

Northern Ireland Water Ltd

Annual Information Return 2010

To the

Northern Ireland Authority for Utility Regulation



Public Domain Version

Part 4 of 8 containing:

Sewage explanatory factors - commentaries for tables 17a-g

Reporter's Submission

By

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The Halcrow logo, featuring a stylized blue 'H' followed by the word 'alcrow' in a blue sans-serif font.

Table 17a – Sewerage Sub-Area Explanatory Factors**Commentary by REPORTER****1. Background**

This table collects information on companies' sewerage services (both costs and explanatory factors) to enable NIAUR to update their sewerage services models.

2. Key Findings

- NI Water has still not been able to disaggregate the data in this table into sub-areas, although work is taking place to be able to allow this to be done.

3. Audit Approach

The audit consisted of an interview with the five line owners to discuss the methodology and data used to generate this table. Cross-checks were made against the various wastewater tables.

4. Audit Findings**4.1 General**

NI Water has still not been able to disaggregate the data in this table into sub-areas, although work is taking place to be able to allow this to be done.

4.2 Sewerage Sub-Areas General

Total non-resident population equivalent has been calculated based on the Northern Ireland Tourist Board's statistics. This has then been subtracted from the total connected population in table 13 line 10 to give the total resident population.

This resident population estimate differs from the resident population that has been used for tables 17b-f, which has been derived using a different methodology.

4.3 Sewerage Data

The length of sewer is only the length of main sewers. NI Water is also responsible for most lateral sewers, unlike other water companies in England and Wales. However as most of these lateral sewers are not mapped, their length is not known. A project is being undertaken to estimate the length of public laterals, however this has not been completed prior to AIR10.

4.4 Costs

It should be noted that the financial data contained in this table has simply been transposed from appropriate lines in Table 22. No allocations have been made across different sewerage sub areas for AIR10. The Company advised that it may be able to report data across sub areas for AIR11. Comment on the basis of the costs in the total column is provided in our commentary to table 22.

5. Company Methodology

5.1 Sewerage Sub-Areas General

Resident and non-resident population (lines 1 and 2)

The estimate of non-resident population is based on NI Tourist Board statistics. The Company provided a detailed explanation of the approach adopted to provide this estimate during the audit which is also replicated in their commentary for Table 17a. We have followed the methodology laid out by the Company in their commentaries and believe the approach taken is reasonable. We note that the Company has not applied the 'two thirds occupancy rule for four months of the year rule' in deriving the number visitor nights.

During the audit the Company explained that their approach for reporting the population in this line has changed from that reported previously. In previous returns NI Water has used an estimated annual number of non-residents visitor nights for NI using a NI Tourist Board report. However the Company advised that the NI Tourist Board has published actual number of non-resident visitor nights for part of the year and the Company have used this estimate to project an annual figure.

We noted a significant decline in the non resident population reported but it is difficult to quantify the impact of the change in methodology. The Company do however present third party evidence which suggests that tourism in NI has been particularly affected by the economic downturn.

The resident population reported in line 1 has been calculated based on the following formula:

- Resident population = Table 13 line 10 (total connected population) – non-resident population

In terms of overall population reported there has been a small increase of 2.9%.

Volume of sewage collected (line 3)

The total volume of sewage collected is taken from Table 14 line 7.

Total connected properties (line 4)

The number of total connected properties is calculated based on the total number of connected properties (household and non-households) and is inclusive of voids. We have checked the Company's calculation and confirm their approach is consistent to the data presented in Table 13.

The Company have made an adjustment to account for site meters and this is discussed in more fully in our commentary to Table 13 (and Table 7).

5.2 Sewerage Data

The total length of sewer is measured in GIS at the end of the reporting period and only includes main sewers. It does not include laterals, which NI Water is responsible for, but which are generally not mapped. Mapped public laterals are not included.

5.3 Costs

Cost data has been taken from table 22. Methodologies are described in our commentary to table 22.

6. Assumptions

Unless stated within the Reporter or Company commentaries no other material assumptions have been made specifically for this table. There are a number of underlying assumptions in the information that has been brought in from other tables (e.g. population, wastewater volume) but these are discussed in the commentaries for those tables.

7. Confidence Grades

The Company has assigned a confidence grade of C4 to the estimate of resident population. This is consistent with table 13 line 10 and we believe it is appropriate.

