Environmental Management Plan

Site Name	Kings Lynn WRC & STC
Site Address	Clockcase Lane Clenchwarton Kings Lynn PE34 4BZ
Short Code / Ref No.	KLYNST
Catchment	Norfolk & Suffolk Wastewater (NSTK)

This is a controlled template and should not be altered unless authorised.

The content of this document should be reviewed and signed off by the relevant managers on an annual basis and audited on a biennial basis by the business unit auditors. [C] [A]

Name	Signature	Position	Created / Reviewed	Date
Paul Elsam		Treatment Manager	Created	28/02/13
Sarah Collier		Treatment Manager	Reviewed	27/10/15
Sarah Collier		Treatment Manager	Reviewed	16/10/16
Sarah Collier		Treatment Manager	Revised	11/02/17
Sarah Spencer		Treatment Manager	Reviewed	21/01/19
Sarah Spencer		Treatment Manager	Reviewed	05/03/20
Sarah Spencer		Treatment Manager	Updated	27/12/20
Sarah Spencer		STC Manager	Updated	20/04/21
Sarah Spencer		STC Manager	Updated	20/04/22
Sarah Spencer		STC Manager	Updated	20/04/23

Contents

Introduction

This document has been designed to cover the Plan, Do, Check, Act methodology used in all Management Systems.

PDCA is the founding principle of this document and therefore the references throughout are in relation to these definitions:

P – Plan – what is the situation, what do we need to achieve and how are we to achieve it?
D – Do – what are the controls in place to ensure that we do our everyday actions without impacting the environment in this area?
C – Check – how do we check that these controls are working and how do we report when they are not?
A – Act – what is the escalation process/review process when things are checked and seen to be not performing?

The key focus of this document is to identify existing processes and controls that cover environmental risk and identifying and addressing those areas that are not adequately covered. Therefore all processes and controls referred to in this document should be adhered to and this document's controls regarded in the same vein for site specific controls.

1 Site Information

1.1 Site Description [P]

The Kings Lynn site has 2 main areas of operations.

The first operational area is the Water Recycling Centre. The Treatment process in the Centre consists of a Raised Inlet, Screening, Grit removal, 3 Primary Settlement Tanks, Secondary Aeration Treatment ahead of 4 Final Settlement Tanks.
The process is supported by 3 Storm/Balancing Tanks, 3 Sludge Holding Tanks and a Sludge Thickening Storage Tank.

Kings Lynn receives liquid sludge, cake sludge and septic waste imports to the site. Sludge is transported via tankers and cake lorries between the hours of 0530 – 2300, from outlying satellite sewage works sites and thickening sites and is discharged into one of 3 sludge holding tanks on site or into the Cake Reception Centre. Average budgeted sludge imports to site total 750m3 per day and cake sludge imports of 150m3 per day Monday to Sunday. Sludge and cake Imported onto site is used to produce Gas to power Combined Heat & Power Engines, this plan looks at the environmental impact of these activities.

Septic waste is discharged through a screen and then pumped up to the inlet of the works.

The site has a Main Office Building, Maintenance Workshop and Logistical Store. The works is home base to Treatment, Maintenance, Collection and Regional Tanker Service Teams.

The second operational area is the Sludge Treatment Centre. The Treatment Centre process consists of the following plant and equipment, and a Sludge Lagoon, 4 Strain presses, 2 pre-thickening sludge storage tanks, 4 Gravity Belt Sludge Thickeners, 1 Thickened sludge storage tank, Monsal EEH plant, 2 Digester Tanks, 1 Waste Heat Boiler and 1 Standby Boiler, 2 CHP Engines, 1 Gas Holder,1 post digestion tank, 4 Centrifuge rigs, a flare stack and a Cake Reception.

