Chapter 45
Energy Consumption and Greenhouse Gas Accounting

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This table requires submission of data under five main sections as follows

- **Block A – Electricity Consumption**

  This section asks for the submission of the total electricity consumption and a breakdown of consumption by renewable and non-renewable energy sources and by external and own electricity generation.

- **Block B – Gross Annual Operational GHG Emissions**

  Gross annual operating GHG emissions are required broken down by: direct emissions from burning fossil fuels, process and fugitive emissions and transport emissions. The report is divided into three sections consistent with the format established by Defra/DECC.

- **Block C – Net annual operation Emissions**

  This section allows the GHG benefit of renewable energy exports and specific green energy purchase to be off-set from the gross operational GHG emissions to report a net GHG emission for the company.

- **Block D – Annual operating GHG Intensity Ratio Values**

  Annual operating GHG intensity ratios are required for the water and sewerage service using flow as a denominator.

- **Block E – Renewable Incentives**

  This section asks the company to report the income from renewable energy incentives

Reporting Requirements

Reported consumption, emissions and incentive should include the direct and indirect operational emissions associated with the provision of water, wastewater treatment and sludge disposal. This is consistent with the 'appointed business' as defined in Appendix 3 of Regulatory accounting guideline 3.06.

This means that the reporting boundary includes emissions generated by outsourced operations and contractors working for the appointed business in carrying out any part of its regulated activities. This is consistent with activities accounted for in Table 21 and 22.

Supply chain, embedded and 'short cycle' emissions or those from non-appointed business activities should not be included. For specific definitions, please refer to the greenhouse gas accounting definition section below.

We are aware that some emissions included within this definition may be burdensome to collect and immaterial to the overall reported emissions value. Whilst we encourage companies to make every effort to record all emissions associated with the appointed business, we will not expect immaterial and disproportionately burdensome emissions to be included in the total.

For lines 9-20 the latest Defra/DECC emissions factors should be used (unless an industry agreed figure has been derived that is of greater accuracy).

Allocation between NI Water and PPP activities.

The table requires emissions by operations outsourced to PPP concessions to be included in a separate column and a total for NI Water to be calculated. For the purpose of this table, electricity paid for by NI Water for the PPP plant and operations should be included in the column for PPP activities.

A: Electricity Consumption (lines 1 to 8)

A breakdown of electricity used should be provided broken down by renewable and non-renewable energy sources and by electricity purchased from the grid and electricity generated by NI Water or the PPP concessions. There should be no double counting between line entries which should be mutually exclusive and sum to NI Water's total electricity consumption.

B: Gross annual operational emissions (lines 9-17)

Emissions should be reported under Scope 1, 2 and 3 headings. There should be no double counting between any of these headings. These are considered in turn.

Scope 1 emissions (lines 9-11) should cover all emissions that are emitted directly from the company's appointed activities. These should include direct emissions from burning of fossil fuels, direct process emissions and transport owned or leased by the company.

Direct process emissions should be accounted for under scope 1. However, these will only be a subset of the total process emissions associated with water and sewage provision. Indirect (scope 3) process emissions are outside of this subset. They should not be reported to us because they fall outside of the management responsibility of the regulated business.

To understand when process emissions are scope 1 (and should be reported) or scope 3 (and should not be reported), we have set out two principles. The first relates to the transfer of ownership of a product that has satisfied all quality obligations placed on the company. Where this takes place, the regulated business no longer has any management responsibility meaning that any future emissions from the product should not be reported to us. Following this principle, we do not expect emissions from the use of water in the home, sludge that goes to landfill or

treated sludge products that are then transferred to farmers (unless the farm is a regulated asset) to be reported to us.

The second principle relates to emissions derived from licensed discharges into watercourses. Providing discharge consents are met, companies can assume that treatment of the effluent has been completed meaning that their management responsibility has ended. As a result, companies should not account for any subsequent emissions from this treated effluent that may be emitted in rivers and estuaries.

Scope 1 emissions should include direct process emissions from the PPP concessions.

Scope 2 emissions (line 12) should cover all emissions that are indirectly emitted as a result of electricity usage.

Scope 2 emissions should include all emissions indirectly emitted from the PPP concessions as a result of electricity usage.

