas CHP engine
- A 1.4MWth biogas boiler

The 1.1 MWth CHP engine and the 1.4MWth boiler included in the dispersion modelling assessment are based on a plant load of 100% operating continuously. This is a conservative assumption as the 1.1MWth CHP will have downtime for maintenance and the 1.4MWth boiler is likely to be operated for less than 50% of the year. In addition, the dispersion modelling assumes that exhaust gases from both the CHP and 1.4MWth boiler will contain the maximum concentration of pollutants permitted. In practice, emissions concentrations are likely to be lower than those permitted.

The 0.4MWth boilers would only run as back-up on an as needed basis in the event that both the CHP or the 1.4MWth boiler are not available and the STC requires additional heat and therefore would not operate alongside these sources.

Additionally, we would like to provide updated MCP information to the Environment Agency, consistent with the information presented within the Air Quality Assessment, to replace the information provided in Section 2,4 of TW_STC_EPR_BBY_11a_ASD (Final V4, May 2023).

2.4 Combustion Plant

Banbury CHP 1(existing CHP engine) (pre-decommissioning) **NB: this unit is too small to be a MCP and being replaced by a new engine**

Banbury CHP 2(replacement CHP engine; new MCP)	
MCP specific identifier*	Jenbacher JMC 312 GS-BL
12-digit grid reference or latitude/longitude	NGR 447050, 240265
Rated thermal input (MW) of the MCP	1.1MWth
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Other engine
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Biogas
Date when the new MCP was first put into operation (DD/MM/YYYY)	20/11/2023 (estimate at time of submission)
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0
Expected number of annual operating hours of the MCP and average load in use	8,760 hours/unrestricted; assume up to 100% load when in use
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	n/a

Banbury Boiler 1 (new MCP)	
MCP specific identifier*	Banbury Boiler 1 10157997
12-digit grid reference or latitude/longitude	SP 47046 40252
Rated thermal input (MW) of the MCP	1.4
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Boiler
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Dual fuelled (Biogas or natural gas)
Date when the new MCP was first put into operation (DD/MM/YYYY)	August 2021
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0

Expected number of annual operating hours of the MCP and average load in use	Unrestricted running (to provide a conservative modelling assumption) although c. 50% running is more representative of actual run times assume upto 100% load
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	n/a

Banbury Boiler 2 (NB: too small to constitute a MCP; included for completeness)	
MCP specific identifier*	Banbury Boiler 2 10037709
12-digit grid reference or latitude/longitude	SP 47046 40252
Rated thermal input (MW) of the MCP	c. 0.4
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Boiler
Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Dual fuelled (Biogas or natural gas)
Date when the new MCP was first put into operation (DD/MM/YYYY)	Pre 2015
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0
Expected number of annual operating hours of the MCP and average load in use	Too small to be in scope of modelling (Assume unrestricted use; typically, c. 500hrs; up to 100% load when in use)
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	n/a

Banbury Boiler 3 (NB: too small to constitute a MCP; included for completeness)	
MCP specific identifier*	Banbury Boiler 3 10037783
12-digit grid reference or latitude/longitude	SP 47046 40252
Rated thermal input (MW) of the MCP	c. 0.4
Type of MCP (diesel engine, gas turbine, other engine or other MCP)	Boiler

Type of fuels used: gas oil (diesel), natural gas, gaseous fuels other than natural gas	Dual fuelled (Biogas or natural gas)
Date when the new MCP was first put into operation (DD/MM/YYYY)	Pre 2015
Sector of activity of the MCP or the facility in which it is applied (NACE code**)	E37.0.0
Expected number of annual operating hours of the MCP and average load in use	Too small to be in scope of modelling (Assume unrestricted use; typically, 500hours; up to 100% load when in use)
Where the option of exemption under Article 6(8) is used the operator (as identified on Form A) should sign a declaration here that the MCP will not be operated more than the number of hours referred to in this paragraph	n/a

Answer 3

The new CHP engine is now expected to come online in late November. This new timing reflecting upgrades to a gas holder/configuration of the DNO.

The old CHP engine is planned for de-commissioning as soon as the new CHP engine has been proven, i.e., once commissioned and tested.

It is important to note there is insufficient biogas to run two CHP engines concurrently; it is standard industry practice to retain an older engine in a contingency capacity during commissioning which can also reduce use of the flare.

Given the above, we suggest the old CHP engine is retained on the emissions plan for the purposes of this transition. We accept that we may need an administrative variation in early 2024 to remove this as a release point or combine with the next identified variation need. Communications will be sent to the area EA Office ahead of new CHP engine commissioning and to confirm when running of the old/existing unit has permanently ceased.