The Company initially assigned a confidence grade of C3 to the estimate of non-resident population. Given that the tourist forecast is based on various surveys and other statistics it would be expected to have some uncertainty inherent in it. Therefore we believe that the grade assigned is appropriate.

The Company has assigned a confidence grade of B3 to the total length of the sewer. This is consistent with Table 16 and we believe it is appropriate.

No confidence grades are required for financial data.

8. Consistency Checks

We confirm the following:

- Volume of sewage collected in Table 17a (line 3) equals the volume of sewage collected in Table 14 (line 7).
- Total length of sewer in Table 17a (line 6) equals the total length of sewer in Table 16 (line 14).
- Direct costs in Table 17a (line 7, column 9) equals direct costs in Table 22 (line 9, column 1).
- Power costs in Table 17a (line 8, column 9) equals power costs in Table 22 (line 2, column 1).
- Service charges in Table 17a (line 9, column 9) equals service charges in Table 22 (line 7, column 1).
- General and support costs in Table 17a (line 10, column 9) equals general and support costs in Table 22 (line 10, column 1).
- Functional expenditure in Table 17a (line 11, column 9) equals functional expenditure in Table 22 (line 11, column 1).

Date: 30 July 2010

Prepared by: [x]

Table 17b – Sewage Treatment Works – Large Works Information Database**Commentary by REPORTER****1. Background**

The purpose of this table is to allow NIAUR to update the econometric modelling of large sewage treatment works (STWs).

2. Key Findings

- No cost data has been reported for the PPP only table;
- The company has identified 18 large works, each of which has its own location code to enable the identification of related costs;
- Only 1 power meter exists at each site. Where a treatment works provides both sewerage and sludge treatment facilities the costs are split on the basis of the judgement of operational staff;
- The Company has changed the approach to reporting general and support costs as compared to AIR09. This will explain some of the variation compared to data submitted last year.

3. Audit Approach

The responsibility for completing table 17b is shared among various line owners. We audited each data owner. The audits consisted of interviews to discuss methodology, and cross check the results against the original sources of data.

4. Audit Findings**4.1 Works Information**

Most of the data for this table is based on the asset performance spreadsheet which we have reviewed in detail for Table 15. Discharge consent information has then been applied by the Environmental Regulation team to filter the outputs for the requirements of Table 17b.

The general data on all STWs in the spreadsheet is filtered to obtain those in the required size category. Seventeen works have been identified, however three of those works (Ballynacor, Bullay's Hill and Armagh) are now operated under the PPP concession and have been removed as required for the reporting, leaving a total of fourteen. We confirm that this matches the figure in Table 17c Line 6.

All works are significantly above the threshold as defined by a pe > 25,000. The nearest to the threshold is Larne STW at 28,228, still comfortably above the limit. An analysis of works in Band 5 has also been carried out to determine if any of these have the potential to be included in Band 6. Four works have a pe > 20,000 but only one (Enniskillen) is

greater than 24,000. The pe's are those derived by the asset performance team and include domestic and trade sources effluent, but exclude tourist pe's as required by the reporting guidelines.

Consent information is entered into the spreadsheet by the environmental regulation team using the appropriate water order consents from the NIEA. Works treatment classification is as defined by NIAUR and is allocated to each works in the spreadsheet by the asset performance team.

All of the works have both BOD and SS consents and in our opinion no single parameter is so tight that it constrains the other parameter. The tightest BOD consents are at Lisburn and Dunmurry (10 mg/l each) but these are both accompanied by SS consents of 15 mg/l and 25 mg/l respectively, providing a tight but balanced consent.

All ammonia consents are accompanied by BOD and SS consents. The tightest (lowest) ammonia consent of 2.5 mg/l is at Dunmurry STW but this is accompanied by a BOD/SS consent of 10/25 which means that treatment to achieve the ammonia consent will be comparable to that required to meet the BOD and SS consent limits. The next highest ammonia consent is 3 mg/l at Ballymena STW, but this is accompanied by a BOD/SS consent of 15/25 giving a similar balanced treatment requirement.

4.2 Costs NIW

The company has identified 18 large works which meet the criteria to be reported in Band 6. Each of these works has its own location code. This enables the company to extract costs direct from the general ledger system.

Line 9 - Direct Costs

Direct costs include Power (521X), Contractors (531X), Materials (541X), Chemicals (548X) and Direct Labour (611X and 612X – Wages Overheads). A single meter measures power at each site and it is not possible to directly separate power costs for sewage treatment from power costs for sludge processing. The field managers have estimated the split of power use on a site-by-site basis and the estimated power costs for sludge processing are not included. The cost of terminal pumping is also not included in the direct costs, except for the three sites identified in the next paragraph.

