Energy Efficiency in GENeco

1. Aim

Business units which operate within the environmental permitting regime are required to:

(a) Take appropriate measures to ensure that energy is used efficiently in the activity.
(b) Review and record every 4 years whether there are suitable opportunities to improve energy efficiency of the activities and
(c) Take any further appropriate measures identified by a review.

This document aims to outline how GENeco satisfies these requirements.

2. Scope

Any 'Waste Operation', 'Installation' or 'exemption' operated by GENeco, a department within Wessex Water Enterprises Ltd, under an Environmental Permit, authorised to accept industrial, commercial, and domestic waste for treatment.

3. Policies

On a corporate level the Carbon Management Policy (ENVPOL06) outlines the Wessex Water long term objective for its combined activities to be carbon neutral, with minimal emissions of other atmospheric pollutants. A carbon management plan will be maintained, based around the hierarchy of:

a) Avoiding emissions
b) Energy efficiency
c) Renewable energy from our own generation
d) Options led by third parties (carbon offsets, renewable energy purchase)

On a departmental level, the GENeco Safety, Health, Environment, Quality and Competence (SHEQC) Policy (IMS025) includes the commitment to 'protect the environment and prevent pollution', and the GENeco environmental policy (BIOP028) includes the commitment to 'manage all of our activities in an environmentally responsible, suitable manner, control pollution and continuously improve the environmental management of our activities'.

4. Measures in place to ensure that energy is used efficiently.

Our team play a vital role in our energy management strategy. An important part of this process is acknowledging the influence that our team have on energy performance. At Wessex Water much of our electricity consumption is under the direct control of our staff:

- **Telemetry/real time monitoring and control**: SCADA, Amulet
- **Process modelling**
- **Greenhouse Gas Emissions Permit** number GB-EA-ETC02-0525 under the Greenhouse Gas Emissions Training Scheme Regulations 2005. Applies to points emitting carbon dioxide and outlines requirements for monitoring, records and reporting.

Other energy efficiency measures include the injection of biomethane to the grid. Biomethane is a renewable gas, produced from organic waste and injected into the gas grid. It can make a contribution to the UK's low carbon economy, helps manage organic waste products and has the added benefit of being a secure energy supply.

The benefit of biomethane as a renewable gas is recognised through the UK government's Renewable Heat Incentive (RHI) scheme which provides financial incentives to promote the generation of renewable heat and biomethane.

5. Energy Efficiency Plan

5.1 Avonmouth Renewable Energy

An Energy Efficiency Plan has been developed and approved by the Environmental Agency (Kevin Nicholls – 25 July 2017) for permit EPR/PP3734LK to comply with schedule 1.2 of the permit (Energy Efficiency). The plan is reviewed and submitted annually as part of the Annual Waste Returns for this permit.

The Energy Efficiency Plan details the following:

(a) Energy Performance of the CHPs: estimation of the overall energy input contributions from biogas and natural gas into the CHPs vs their energy and heat outputs
(b) Allocation of energy outputs from the CHPs: review of electricity and heat generation vs total site consumption
(c) Biogas Utilisation: percentage of biogas to the CHPs, G2G plant and BFWRF
(d) Energy Performance of the BFWRF: biogas generated by the Food Waste digesters per electrical use and heat demand of the pasteurisers
(e) Overall plant efficiency: efficiency of the BFWRF, CHPs and G2G plant (average methane concentration in biomethane injected to the grid).

By monitoring these parameters, the plan also details any new energy efficiency improvements implemented during the reporting year.

The Energy Efficiency Plan for 2018 and previous years are located in K:\GENeco Environmental Permits\1a.Bristol CHP AD Food waste PP3734LK\1.10 Annual Report\EA Permit. All subsequent Energy Efficiency Plans are stored in SharePoint within the Compliance Obligations library (BFWRF CHP GTG PP3734LK).

5.2 Bristol Treatment Centre

See Energy Use and Energy Efficiency (GENWMG82)
Condition 1.3 and section S5.3 of permit EPR/SP3131QJ identifies that the energy usage of the site needs to be submitted to the EA on an annual basis.

Due to the scale of the site, the operations are classed as low energy users. However, any new asset, service or supply arrangement energy consumption will be assessed before acquisition in order to minimise environmental life-cycle impacts.

5.3 Trowbridge Renewable Energy

As part of condition 1.2 (Energy Efficiency) of the permit EPR/HB3602TR, an energy efficiency plan will be developed to evaluate the following:

(a) Efficiency of the Gas to Grid plant (average methane concentration in biomethane injected to the grid)
(b) Energy Performance of the CHP in the event of G2G maintenance

The plan will be submitted to the EA as part of the Annual Waste Returns for this permit.

5.4 Berry Hill IED and Poole IED

An energy efficiency plan will also be developed to satisfy condition 1.2 of permits EPR/HB3406LE (Berry Hill IED) and EPR/HB3009CM (Poole IED) which will evaluate the energy performance of the CHP (estimation of the overall energy input from biogas and the heat and electricity outputs).
Each plan will be submitted to the EA as part of the Annual Waste Returns for both permits.

Revision history

Issue	Date	Approved by	Description
1	Jan 2016	R Creed	New document
2	July 2019	H Edwards	Removed Energy Efficiency Review table. Updated with current method for reviewing Energy Efficiency. Removed stakeholders within Wessex Water as out of date
3	Feb 2024	F Ramirez Diaz	Updated to new format. Replaced links out of date. Added GENeco SHEQC policy and updated GENeco Environmental policy. Updated language and added the new location of Energy Efficiency Plans on SharePoint.
4	Nov 2025	F Ramirez Diaz	Added biomethane grid injection as an energy efficiency measure Expanded description of the Energy Efficiency Plan for permit PP3734LK Added Energy Efficiency Plans for permits: - SP3131QJ (Bristol TC) - HB3009CM (Poole IED) - HB3406LE (Berry Hill IED) - HB3602TR (Trowbridge IED)