

# Northern Ireland Water

Energy Consumption and Greenhouse Gas Accounting  
(Commentary for Table 45)

Public Domain Submission

Prepared for  
**Utility Regulator and NI Water**

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## Table 45 – Energy Consumption and Greenhouse Gas Accounting

### 1. Introduction

This commentary provides details from our review of NI Water's Carbon Accounting assessment included in Table 45.

### 2. Key findings

- NI Water has applied the UKWIR carbon accounting methodology correctly.
- NI Water has applied the correct greenhouse gas conversion factors. We observed that the Company used UKWIR CAW 8.0 rather than the latest CAW 8.1 however, the change in this workbook does not affect the Company's emissions.
- The carbon accounting boundary includes all of NI Water's activities
- A Climate Change Mitigation Strategy to reduce energy usage and carbon emissions is in place to assist in achieving long term emissions reductions.
- Improving the accuracy of the Flow-to-Full-Treatment figure needs to be considered in the future.
- We audited the reported data and challenged the processes on a sample basis. Except where detailed below, we consider the data reported in the table is robustly prepared using systems and process that are appropriate and in line with the reporting requirements and that are properly implemented with effective quality control and governance arrangements.

#### 2.1 Recommendation

- We believe that the data collation and calculation system would need to be improved in a specifically formatted data list. We would also recommend that the methodology statements for each data provided by various data owners could be attached with the data list sheet.

### 3. Audit approach

The audit consisted of interviews with the NI Water Energy team and a review of relevant documentation, system methodologies, and data used to compile the table. The audit also included a review of the Company's commentary.

### 4. Company methodology

#### 4.1 Data source

During our audit, we discussed data sources, and use and requirements of data as per the UKWIR methodology. We believe the data collection process is appropriate. For example, energy suppliers send electricity invoices from half-hourly meters at each site to the Company's finance and energy teams on a monthly basis in a spreadsheet format. This subsequently enables compilation for returns such as the AIR submission.

## 4.2 Reporting boundary

During our audit, we discussed with the Company its carbon accounting reporting boundaries. The inputs to the UKWIR worksheet appear to be in line with the NIAUR guidance:

- The Company has produced CAW workbooks (version 8.0) for NI Water only and PPP, and then added these to provide NI Water total figures.
- The Company explained that emissions related to outsourced activities are not included except emissions from sludge disposed by outsourced operators. All of NI Water activities including non core business are included.
- No supply chain, embedded or short cycle emissions are included, except NI Water's outsourced emissions from their capital programme partners and PPP programmes.
- Emissions from all of business mileage related to NI Water's activities are included.

During the review of the Company's documentations, we observed that the UKWIR's CAW workbook (version 8.1) has been issued in March 2014. The change from version 8.0 was to update calculation for emissions from the generation of non-REGO electricity from biogas CHP. We believe and the Company confirms that this does not affect the NI Water's emissions.

Other GHG emissions and their carbon equivalents are not included as the Company does not presently record this information.

## 4.3 Validation of inputs

We checked that all data collected and used in the methodology was clearly marked with units and these had been consistently applied.

We also checked that figures from other tables such as Tables 10 and 14 are consistent.

Having 3 UKWIR workbooks (NI Water only, PPP and total) to produce Table 45 is not efficient and could lead to possible mistakes. We suggest a better data collation and calculation system could be in place to manage the better presentation of Table 45.

## 4.4 Conversion factors

We confirm that the correct spreadsheet has been used and the conversion factors locked within it have been applied.

## 5. Audit findings

### 5.1 Carbon emission reduction strategy

During the audit, we discussed the Company's carbon reduction commitment. The Company explained that NI Water has its own specific Climate Change Mitigation Strategy aligned to energy and carbon reduction and they do acknowledge the targets set by the Government. Their long term target is to reduce carbon emissions by 80% by 2050 (against a 1990 baseline). The Company also explains that they have a green energy efficiency target, which was set at 40% by 2020. NI Water currently purchases green tariff and generates a total of 15-16% of total electricity consumption. NI Water added that once they have a new supplier they should be able to achieve minimum of 20%. To assist in achieving this, the Company is planning to invest £6m in installing 1 or 2 wind turbines, hydro systems and solar PV and fixing some of broken equipments.