There is currently one meter at Duncrue Street, which measures power to both the Belfast STW and the incinerator. The estimated power costs of the incinerator have been excluded from line 10. Where possible, terminal pumping station costs are excluded from line 10. Three STWs (Ballymena, Newry and Omagh) have their terminal pumping stations on site, and it is therefore not possible to separate these costs from line 10.

The Company has changed the approach to reporting general and support costs as compared to the method used in AIR09. This is responsible for some of the variation

compared to AIR09. Further information on the change in method for reporting general and support costs is provided in our commentary to table 22.

Line 10 – Power Costs

Power costs are measured at each site by a single meter. Therefore the costs by site can be extracted directly from the oracle system. In order to split costs between sewerage and sludge treatment the company relies on operational judgement by the field managers on a site by site basis, based on their knowledge of the processes and likely power consumption.

There is currently a single meter at Duncrue Street, which measures power to both the Belfast STW and the incinerator as noted above. For AIR09, the power costs were split 60% to the STW and 40% to the incinerator. For AIR10 the company has continued to use the 60%:40% split. NIWS intends to install a separate meter on the incinerator so that these costs can be more accurately captured. For AIR11 NIWS expects to be able to report these costs in more detail.

Line 11 – Service Charges

NI Water does not currently pay any service charges.

Line 12 – General and Support Costs

General and support costs include Costed Wages Charge (611X) and Wages Overheads (612X). These are allocated to each individual STW in proportion to the direct costs. As the company advises in its commentary the total value from table 22 line 10 was used as the starting point to report this data. This was then split across all WWTWs based on direct labour costs at the works as a portion of all direct labour costs at all works. The data for direct labour costs was extracted from the company general ledger system which records operational costs on a timesheet basis.

Data for qualifying works was then reported in the relevant cells for this table. We believe the approach is appropriate for the purposes of reporting the data.

It should be noted that the overall quantum of general and support costs will have adjusted compared to last year due to an alternative method used compared to AIR09. The result of this change has been to increased general and support costs for the report year. Further comment on the method used to report general and support costs is provided in our commentary to table 22.

Line 13 – Functional Expenditure

Functional expenditure is calculated as the sum of line 9 and 12.

Line 14 – Estimated Terminal Pumping Costs

Terminal pumping station costs only include power costs, as these are the only costs that are able to be separately identified. For three STWs, identified earlier, the terminal pumping stations are on site and therefore included in the site power costs.

Line 15 – Estimated Sludge Costs

Sludge treatment costs are generally captured separately in the financial system, with the exception of power costs for sludge treatment, which are estimated as described in the previous paragraphs. The sludge treatment costs include any on-site treatment. Most of Northern Ireland's sludge is processed centrally, typically by incineration. Any off-site processing costs are included in table 17g.

PPP Only

No cost data has been reported for the PPP only table.

6. Assumptions

Assumptions have been made by the field managers regarding the split of power usage to sewage treatment and sludge treatment, as discussed above. This is a reasonable approach in the absence of more appropriate data.

7. Confidence Grades

Confidence grades of C5 have been applied to the population equivalent data. This is consistent with the grades applied to similar data in Table 15 Lines 6 and 7 by the asset performance team and given the degree of estimation applied to the data we support these grades.

All other grades for the consent standards (Lines 3 – 7) and treatment classification (Line 8) are A1. This is factual well documented information and we support this grade for these lines.

No confidence grades are required for financial data.

8. Consistency Checks

The number of large works (NIW only) is consistent with that reported in Table 17c

The direct cost in this table is consistent with the total direct costs in Table 17f for large sewage treatment works.

Date: 30 July 2010

Prepared by: [x]

Table 17c – Sewage Treatment Works - Numbers

Commentary by REPORTER

1. Background

The purpose of this table is to classify each company's sewage treatment works by size and by method of treatment.

2. Key Findings

- There are no significant issues to report on for this table.

3. Audit Approach

The audit consisted of an interview with the line owners to discuss the methodology and review the master spreadsheet that has been used as an input to this table.

4. Audit Findings

The basis for the information to complete this table is the asset performance master spreadsheet, managed by the asset performance team in NIW. The construction and content of this spreadsheet is described in detail in the commentary for Table 15.