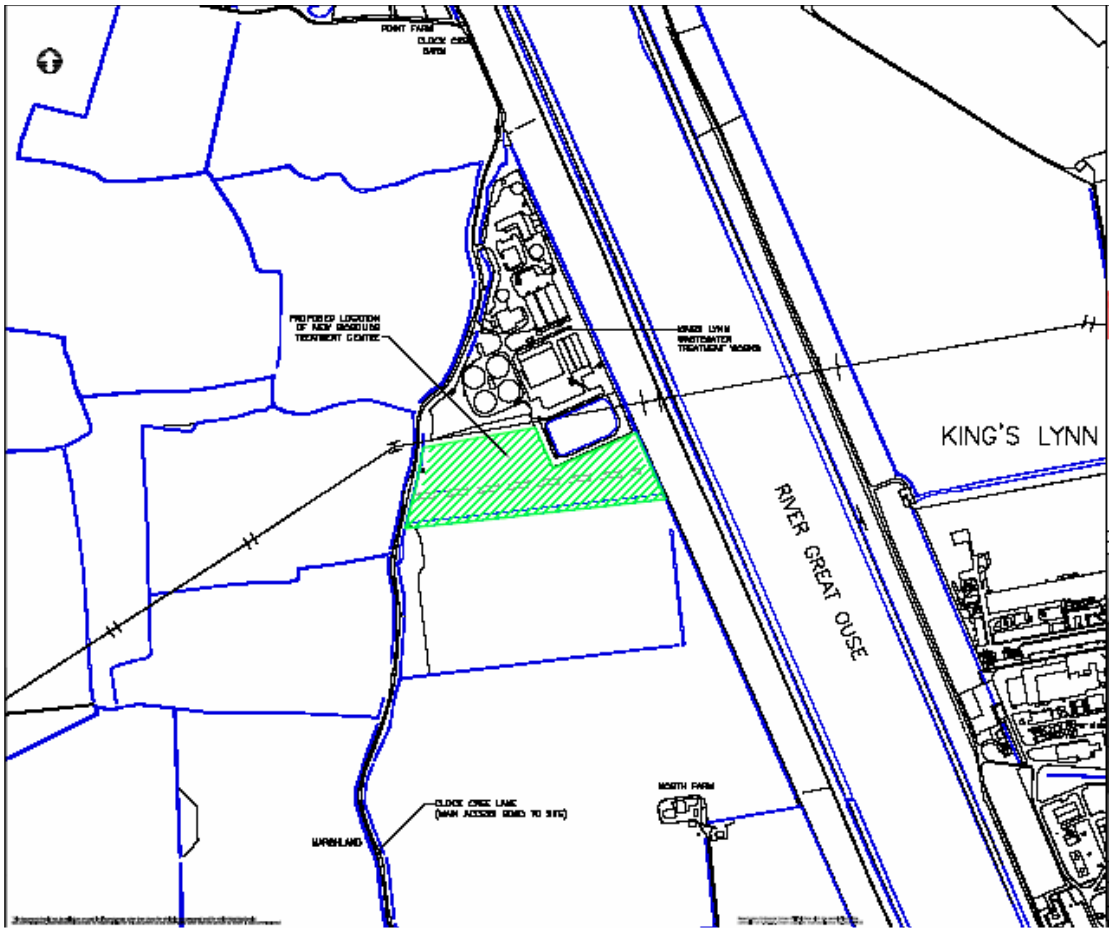
The site covers an area of approximately 1.5km2

1.2 **Site location** [P]

The site is set in a predominantly rural area North East of the village of Clenchwarton, positioned on the banks of the River Great Ouse, and approximately 2km as the Crow flies from the village centre.

The site is accessed by road by travelling approximately 1.5km along Clockcase Lane.

The nearest residential and industrial properties by compass direction are North 0.35km (residential), South 1.20km (residential), East 0.75km (industrial), West 1km (residential).



1.3 Permits / Permissions / Licences [D]

This table highlights the permits, exemptions and licences that relate to the sites operation and its impact on the environment:

Ref No.	Description	Regulation	Location held
AECTS11334D	Consent to Discharge	EPR – Water	Online central folders and hard copy in blue box on site
EPR/DP3692SL	Sludge Treatment Centre permit	EPR – Waste	Online central folders and hard copy in site office
YP3234UV	Combined Heating Power permit	EPR – Waste	Online and hard copy in site office
NWP991	Hazardous waste registration		26/11/2013

The conditions relating to these permits are held within the permits and summarised in section 3.3

2 Contact information

2.1 Operational Contacts [P] [D]

This section details the day to day contacts for all aspects of the site.