Scope 3 emissions (lines 13 and 14) relate to all other indirect emissions that are not included in scope 2 emissions. In line with our boundary definition (above), scope 3 emissions should only be reported to us where the regulated business retains management responsibility. Therefore, the scope 3 emissions that should be reported are those from business travel on public transport and private vehicle usage for company business (line 13) and emissions from regulated business activities that has been outsourced to third parties and have not been included in scope 1 or 2 emissions (line 14).

We are aware that NI Water may identify other scope 3 emissions outside of those reported in lines 13 and 14. These include emissions from the use of water in the home, staff commuting emissions and emissions from wastewater (and associated by-products) after they have been returned to the environment. We do not expect any of these emissions to be accounted for here because they fall outside of the management responsibility of regulated business. Embedded emissions can also be classified as scope 3 emissions but again should not be reported here as they are not operational emissions.

For Table 45, direct process emissions and indirect emissions due to electricity use from the PPP concessions should be reported under Scope 1 and 2.

C: Net annual operational emissions (Lines 18-20)

The net annual operational emissions section accounts for emission reductions derived from renewable energy generated onsite and then exported (line 18) and green energy purchased (line 19). These reductions are subtracted from the gross emissions value (line 17) to show net operational emissions (line 20).

D: Annual operational GHG intensity ratio values (Lines 21-23)

Intensity ratio values should be reported in $kgCO_2e/Ml$ for both water and sewerage services. Two intensity ratios are needed for the sewerage service, one that uses table 14 data as a denominator and one that uses actual measured volumes from sewage treatment works.

E: Revenue from renewable energy incentives (Line 24):

Companies should report revenue from renewable energy generated from assets that are owned or controlled by the company including revenue claimed on NIROCs and other financial incentives.

A-E: Confidence Grades

Confidence grades should be assigned for each line of data based on the criteria set out in the Introduction to the Annual Information Return Reporting Requirements.

Definitions

- **Direct emissions:** Emissions from assets that are owned or controlled by the water company
- **Indirect emissions:** Emissions from a company's activities but come from sources that are not owned or controlled by the company
- **Scope 1 emissions:** See 'Direct emissions'
- **Scope 2 emissions:** Indirect emissions that are derived from grid electricity usage.
- **Scope 3 emissions:** All other indirect emissions that are not covered in 'scope 2 emissions'. Note that companies are not required to report all scope 3 emissions, those that should be reported are presented in this guidance.
- **Operational emissions:** All direct and indirect emissions from the provision of water, wastewater treatment and sludge disposal where the regulated business retains management responsibility.
- **Outsourced activities:** The arrangement whereby companies choose to delegate part of the regulated business previously carried out in-house to a third party for an agreed time period for payment, e.g. call centres or maintenance contractors.
- **Supply chain emissions:** Emissions from the manufacture and transport of consumables used by the water industry. This relates to activities where the company no longer has management responsibility.
- **Embedded emissions:** Emissions from the manufacture and distribution of materials, especially materials for construction, such as concrete and steel, rather than for consumables.
- **Short Cycle emissions:** Emissions that have been derived directly or indirectly from biomass, thus the carbon dioxide emissions returning to the atmosphere are equivalent to those that have been recently extracted by a growing plant. Emissions of nitrous oxide and methane do not count as short cycle emissions as they do not complete the cycle.

Company Commentary

The company should provide further explanation or commentary on:

- The types of renewable and non-renewable energy generated by the company and provide a breakdown of the total renewable and non-renewable energy generated by type (for example wind, hydro, biogas, biomass or diesel generators).
- It approach to determining the boundaries of the scope of GHG emissions reported.

- The conversion factors used in the assessment of GHG emissions identifying the specific conversion factors used for different types of energy of fuels.
- The type and extent of contract it has established for purchase of renewable energy from the grid covered in lines 2 and 19 of the Table 45.

The company's commentary should include further breakdown of GHG emissions by water and sewerage service and the main sub service areas consistent with the allocation of operational costs in Tables 21 and 22 of the AIR as follows:

- Water service: water resources and treatment; and, water distribution.
- Sewerage service: sewerage; sewage treatment; sludge treatment and disposal.