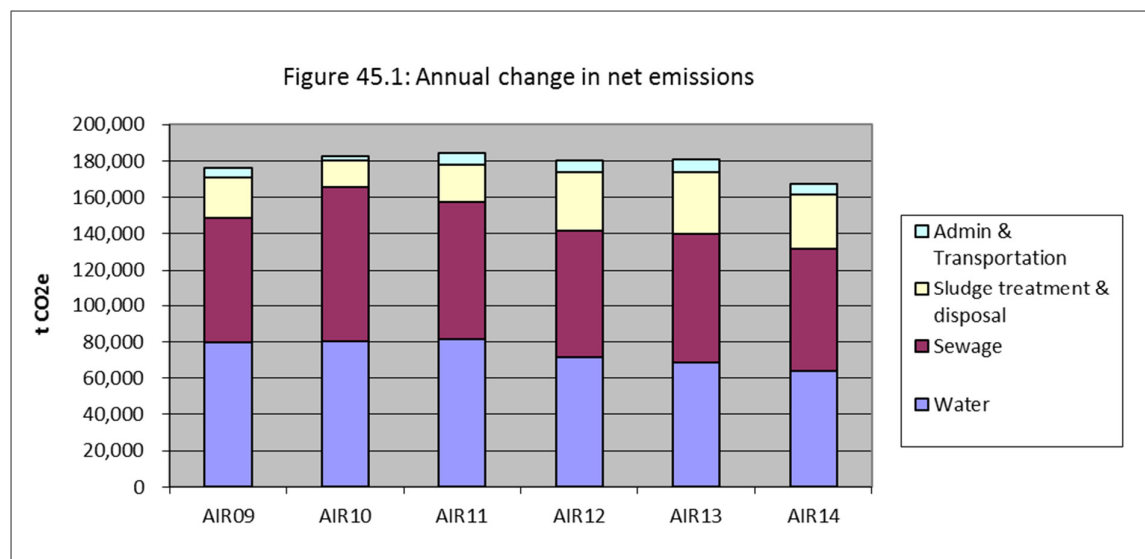
The Company does not currently have a figure for 1990 baseline however the current Climate Change Mitigation Strategy will assist in the reduction of carbon emissions over the PC13 & PC15 periods. To

purchase green tariff energy is not the only way to reduce emissions. We urge NI Water to come up with short and medium term emission reduction goals to achieve and measure against a long-term target; however the aforementioned strategy (subject to Regulatory funding) will address the concerns.

## 5.2 Annual operational GHG emissions

Total operational emissions (calculated according to Defra guidelines) were 156,905 tonnes of CO<sub>2</sub>e. Total operational emissions are reduced by 15% (or circa 27,000 tCO<sub>2</sub>e) since AIR13. In detail, whilst operational emissions from NI Water's activities are reduced by 13%, emissions from PPP have also decreased by 17%. We understand these are due to the mild weather throughout the year which led to a reduction of grid energy usage in NI Water's activities.

Figure 45.1 below shows the annual change of NI Water's total gross operating emissions. Considering the Company's confidence grades and changes in conversion factors, the change in emissions is within its accuracy limits.



NI Water explained that they assume all the outsourced activities such as its call centre, Echo, are included, e.g. in the electricity calculation. All other activities including septic tank and vehicle maintenance, which are non-appointed business, are also included as NI Water currently does not have system to clarify appointed/non appointed business. This understanding is consistent with other parts of AIR submission such as Table 41.

### Electricity

Circa 84% of total emissions is from scope 2, grid electricity used by the Company.

We observed a 1.4% decrease in total grid electricity consumption (Line 5) from AIR13 to AIR14. In detail, electricity consumption by NI Water is increased by 0.2% but this is offset by a 5.4% decrease in PPP usage. In terms of the emissions, the scope 2 emissions for AIR14 are reduced by 14% for NIW and 20% for PPP, totalling 16%. We believe that this is due to a reduction in conversion factor for electricity.