Head of Sludge	Peter Joyce	07841958572
Treatment Manager	Sarah Spencer	07702340949
		01553 735463
Maintenance Manager	Gavin Baterbee	07764795626
		01553 735468
Site Optimiser	Kevin Robinson	07736091608
CHP Manager	Matthew Butler	07971550969
OMC Duty Manager	(ref KLYNST)	08450703446
EA PPC officer	Ross McIntyre	

2.2 Emergency Contacts [P] [D]

EA emergency incident number		0800 807060 (24hrs)
OMC Duty Manager	(ref KLYNST)	08450703446
Out of hours contact for CHP emergencies		
OMC ref KLYNST		08450703446
Standby & Waste heat Boilers	Steam Team	
Flare Stack	Gas Team	
Auxiliary Steam Plant	Steam Team	
Boiler Ancillary	Steam Team	

2.3 Third Party Contacts [P] [D]

Alfa Lavell	
M&N Engineering	01305 825967
Quartzelec	07741266768

3 Risks and mitigations

3.1 Risk Identification [P]

An Environmental Risk Assessment was completed as part of the generation of this plan and can be found appended to this document when printed and as an independent document on HAWK.

3.2 Risk Mitigation [P] [D]

The following section addresses some of the risks identified during the Risk Assessment process.

3.2.1 Noise and Vibration

Assets were built to WIMES which is the water industry standard. There is no documented issue with regards to noise at the site as the current operations have not caused any noise related complaints.

During normal operations equipment is routinely checked for any increase in noise or vibration, and maintenance jobs raised and carried out where this is the case using the POSMAINT system and recorded on app for pumps and mechanic plants. Since there have been no noise related complaints and noise and vibration impacts are considered to be appropriately mitigated, a separate Noise Impact Assessment and Noise Management Plan are also not considered to be required.

If a complaint is made with respect to noise or vibration the Treatment Manager will assess the cause of the complaint and will report the findings. If the noise or vibration leading to the complaint has been caused by a continuing operation, additional noise or vibration surveys may be required to confirm the degree of impact upon the receptor. The Treatment Manager will make any recommendations for further noise or vibration control to the Management Team and shall inform the Environment Agency of the complaint as soon as it is practicable to do so.

3.2.2 Spill control

Reference WWS-PRO-8.13

All fuel/chemical tanks on site are double skinned and bunded apart from the gas oil tank to rear of main office buildings. This tank has a bund only and is subject to request for capital funding to replace with a double skinned bunded tank.

Spill control equipment is situated in 2 locations on site. The equipment includes absorbent pads, granules and booms.

1. Between Fuel Tanks at rear of office buildings
2. By Waste Oil Tanks on Sludge Treatment Centre

All surface water drainage gullies and manhole covers that link the onsite network of drains that discharge into local neighbouring water courses are painted blue to indicate their surface water status and the associated pollution risk due to spillage.

Location of the drains can be found on the site HAZOP drawings.

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3.2.3 Reporting an incident

Reference Policy WWS-PA-008

- G:\AH_HH_US_BSY\Publish\WWLDC Copy\N&S\Odour Management\Odour Management Plans\NSTK
- All identified odours on site generated through operational activities will be reported to the OMC who in turn will report to the EA NIRS Database. This will be recorded in the site odour diary.
- Any external odour complaints will be dealt with immediately with feedback to the OMC and EA, and logged in the on site odour diary.
- Any failure of the CHP will be monitored by the OMC and standby personnel called out. Depending on the type of failure or fault, this will be reported via OMC to the EA NIRS Database.