Answer 4

Thames Water confirms that emission points A11 and A12 were removed based on Environment Agency advice. The two diesel generators are not DAAs to the installation and therefore were removed.

An updated Table B3-2a is provided below. A revised emission point plan is attached as "TW_STC_EPR_BBY_DR_0002".

An updated Question 4, Part B3 is also provided below, as emission point references have changed in this section too.

An updated Odour Management Plan and Odour Improvement Plan is also provided to include the updates site plan.

Table B3-2a – Emissions to Air

Emission point reference and location	Source	Parameter	Quantity	Unit
A1	CHP Engine 1 (pre-decommissioning) [Note 1] [Note 4]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	-	
		Carbon Monoxide	-	
A2	Auxiliary Boiler 1 (on biogas) NB: the second backup fuel is natural gas	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	New MCP ELV's Applicable	-
		Sulphur Dioxide Carbon Monoxide	New MCP ELV's Applicable	-
A3	Auxiliary Boiler 2 NB: Below 1MWth unit is dual fuel; biogas; the second backup fuel is natural gas	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	-	-
		Carbon Monoxide	-	-
A4	Auxiliary Boiler 3 NB: Below 1MWth unit is dual fuel; biogas; the second backup fuel is natural gas	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	-	-
		Carbon Monoxide	-	-
A5	Emergency Flare [note 2]	Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	[note 3]	
		Carbon Monoxide	[note 3]	
A6	Biogas holder Pressure Relief Valve	-	No limit set	-
A7	Digester Pressure Relief Valve	-	No limit set	-

A8	Digester Pressure Relief Valve	-	No limit set	-
A9	Digester Pressure Relief Valve	-	No limit set	-
A10	Digester Pressure Relief Valve	-	No limit set	-
A11	OCU 1	Hydrogen Sulphide	No limit set	-
		Ammonia	20	mg/m^3
A12	OCU 2	Hydrogen Sulphide	No limit set	-
		Ammonia	20	mg/m^3
A13	New CHP Engine [Note 5]	Sulphur dioxide	40	mg/m^3
		Oxides of Nitrogen (NO and NO_2 expressed as NO_2)	190	mg/m^3
		Carbon monoxide	No limit set	-

Note 1: These limits are based on normal operating conditions and load – temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 5 per cent (dry gas). The measurement uncertainty specified in LFTGN08 v2 2010 shall apply.

Note 2: These limits are based on normal operating conditions and load – temperature 0°C (273K); pressure: 101.3 kPa and oxygen: 3 per cent (dry gas). The measurement uncertainty specified in LFTGN05 v2 2010 shall apply.

Note 3: Monitoring to be undertaken in the event the auxiliary flare has been operational for more than 10 per cent of a year (876 hours). Record of operating hours to be submitted annually to the Environment Agency.

Note 4: When the new CHP Engine has been commissioned, CHP Engine 1 will be decommissioned, there will no longer be a requirement to monitor or report on emissions from A1. The Environment Agency will be notified when the old engine has been decommissioned to remove the reporting requirements.

Note 5: The new CHP Engine will require monitoring and reporting on emissions from A15 following the completion of commissioning and commencement of normal operations. The Environment Agency will be notified of the completion of commissioning and when the new CHP Engine enters into normal operation. Monitoring requirements are defined at a temperature of 273.15K, a pressure of 101.3kPa and after correction for the water vapour content of the waste gases at a standardised O2 content of 15% for engines and gas turbines and 3% for all other MCPs.

Answer 4 (continued)

4 – Monitoring

4a – Describe the measures you use for monitoring emissions by referring to each emission point in Table 2 above

The air emission points A2-A4 (existing boilers) are to be monitored in accordance with EA guidance and the requirements of MCPD (subject to confirmation of monitoring requirements).

Point A15 (new CHP engine) will be monitored following commissioning.

Hours of operation of the flare (A5) are monitored and logged. In the unlikely event that the total annual hours of operation exceed 10% of the hours in a year (876 hours), emissions from the flare would be subject to monitoring in accordance with EA guidance.

Points A13 and A14, 2x OCUs will have bi-annual testing.

There is no routine monitoring proposed for points PRVs A6 – A10 (1x biogas holder and 4x digester tank).

Air emission point A1 relates to a CHP engine that is planned for de-commissioning.

