

**Northern Ireland Water Ltd**  
Annual Information Return 2011  
To the  
Northern Ireland Authority for Utility Regulation



**Public Domain Version**

**Part 10 of 10 containing:**  
Energy consumption and greenhouse gas accounting -  
commentary for table 45

**Reporter's Submission**

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**Table 45 – Carbon Accounting****Commentary by REPORTER****1. Background**

This commentary provides details from our review of NI Water's Carbon Accounting assessment included in a new 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.
- The carbon accounting boundary includes all of NI Water's activities
- A strategy to reduce emissions needs to be in place in order to achieve the long term target
- Improving the accuracy of the Flow to Full Treatment figure needs to be considered in the future

**3. Audit Approach**

The audit consisted of an interview with the NI Water carbon accounting system owner 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.

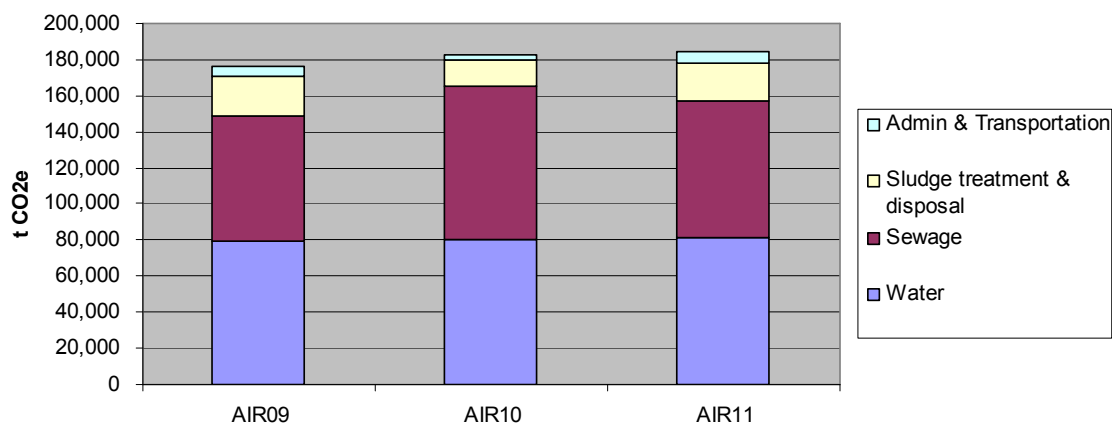
**4. Audit Findings****4.1 General**

We have reviewed the Company's statement on 'Carbon Accounting' in its Board Overview and have met with NI Water's energy team. NI Water has cooperated throughout the audit process and made available all relevant information to the Reporter.

**4.2 Annual operational GHG emissions**

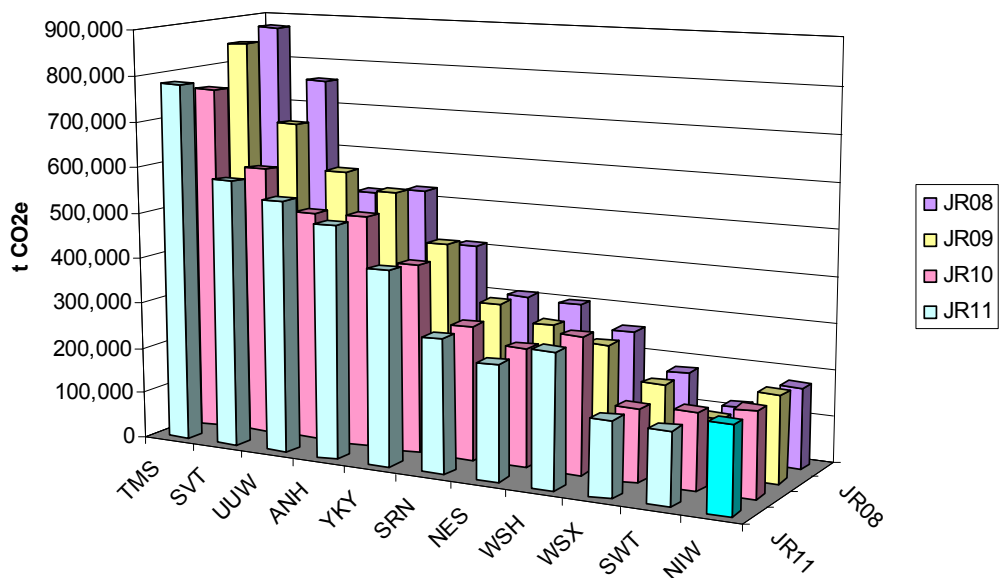
Total operating emissions (calculated according to Defra guidelines) was 184,604 tonnes of CO<sub>2</sub>e. Total operating emissions has decreased by 2% or 4,069 tCO<sub>2</sub>e from 2009/10. Figure 45.1 below shows the annual change of NI Water's total gross operating emissions. Considering the Company's confidence grades, the change in emissions is within its inaccuracy.