3.2.4 Odour event

Reference

WWS-POL-010
WWS-STD-010
WWS-PRO-10.01

- G:\AH_HH_US_BSY\Publish\WWLDC Copy\N&S\Odour Management\Odour Management Plans\NSTK
- All identified odours on site generated through operational activities will be reported to the OMC who in turn will report to the EA NIRS Database. This will be recorded in the site odour diary.
- Any external odour complaints will be dealt with immediately with feedback to the OMC and EA, and logged in the on site odour diary.

3.2.5 Damage to a habitat

- All vehicles to adhere to prescribed roadways
- Biodiversity team to produce a site specific management plan
- Standard rule –No tree or hedge works during the bird nesting season from 1st March to 31ST July: consideration should be given to birds such as wood pigeon that will nest outside of this period. It is an offence to destroy the nest of any wild bird under the Wildlife and Countryside Act 1981.

3.2.6 Other risks identified

- Cold weather can cause plant failure due to freezing of pipes and apparatus.
- Extensive cold weather protection has been installed around the site which includes lagging and trace heating of pipe work, pumps and valves.
- Defrosting equipment and salt supplies are stored on site and a road gritting contract is in place with Ground Control.

3.3 Permit conditions

The permits in place require a number of things to be completed and limits to be met.

Current reports required by the permits for reporting to the Environment Agency are;

Type	Responsible	Detail	Frequency
Waste Returns	S Spencer	Tonnage waste	Quarterly
CHP report	T Orsborne	Units	Annual
CHP Emissions	T Orsborne	Units	Annual

Other conditions include the limits set by the regulator, these are

Imports
400000 tonnes annual import threshold (waste streams permitted listed later in the plan)

Emissions Sampling
(Table below)

Emission Point	Substance / Parameter	Emission Limit Value	Reference Period
A1	Oxides of nitrogen	500 mg/m^3	Hourly average, annual
A2	Oxides of nitrogen	500 mg/m^3	Hourly average, annual
A1	Carbon monoxide	1400 mg/m^3	Hourly average, annual
A2	Carbon monoxide	1400 mg/m^3	Hourly average, annual
A1	Total VOC	1000 mg/m^3	Hourly average, annual
A2	Total VOC	1000 mg/m^3	Hourly average, annual

Improvement Conditions
See CHP Permit for details

3.4 Specific Plans

Each site has a comprehensive library of documents that support the efficient and successful operation of the site. This plan is not going to detail those plans but direct the reader to the locations of the plans.

3.4.1 Odour

An Odour Plan for the site can be found at 'G:\AW_HH_US_BSY\Publish\WWLDC Copy\N&S\Odour Management\Odour Management Plans\NSTK' and should be reviewed at no less than 12 month periods.

The Odour Scrubbers on site are monitored weekly and recorded in the Odour Management Folder. Any defects picked up either as part of these inspections or by any other means are raised with the Tactical Operational Technicians, prioritised and a job raised on the SAP system. These are then deployed out inline with the priority to the local M&E team to be rectified. Jobs raised are then recorded in the on site Defects Log Book together with the job no. and M&E update with the progress on the job.

2.4.2 Gas

A comprehensive Gas plan for the site can be found at the following location 'AW_HH_BSY\Publish\ELECTRONIC DOCUMENT CONTROL LIBRARY\Waste Water LDC\N&S\Gas Plans' and should be reviewed at a period of no less than 12 months.

2.4.3 Contingency

A Sludge Treatment Centre Operational & Contingency Plan can be found at 'AW_HH_US_BSY\Publish\ELECTRONIC DOCUMENT CONTROL LIBRARY\Waste Water LDC\Area\STC O&C Plans' and should be reviewed at periods of no less than 12 months.

3.4.4 Accidents

Kings Lynn CHP is not subject to Control of Major Accidents Hazards Regulations (1999) (COMAH).
All oil tanks and chemicals storage areas will be adequately bunded and wastes contained in appropriate containers. Procedures have been developed as part of the Hazop study undertaken for the site.

Environmental aspects and impacts that the Installation can be expected to have an influence over will be assessed under ISO 14001 provisions.