Table B3-4a – Emission Monitoring

Monitoring point	NGR	Monitoring frequency	Methodology (standard)	Assessment procedures
A1 (CHP Engine 1)	SP 47035 40261	Unit is being replaced once A13 commissioning complete. Testing/ELVs therefore not anticipated during transitioning period.		
A2 (Boiler)	SP 47037 40253	Oxides of Nitrogen – Annual/No limit set Carbon monoxide - Annual / No limit set	BS EN 14792 BS EN 15058 Or No limit set	
A3 (Boiler)	SP 47048 40244	Oxides of Nitrogen – Annual / No limit set Carbon monoxide – Annual / No limit set	BS EN 14792 BS EN 15058 Or No limit set	

A4 (Boiler)	SP 47051 40246	Oxides of Nitrogen – Annual / No limit set Carbon monoxide – Annual / No limit set	BS EN 14792 BS EN 15058 Or No limit set	
A5 (Emergency Flare)	SP 47122 40244	Hours of operation – continuous and if over 876 hours then: Oxides of Nitrogen – Annual Carbon Monoxide – Annual	BS EN 14792 BS EN 15058	
A6 (Biogas holder PRV)	SP 47001 40256	n/a	n/a	
A7 (Digester PRV)	SP 47001 40277	n/a	n/a	
A8 (Digester PRV)	SP 47013 40284	n/a	n/a	
A9 (Digester PRV)	SP 47025 40294	n/a	n/a	
A10 (Digester PRV)	SP 47038 40303	n/a	n/a	
A11 (OCU 1)	SP 47050 40223	Hydrogen sulphide Once every six months	CEN TS 13649 for sampling OR US EPA M11	NIOSH 6013 for analysis
		Ammonia: Once every six months	EN ISO 21877 OR CENTS 1369 for sampling NIOSH 6016 for analysis	
A12 (OCU 2)	SP 47076 40218	Hydrogen sulphide Once every six months	CEN TS 13649 for sampling OR US EPA M11	NIOSH 6013 for analysis
		Ammonia: Once every six months	EN ISO 21877 OR CENTS 1369 for sampling NIOSH	

			6016 for analysis	
A13 (New CHP Engine)	Approx: SP 47060 40260	Oxides of Nitrogen – Every 3 years Carbon Monoxide – Every 3 years Sulphur dioxide – Every 3 years VOCs – testing requirement only; No ELV	BS EN 14792 BS EN 15058 BS EN 14791 BS EN 12619	
S1 (Sample point for all liquors)	SP 47173 40196	n/a	MCERTS or ISO/IEC 17025	

Form B4 New bespoke waste operation permit

5. 'Acceptance of TWUL Inter Site Sludge Cake and Sludge Liquors EMS-DOC.071' Section 5 and 'Inter-Site Digested Cake Import Areas' states there are designated areas on the site cake pads allocated for storage of cake imported to site under the waste activity. Section 5 also states, the precise area for storage will be at the discretion of the site operations team at the time of transfer.
    i. Explain how will you ensure segregation of digested cake, clearly identifying the area/bay to be used.
    ii. Explain how will you mark areas/ boundaries on the cake pad
    iii. Explain how will you record storage placement when it changes to ensure no mixing of imported and produced digestate

Advisory note: The imported digested cake must be kept separate and segregated from digested sludge cake produced on site. Deciding where to store cake separately at the time of transfer causes concern, as it suggests storage areas will change daily.

Advisory note: The monitoring points provided/ suggested in the bioaerosol risk assessment and questionable for monitoring accuracy. Further guidance on monitoring points for bioaerosols will be provided during the determination process.

Answer 5i, 5ii and 5iii
Please see our document 'Acceptance of TWUL Inter-Site Sludge, Cake and Sludge Liquors EMS-DOC.071 version 6'.

Section 5 of the above document confirms that 'cake imported to site must be stored separately from indigenous sludge cake' in 'clearly marked bays' i.e. use of signage which denotes the contents of a bay.

Thames Water confirms that treated cake imported from other Thames Water treatment centres will not be imported for the purpose of mixing, treatment or blending with the outputs from the indigenous anaerobic digestion process.

Banbury's cake pad has three separate bays, the boundaries of each bay is designated by tall concrete walls, as shown on the site plan, "B22849AM-JAC-BBY-DR-0002".

Signage will be used to highlight any bay used to store imported cake . The freeboard on each bay wall ensures segregation is maintained. Such signage will remain in place until the bay is completely emptied and becomes available for storage of indigenous cake.

Thames Waters Bio Recycling Teams 'Stock inventory report' will be used to record the location of cake imported to the site.