We also found that NI Water using an offset percentage for green tariff electricity consumption as a proportion of the renewable energy over total energy consumption. We asked the Company to query their suppliers to provide actual percentages of renewable electricity in grid electricity. Their suppliers explained that it is 100% renewable. In addition, however, NI Water receives Climate Levy exemptions using the green tariff. Our understanding is that the Company can not claim benefits twice, and the

offset percentage should be 0%. NI Water has corrected this for the final AIR14 submission however there should be particular care when compare the electricity and net operational emissions figures to previous years.

### ***Sludge treatment, recycling and disposal***

NI Water's gross emissions from Sludge have decreased by 4,444 tCO<sub>2</sub>e (13%) from AIR13. The Company explains that all sludge is disposed to a third party by PPP.

### ***Administration***

Emissions from administration are reduced by 230 tCO<sub>2</sub>e (7.5%) from AIR13. As previous years NI Water has not included emissions from SF<sub>6</sub>, PFC or HFC.

### ***Transportation***

During our audit, we found that NI Water had no mileage from business travel using employees' private vehicles and public transportation (scope 3) but these were included in Scope 1. We asked the Company to correct this. Therefore, emissions from transport in Line 11 looks decreased and Line 13 looks increased however this is not the case. Since AIR13, NI Water explained that emissions from transportation are split between water and wastewater on a 50:50 basis and between petrol and diesel on a 60:40 basis.

## **5.3 Annual operational GHG intensity ratio**

The Company has calculated its gross emissions/ML of water or sewage treated, using Table 10 Line 26 (for water) and Table 14 Line 7 (for wastewater) respectively. We found that whilst the gross emissions/ML of treated water and of sewage treated are similar to that reported in AIR13, except the operational emissions/ML of treated water distribution halved in PPP.

NI Water uses the Flow-to-full-treatment (FFT) figure and assumes that this includes the volume of wastewater returned (based on distribution input) and surface water. We and the Regulator believe that this surface water estimate should also include:

- road drainage (as NI Water highlights),
- groundwater infiltration,
- roof and other surface drainage to sewer,
- other surface water directly discharged to river, and
- water spilled through CSOs and storm-tanks.

NI Water does not use MCERT figures for Line 23 therefore FFT figures could produce a significantly different '*emissions/ML of sewage treated*' figure if better means of measurement or better estimates of the components were available.

We understand that the Company did not have enough time to investigate FFT figure any further; however, the road drainage estimate is made up from a number of coarse assumptions and is therefore considered to be of a low accuracy. We would recommend further consideration of how FFT should be measured in the future.

## 6. Assumptions and omissions

During our audit, the Company confirmed the assumptions made for AIR14:

- The volume of water in sludge has been calculated at 30% of wet tonnes to dry solids. This information was provided by its contractors. We confirm a ratio of 22% to 30% has been widely used in the industry, thus we confirm the approach is reasonable.
- NI Water has assumed a 60:40 split between petrol and diesel for fuel use and a 50:50 split between water and wastewater for transportation and admin.
- Other GHG gases such as PFC's, HFC's and SF6 are not included in AIR13. We believe emission from these gases would be immaterial.

## 7. Confidence grades

As electricity consumption contributes the most to the overall GHG emissions, overall confidence grades reflect the energy consumption confidence grades. Circa 84% of total emissions according to Defra guidance are from electricity consumption (scope 2), of which 98.36% (83.5% of the total emission) are based on half hourly metered data.

Electricity consumptions are directly linked to the cost and were also checked by their financial auditor. We believe that the electricity related emissions should therefore be reasonably accurate and we concur with the Company's assessment.

Scope 1 emissions are also linked to finance and we thoroughly checked the usage from both finance and consumption. As is common across the water industry in England and Wales, NI Water is confident in the reliability of data relating to its own activities (reported in blocks B1 and B2), but has less confidence in the information provided by its contractors in block B3. NI Water assigned CX for the emissions in this block this year. We believe that the unknown emissions are relatively immaterial and we concur with the Company's assessment.