The Installation lies within Flood Zone 3 as defined by the Environment Agency. At this location,
Flood Zone 3 represents an annual risk of flooding of greater than 0.5% from tidal / coastal sources
(high risk). However, the proposed site is located within an area defended by flood embankments

3.4.5 Site Closure

To follow with site developments planned

4 Site Management [D]

This section looks at the management of site to minimise impact to the environment.

4.1 Waste Management

Waste management is a highly regulated activity and as a site we have regulatory obligations with regards importing and treating waste as well as the standard Duty of Care obligations. This section looks at those obligations.

4.1.1 Identification of wastes [P]

The activities on this site generate a wide range of wastes. Primarily though we generate:

EWC code	EWC Description	AW Description
19 08 05	Sludges from treatment of urban waste water	treatment of raw sewage
20 03 04	Septic tank sludge	treatment of raw sewage
20 03 06	Waste from Sewage cleaning	treatment of raw sewage
19 08 01	Screenings (Wastewater)	treatment of raw sewage
19 09 01	Solid waste from primary filtration and screenings	treatment of raw sewage
20 01 01	Paper and cardboard (Magazines etc)	Office activities packaging of deliveries to site
20 01 39	Plastics (drinks bottles etc)	Office activities packaging/containers of products used on site
17 02 01	Wood	Pallets delivered to site

4.1.2 Location of wastes

Waste storage on this site is part of our normal operations. The below list indicates the areas where wastes are stored in skips and other waste containers. The processes that treat waste are labelled.

STW Site

Area to rear of main office

- General Waste Skip
- Metals Skip
- Wood Skip
- Recycling Wheelie Bin
- Fluorescent tube crates
- Battery disposal crates

- Grit/Screenings Skip (Sewer cleaning activities)

Sceptic Import Area
- Screenings Skip

Inlet Area
- Screenings Skip
- Grit Skip

RTS Porta cabins
- General Waste Wheelie Bin

STC Site

- Strainpress Area - 4 x Screenings Skips
- Office/Administration Building - General Waste Wheelie Bin
- Centrifuge Cake bays - 8 x Cake Skips

4.1.3 Management of contractors exporting waste

[D]
Anglian Water has 8 waste streams removed from this site.
These are managed and controlled in the following manner:

EWC Code	EWC Description	Carrier	Broker	Disposal Route
19 08 05	Sludges form treatment of urban waste water	Biosolids		Land
20 03 04	Septic tank sludge	Biffa		Landfill
20 03 06	Waste from Sewage cleaning	Biffa		Landfill
19 08 01	Screenings (Wastewater)	Biffa		Recycled
19 09 01	Solid waste from primary filtration and screenings	Biffa		Landfill
20 01 01	Paper and cardboard (Magazines etc)	Biffa		Recycled
20 01 39	Plastics (drinks bottles etc)	Biffa		Recycled
17 02 01	Wood	Biffa		Recycled

Copies of the Waste Transfer Notes and Consignment Notes for these waste movements (skips and the like) can be found in the Treatment Managers Office. Wastes that are disposed of to land by RTS and Biosolids

have comprehensive records held by RTS and Biosolids and can be obtained from the Biosolids Team Office in Cambridge.

4.1.4 Management of importing waste

Waste is imported to this site as part of the waste operations.

All cess and septic waste imported to this site is not part of any permit as it is outside the permitted area for this waste. Imports are undertaken under the MWRP RPS 007 for the import of domestic waste. We do have licensed carriers bringing septic and cess waste in under the control of RTS.

This site does accept transfers of AW waste falling under the classifications (as stipulated in the Sludge Treatment Centre Permit):

19 08 01	19 09 02	20 03 06
19 08 02	19 09 03	20 03 09
19 08 05	19 09 06	
19 08 09	20 03 04	

Copies of the Waste Transfer Notes for the import of Cess and Septic are covered by the signing in process and with a sampling regime to ensure that the waste is the correct classification. These are held in the weighbridge office and sent monthly to RTS.

Wastes that are imported by RTS and Biosolids have comprehensive records held by RTS and Biosolids and can be obtained from The Biosolids office in Cambridge.