Figure 45.1: Annual change in gross emissions

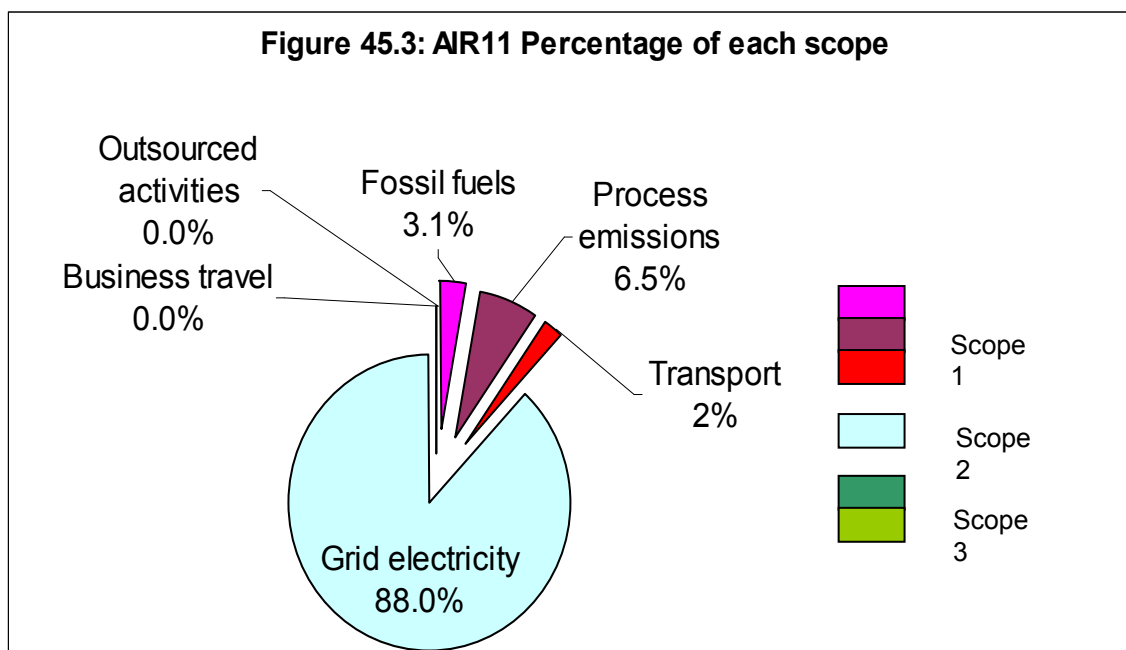


We compared the NI Water's gross emissions against E&W in Figure 45.2 below. Considering the size of companies and geography, NI Water is similar to Wessex Water, suggesting that NI Water is not a major outlier.

Figure 45.2: Comparisons with E&amp;W



The following Figure 45.3 shows that the majority of emissions are from scope 2, grid electricity used by the Company, which is around 88% of total emissions. Therefore the changes in the conversion factor and treatment of green energy will directly affect to the Company's total annual emissions.



We found that the majority of outsourcing activities, which shared circa 25% of last year's total emissions, are now moved into scopes 1 & 2, in line with the change in the Reporting guidance. NI Water states in their commentary that they do not include non appointed business. We queried the Company what has been excluded from their submission. They explained that outsourced activities such as call centre, Echo, and AON are excluded. All other activities including septic tank and vehicle maintenance, which are non appointed business, are included.

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

NI Water's gross emissions from Sludge have increased by 5,665 tCO<sub>2</sub>e (39%) from AIR10. This is not consistent with the sludge volumes reported in Table 15.

#### ***Administration***

Emissions from administration are reduced by 62 tCO<sub>2</sub>e (3%) from AIR10. As previous years NI Water has not included emissions from SF<sub>6</sub> and HFC.

#### ***Transportation***

In AIR11, 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 30:70 basis.

Emissions from air travel are derived from expenses claims. At the end of the year, this information is sorted by each travel mode, i.e. car or air travel, and the mileages of each trip are calculated via a website mileage calculator. The Company explained that they included all of NI Water's business related travel emissions.

We found that business travel (scope 3) has reduced by almost 100% from AIR10. We have checked the pre- and post audit versions of UKWIR CAW workbook and

found that inputs were inconsistent and not included in the post audit information. NI Water explained that were included as part of PPP assessment. We believe that this is the case; however the emissions from business travel are immaterial and we had not investigated this issue matter further.

### **Electricity (Scope 2)**

We observed the significant increase (circa 41%) in total grid electricity consumption from AIR10 to AIR11. The Company could not provide full information on the reasoning for this but confirmed that this could be due to transfer of capital projects to operational ownership and as a result of improved water and wastewater treatments processes, many of which are more energy intensive, in order to meet various environmental legislative drivers. We have not sought to verify this explanation further.

We also checked the percentage of scope 2 emissions in total gross emissions in England and Wales (table 45.1 below). The grid electricity emissions in England and Wales range from 70% to 87% of the total (with an average of 77%). Last year the England and Wales emissions from grid electricity also averaged circa 76%, while the equivalent NI Water was 62%. The percentage of electricity in total emissions in England and Wales is relatively stable whilst NI Water's value has changed significantly. We believe this is a result of NI Water capturing methodology still maturing but would expect the data to become more stable once further improvements are made.