The company should state the denominators used to calculate the GHG intensity ratio values and describe how it derived the flow to full treatment denominator for line 21 of the return.

Reporter commentary

The reporter shall audit the submission by the company and comment on the compliance with the guidance and completeness of the report.

Table 45 row definitions

BLOCK A – ELECTRICITY CONSUMPTION

Row 1	Grid electricity purchased (excluding renewable energy).	MW.hr	0dp
Definition	Electricity purchased from the grid excluding renewable energy purchased reported in line 2.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 2	Grid electricity purchased - renewable energy.	MW.hr	0dp
Definition	Renewable energy purchased through the grid. Renewable energy should be covered under green tariffs which satisfy the requirements set out in Defra's GHG reporting guidelines, consistent with the GHG emission benefit reported in line 19.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 3	Non-renewable electricity generated and used.	MW.hr	0dp
Definition	Electricity generated and used by the company excluding renewable electricity reported under line 4.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 4	Renewable electricity generated and used.	MW.hr	0dp
Definition	Renewable electricity generated and used by the company. The renewable electricity should be backed by Renewable Energy Guarantees of Origin (REGOs).		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 5	Total electricity consumption.	MW.hr	0dp
Definition	Total electricity consumption by the company.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Calculated field: Sum of lines 1 to 4		
Responsibility	Network Regulation		

Row 6	Non-renewable electricity generated and exported to the grid.	MW.hr	0dp
Definition	Non-renewable electricity generated and exported to the grid. This should be the total electricity generated and exported less the renewable electricity generated and exported reported under line 7		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 7	Renewable electricity generated and exported to the grid.	MW.hr	0dp
Definition	Renewable electricity generated and exported to the grid by the company. The renewable electricity should be backed by Renewable Energy Guarantees of Origin (REGOs).		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 8	Total renewable electricity generated.	MW.hr	0dp
Definition	The total renewable energy generated.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Calculated field: sum of lines 4 and 7		
Responsibility	Network Regulation		

BLOCK B – GROSS ANNUAL OPERATIONAL GHG EMISSIONS

Row 9	Scope 1 emissions: direct emissions from burning fossil fuels (including natural gas CHP generation on site).	$t.CO_2e$	0dp
Definition	Emissions from the burning of fossil fuels on site (such as diesel generators or fuel to incinerators). This will include the emissions associated with on site generated energy from CHP engines powered from non renewable sources (such as natural gas). This should be reported in the following way: i Where a company runs a CHP plant and uses both of the elements produced (heat and electricity), the emissions from the fuel used to run the CHP plant should be reported. ii Where a company runs a CHP plant but only uses one element (heat OR electricity) and the other element is used by a non regulated body, the company should report only the emissions for the element they have used. Annex 2 of Defra/DECC's 2010 GHG Conversion Factors for Company Reporting document provides a methodology for determining the emissions factor that should be used in this instance.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 10	Scope 1 emissions: process and fugitive emissions.	$t.CO_2e$	0dp
Definition	Process emissions (such as N_2O emissions from ozonation or CH_4 emissions from sludge processing) are those given off from water and sewage treatment processes. Fugitive emissions (such as the release of HFCs from refrigeration units or CH_4 escaping from digesters) should also be included here. Process emissions that are not the management responsibility of the appointed business should not be reported here (see guidance, above, for more information).		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 11	Scope 1 emissions: transport - company owned or leased vehicles.	$t.CO_2e$	0dp
Definition	Transport emissions from vehicles owned or leased by the company. This will include lorries, vans and company cars.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 12	Scope 2 emissions: total grid energy used (including CHP electricity purchased).	$t.CO_2e$	0dp
Definition	NI Water should account for all grid electricity purchased for its own consumption regardless of the source. It should use the latest 5 year grid rolling average (electricity consumed) emissions factor. There is no need to report indirect scope 3 emissions associated with electricity generation. All sites should be included regardless of whether or not they are covered by the EU-ETS. All CHP derived and green tariff electricity that is purchased should also be accounted for here using the 5 year rolling average grid emissions factor.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 13	Scope 3 emissions: business travel on public transport and private vehicles used for company business	$t.CO_2e$	0dp
Definition	Emissions from business travel on public transport and private vehicles used for company business should be included here.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 14	Scope 3 emissions: outsourced activities (if not included in Scope 1 or 2) Energy and other	$t.CO_2e$	0dp
Definition	Emissions from outsourced activities that have not been included in the above scope 1 and 2 emissions. See definitions section, above, for more information.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 15	Not used