Waste is imported to this site as part of the waste operations. This site does accept Cess and Septic waste under the MWRP RPS 007 and it issues "permits" to import to tanker companies through RTS.

4.2 Biodiversity

Anglian Water has a 'duty' to have regard for the conservation of biodiversity in exercising its functions under the Natural Environment and Rural communities (NERC) Act 2006, in addition to maintaining compliance with various other pieces of environmental legislation. AW has identified priority species and habitats on its landholdings through the AW Biodiversity Action Plan (BAP) which brings us in line with Government strategy.

4.2.1 This Site [P]

The biodiversity on this site has been surveyed whilst AW has been in ownership.

A survey was completed for the proposed building onsite of a Cake Reception Centre by an ecological consultant, as part of the capital delivery programme.

An initial biodiversity survey was completed on the 29th August 2012 by the biodiversity team.

Findings from the biodiversity surveys are held on the biodiversity database and will eventually be mapped on to overlays of each site.

Guidance for day to day operations can be found in the Biodiversity: Guidance for Operations booklet which is currently in production. A management plan specific to site considerations will be produced.

The site is situated along the bank of the tidal River Great Ouse before it enters The Wash. This section of the river is afforded no statutory protection as a designated site, however the boundary of the designation for The Wash Ramsar site, Special Area of Conservation (SAC), Special Protection Area (SPA), National Nature Reserve (NNR) and Site of Special Scientific Interest (SSSI) is located 1km down river of the King's Lynn WWTW. The Wash is important for its estuarine mudflat and saltmarshes that provide valuable habitat for wildfowl and waders. Otter footprints have been recorded along the river bank adjacent to the site and the trees and hedgerows on site provide a first safe resting spot to a variety of migratory birds.

4.2.2 Active biodiversity

All AW personnel are encouraged to act as the "eyes and ears" of the company and report any species that they see that has not previously been identified on the site. Any records should be sent to biodiversity@anglianwater.co.uk Here the surveys will be looked at and used to inform company decisions and so that the biodiversity team can provide support to the site.

4.2.3 Rules for biodiversity

There are some general rules which have been developed for operation on sites:

- Do not drive on the grassed areas unless specifically authorised to do so.
- Report all damage to trees and habitats caused on site.
- No tree/hedge/scrub removal during bird nesting period form 1st march to 31st July.
- Prior to tree works check with local Authority to check whether any Tree Preservation Orders have been enforced.

4.3 Climate Change

· A climate risk assessment has been carried out for Kings Lynn STC, and is available on the system.

· Due to where it is situated, Kings Lynn STC would not be at risk of rising sea levels and due to having rise 3m before overtopping the River Bank wall. The outfall is pumped and so this would not be affected either.

· Higher temperatures could leave to plant failure due to thermal cut outs. if this were to happen then the plant would shutdown and alarms would be generated for someone to investigate.

· Cooling Heat Exchangers have been installed on site and are used to keep the Digesters at the optimum run temperatures. Modifications could eb made for them to be able to ramp up further than they currently run if outside temperatures were to increase.

· Although temperature changes on site could affect odours, this would constantly be monitored and we already have Odour Management plan in place.

· Lower freezing temperatures could freeze equipment on site which would lead to plant failure and someone getting an alarm to investigate. There is insulation and also trace heating on all equipment that needs it.

· If we were to begin to have lower temperatures on site which equipment could not be protected against using current measures then we would have to write a cold weather plan. Due to being a aeration process the site does not get the lower temps as other sites.

· The site has a permitted throughput of 750l/s. Anything above this is diverted to the on site storm tanks where it is held. If rainfall continues and there become full then they will discharge directly to stream as allowed in our discharge permit for the site.

· In the event of a lack of potable water on site due to either a burst main or through water shortages in the event of prolonged warm weather leading to raw water shortages then the boilers on site would shutdown leading to the process being halted.

5 Other documents

This is where you should list documents that may support this PDCA action for this site that have not already been mentioned through the body of the document.