1. Annex 1

Example Annual Waste Transfer Note - portable toilet waste - redacted

Thames Water Utilities Ltd
Environmental Protection Act 1990
DUTY OF CARE: ANNUAL WASTE TRANSFER NOTE

Section 1 Description of waste:

Description of Waste: For example: cess, septic	Treated Portaloo Waste	Quantity	(see page 2)
EWC code: (as classified under WM3)	20 03 04	Frequency	Daily / Weekly / Monthly (please circle)
How is waste contained	Sealed haulage vehicles	Physical form	Liquid / sludge / solid (please circle)

Section 2 Current Holder of the Waste - *Transferor*

Company Name:	[redacted] LTD
Address: (incl. postcode)	[redacted]
Standard Industrial Classification Code (2007 List):	37000

Tick box(s) that apply

Producer of waste		
Waste collection authority		Name:
Holder of Environmental Permit		Permit number:
Exempt from requirement to have an Environmental Permit		Exemption registration No.
Registered waste carrier	✓	Registration number: CBDU[redacted]
Exempt from requirement to register as waste carrier		

Section 3 Address of place of collection:

Various sources.

Section 4 Person Receiving the Waste - *Transferee:*

Under Contract: **No**	If under contract on behalf of
Name: **Thames Water Utilities Ltd**	Name
Address : **Clearwater Court, Vastern Road, Reading, Berkshire RG1 8DB**	Address

Tick box(s) that apply:

Holder of an environmental permit	✓	Permit number: **Available on request**
Exempt from requirement to have a environmental permit	✓	Exemption code: **Available on request**
Registered waste carrier – Thames Water	✓	CBDU109215 (exp. June 2025)

Section 5 Address of place of transfer:

Designated 'cess' reception area at Sewage Treatment Works (see page 2)

Section 6 First date of transfer:	**Section 7 Duration (if season ticket):**
1st November 2022	**12 months**

Section 8 Signatures:

I confirm that I have fulfilled my duty to apply the waste hierarchy as required by Regulation 12 of the Waste (England and Wales) Regulations 2011.

Transferor signature	[redacted]	Transferee signature	[redacted]
Print name	John [redacted]	Print name	
Representing	[redacted]	Representing	Thames Water Utilities Ltd
Date	29/11/2022	Date	30/11/2022

Form: TESF13 | Issue Date: 18/10/2022

Thames Water Utilities Ltd
DUTY OF CARE: ANNUAL WASTE TRANSFER NOTE
Environmental Protection Act 1990
Please select which sites you will be disposing at:

Thames Water Sites	Site Environmental Permit Ref. No. / T21 Exemption Ref. No.	Please tick which sites you will dispose at : ✓	Please provide estimated total annual input at each site (cubic metres):
Alton STW	WEX314629		
Aylesbury STW	WEX314629	✓	2
Banbury STW	WEX314629	✓	350
Basingstoke STW	WEX314629	✓	42
Beckton STW	WEX314629		
Beddington STW	382N/V001		
Bicester STW	WEX314629	✓	4
Bishops Stortford STW	WEX314629	✓	2
Camberley STW	WEX314629		
Chertsey STW	EPR/DP3090SF	✓	12
Cirencester STW	WEX314629		
Crawley STW	WEX314629		
Crossness STW	WEX314629		
Dartford, Long Reach STW	EPR/BB3204GD	✓	2
Deephams STW	WEX314629		
Didcot STW	WEX314629	✓	2
East Hyde STW	WEX314629		
Farnham STW	WEX332761	✓	2
Guildford STW	WEX306398	✓	2
Little Marlow STW	WEX314629		
Maple Lodge STW	WEX314629	✓	2
Mogden STW	EPR/CP3999LE		
Newbury STW	WEX314629	✓	2
Oxford STW	EPR/BB3500MP	✓	6
Reading STW	WEX314629		4
Rye Meads STW	EPR/EB3030DF	✓	2
Sevenoaks Dunbrik Depot (Kent County Council)	Ref. Kent County Council		
Slough STW	EAWML 83673	✓	2
Swindon STW	EPR/BP3590SR	✓	866
Wantage STW	WEX314629	✓	4
Wargrave STW	WEX314629		
Witney STW	WEX314629	✓	240
Woking STW	WEX314629	✓	4

Form: TESF13 Issue Date: 18/10/2022

2) Extract of Thames Water Inter-site - Sludge Liquor (SLQ) movements

Date/Time	Site	Company	Card Nu	Owner	Line	Origin	Destina	Waste (	Duratio	Volume
21/04/2022 19:40	Banbury Intersite	TWIS Fleet	81.1.0.448	SPARE 108	2	Aylesbury		SLQ	6	11.548
30/07/2022 21:53	Banbury STW	TWIS Fleet	81.1.0.361	MK68 LUR	2	Didcot		SLQ	10	20.676
31/07/2022 01:29	Banbury STW	TWIS Fleet	81.1.0.361	MK68 LUR	2	Didcot		SLQ	10	19.549
31/07/2022 04:31	Banbury STW	TWIS Fleet	81.1.0.361	MK68 LUR	2	Didcot		SLQ	10	17.16

END OF NOTE