Row 16	Not used

Row 17	Gross operational emissions.	$t.CO_2e$	0dp
Definition	Total emissions attributed to the appointed business before any external mitigation reductions are considered.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Calculation: sum of lines 8-16.		
Responsibility	Network Regulation		

BLOCK C – NET ANNUAL OPERATIONAL EMISSIONS

Row 18	Exported renewables (generated on-site and exported).	$t.CO_2e$	0dp
Definition	Renewable energy generated onsite and then exported should be subtracted using the latest five year grid rolling average emission factor. The exported energy should be backed by Renewable Energy Guarantees of Origin (REGOs) and this value must not exceed the amount of electricity. GHG benefit entered as a negative value.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 19	Green tariff electricity purchased.	$t.CO_2e$	0dp
Definition	Green tariffs need to satisfy the requirements set out in Defra's GHG reporting guidelines. They should then be subtracted from the company's gross emissions. GHG benefit entered as a negative value.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 20	Net operational emissions.	$t.CO_2e$	0dp
Definition	Total emissions attributed to the appointed business including external mitigation reductions.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Calculation: Sum of lines 17 to 19.		
Responsibility	Network Regulation		

BLOCK D – NET ANNUAL OPERATIONAL EMISSIONS

Row 21	Operational GHG per Ml of treated water.	$t.CO_2e/Ml$	0dp
Definition	Operational GHG emissions per Ml of treated water should include all GHG emissions derived from the abstraction, treatment and distribution of water. The numerator should include scope 1, 2 and 3 emissions as well as any emissions reductions accounted for in the net emissions total. These values do not need to include admin or transport emissions. This differs slightly from the approach set out in the Defra/DECC guidance. The denominator should be derived from the volumes of water reported in table 10 of the AIR.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 22	Operational GHG per Ml of sewage treated (flow to full treatment).	$t.CO_2e/Ml$	0dp
Definition	Operational GHG emissions per Ml of sewage treated should include all GHG emissions derived from sewage pumping, treatment and sludge treatment and disposal. The numerator should include scope 1, 2 and 3 emissions as well as any emissions reductions accounted for in the net emissions total. These values do not need to include admin or transport emissions. This differs slightly from the approach set out in the Defra/DECC guidance. The denominator should be the Flow to Full Treatment volume at sewage works. This is different to the values reported in table 14 due to water entering public sewers from surface water drainage and sewage discharged from overflows on the sewerage network and through storm tanks. Where possible, companies should use data which is measured as part of their monitoring of discharge consents compliance or to support payments to PPP concessionaires.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

Row 23	Operational GHG per Ml of sewage treated (based on water distribution input).	$t.CO_2e/Ml$	0dp
Definition	Operational GHG emissions per Ml of sewage treated should include all GHG emissions derived from sewage pumping, treatment and sludge treatment and disposal. The numerator should include scope 1, 2 and 3 emissions as well as any emissions reductions accounted for in the net emissions total. These values do not need to include admin or transport emissions. This differs slightly from the approach set out in the Defra/DECC guidance. The denominator should be derived from the volumes of wastewater returned to sewer reported in table 14 of the AIR.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

BLOCK E – NET ANNUAL OPERATIONAL EMISSIONS

Row 24	Revenue from renewable energy sales and incentives.	£'000	3dp
Definition	Revenue from renewable energy generated from assets that are owned or controlled by the company. This will include revenue from all NIROCs claimed and any revenue generated through other incentive schemes.		
Primary Purpose	Informing relative performance and efficiency assessments.		
Processing rule	Input		
Responsibility	Network Regulation		

CHANGE CONTROL SHEET
CHAPTER 45

2011/1.0	First issue of chapter for the PC10 period.
2011/2.0	Chapter amended to move PPP to Scope 1&2 and reduce the lines required for Scope 3 emissions.