**Table 45.1 Percentage of electricity (scope 2) emissions in total figure**

	NIW	ANH	WSH	NES	SVT	SRN	SWT	TMS	UUW	WSX	YKY
JR11	88	76	84	86	71	75	87	70	70	72	76
JR10	64	74	85	80	70	76	84	71	76	74	75

### **4.3 Annual operational GHG intensity ratio**

The Company has calculated its gross emissions/MI of water or sewage treated, using Table 10 Line 26 (for water) and Table 14 Line 7 (for wastewater) respectively. We found that the gross emissions/MI of treated water is similar to that reported in AIR10.

While we were checking the UKWIR CAW workbook provided by the Company, we found that Table 14 Line 7 does not include trade effluent (Table 14 Line 6). We have therefore recalculated Line 23 believe this line should be reported as follows:

$$855.35 \text{ kg/MI} \times 112,424 \text{ MI} / (328.19 \text{ MI/d} \times 365) = 803 \text{ kg CO}_2\text{e/MI}$$

We note that the gross emission/MI of treated sewage has decreased by circa 4% compared to AIR10.

We also note that because of the same error in Table 14 Line 7, the figure in Table 45 Line 22 is also recalculated as follows:

$$544.55 \text{ kg/MI} \times 176,591 \text{ MI} / (503.99 \text{ MI/d} \times 365) = 523 \text{ kg CO}_2\text{e/MI}$$

We assume that Flow to full treatment (FFT) figures include volume of wastewater returned (based on distribution inputs) and surface water. We and the Regulator believe that this surface water estimate should include road drainage (as NI Water highlighted) but also:

- groundwater infiltration,
- roof and other surface drainage to sewer,
- other surface water directly discharged to river, and
- water spilled through CSOs and storm-tanks.

Since we consulted with the Regulator and the Company, we had checked the England & Wales FFT figures where the companies would use MCERT figures for Line 23. We have checked 5 of 10 England and Wales WaSCs and confirm they use MCERT figures. The following table shows that the percentage of surface water in total FFT figures. Using measured figures in England and Wales, the percentages are so varied. NI Water's figure is not measured in this way but it is within the range.

**Table 45.2 Percentage of surface water in FFT calculation**

	NIW	ANH	WSH	NES	SVT	SRN	SWT	TMS	UUW	WSX	YKY
% Surface water	35	44	57	44	42	35	53	22	60	37	48

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 assumptions and therefore considered to be of a low accuracy. We would recommend further consideration of how FFT should be measured in the future.

We also believe that the units for block D should be kg CO<sub>2</sub>e/MI or NI Water should divide the reported figures by 1,000.

## 5. Company methodology

### 5.1 Strategy

During the audit, we discussed the Company's carbon reduction commitment. The Company explained that NI Water does not presently have a specific strategy akin to the Strategic Direction Statements for water companies in England and Wales. However they do acknowledge the targets set by the Government and their long term target is to reduce carbon emissions by 80% by 2050 (against a 1990 baseline).

To assist in achieving this, the Company has set targets for the renewable energy use (details described in the Company's commentary) and now self generate their own renewable electricity and also purchase electricity derived from renewable sources.

The Company does not currently have a figure for 1990 baseline or any formalised strategy to reduce emissions. To purchase green tariff energy is not the only way to

reduce emissions. We urge NI Water to come up with short and medium terms of goals to achieve a long-term target.

## **5.2 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.

## **5.3 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 for NI Water only and PPP, then added to NI Water total figures.
- The Company explained that emissions related to outsourced activities are not included but non core business of NI Water activities are all 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.
- Other GHG emissions and their carbon equivalents are not included as the Company does not presently record this information.

## **5.4 Assumptions & Omissions**

During our audit, the Company confirmed the assumptions made for AIR11:

- 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.
- Other GHG gases such as PFC's, HFC's and SF6 are not included in AIR11. We believe emission from these gases would be immaterial.

## **5.5 Validation of the inputs**

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

We also checked that figures from other tables such as Tables 10 and 14 are consistent; however a figure from Table 14 is incorrect (see section 4.3).

Having 3 UKWIR workbooks (NI Water only, PPP and total) to produce Table 45 are not efficient and could lead to possible mistakes. Considering emissions from outsourced activities, except PPP are so small, we suggest the Company consult with the Regulator to manage the presentation of table 45.

## **5.6 Conversion factors**

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

The conversion factor for grid electricity increased from 0.544 to 0.5416 kgCO<sub>2</sub>/kwh. This has been correctly applied for the calculations.

## **6. Confidence Grade**

As electricity consumption contributes the most to the overall GHG emissions, overall confidence grades reflect the energy consumption confidence grades. 88% of total emissions according to Defra guidance are from electricity consumption (scope 2), of which 98.2% (86% of the total emission) are based on half hourly metered data. Electricity consumptions are directly linked to the cost and are also check. 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 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. However, we believe that the unknown emissions are relatively immaterial and concur with the Company's assessment.

**Date:** 29 July 2011  
**Prepared by:** HMS