The total number of STWs in Table 17c (NIW plus PPP) is 1064. The comparable figure in Table 15 Line 8 is 1046. The difference of 18 is accounted for by the inclusion of 5 screened and 13 unscreened outfalls in the figures for Table 17c (NIW only), not included in Table 15 as required by the reporting guidelines.

The general data on all STWs in the Company's spreadsheet is filtered to obtain those in the required size category. These are as defined by the regulator as follows:

Bandings	Loading kgBOD/day	PE
Size band 1	<15	0 – 250
Size band 2	15 – 30	250 – 500
Size band 3	30 – 120	500 – 2000
Size band 4	120 – 600	2000 – 10000
Size band 5	600 – 1500	10000 – 25000
Size band 6	1500 +	25000 +

The population equivalent's are those derived by the asset performance team and include domestic and trade sources effluent, but exclude tourist population equivalent's as required by the reporting guidelines.

Consent information is entered into the spreadsheet by the environmental regulation team using the appropriate water order consents from the NIEA.

Works treatment classification is as defined by NIAUR and is allocated to each works in the spreadsheet by the asset performance team.

PPP information

There are six works operated under PPP contract. Five works are operated under the Omega contract by Glen Water. These are North Down, Armagh, Richill, Ballyrickard and Ballynacor. The sixth works is Kinnegar, operated by Coastal Clearwater.

Richill is the only small works in size band 4, and also has an ammonia consent of 2 mg/l. It therefore appears in Line 9 of the Table 17c PPP table.

All the other STWs are classified as large works in Line 6 of Table 17c PPP table.

6. Assumptions

There are no other assumptions made by the Company in the compilation of this table.

7. Confidence Grades

No confidence grades are required for this table.

8. Consistency Checks

- The total number of STWs in Table 17c (NIW plus PPP) is 1064. The comparable figure in Table 15 Line 8 is 1046. The difference of 18 is accounted for by the inclusion of 5 screened and 13 unscreened outfalls in the figures for Table 17c (NIW only), not included in Table 15 as required by the reporting guidelines.

Date: 30 July 2010

Prepared by: [x]

Table 17d – Sewage Treatment Works - Loads

Commentary by REPORTER

1. Background

The purpose of this table is to collect information on the sewage loads received by the various types and sizes of treatment works in each company. The data collected is used to inform NIAUR's assessment of the Company relative operating efficiency.

2. Key Findings

- There are no significant issues to report on for this table.

3. Audit Approach

The audit consisted of an interview with the line owners to discuss the methodology and review the master spreadsheet that has been used as an input to this table.

4. Audit Findings

Most of the data for this table is based on the asset performance spreadsheet which we have reviewed in detail for Table 15. Discharge consent information has then been applied by the environmental regulation team.

Loads at each NIW works have been calculated from the associated population equivalents using the given factor of 60g BOD per person per day.

PPP works loadings are calculated from more accurate operational data. Kinnegar STW is sampled daily for influent BOD by a 24 hour composite sample. Flow to full treatment is also measured and the loading can then be calculated with good accuracy. The other five PPP works are sampled weekly and the load calculated in a similar manner.

Loads handled by PPP operated works have expanded significantly since AIR09 as shown below.

	AIR09 kgBOD/day	AIR10 kgBOD/day
PPP load	9127	22206
Total load	136336	134346
% PPP load	6.7%	16.5%

This is due to an expansion in PPP works numbers from two sites in size band 6 for AIR09 up to 5 sites in size band 6 and one site in size band 4 for AIR10.

A corresponding reduction in loads is therefore seen in the NIW only Table 17d, notably in the size band 6 category, where loads have fallen from 86,939 kgBOD/day for AIR09 down to 73,429 kgBOD/day for AIR10.

Apart from this load transfer between NI Water and PPP sites, the loads in other size bands have remained broadly constant between AIR09 and AIR10

5. Company Methodology

The basis for the information to complete this table is the asset performance master spreadsheet, managed by the asset performance team in NIW. The construction and content of this spreadsheet is described in detail in the commentary for Table 15.

The general data on all STWs in the spreadsheet is filtered to obtain those in the required size category. These are as defined by the regulator as follows:

Banding	Loading kgBOD/day	PE
Size band 1	<15	0 – 250
Size band 2	15 – 30	250 – 500
Size band 3	30 – 120	500 – 2000
Size band 4	120 – 600	2000 – 10000
Size band 5	600 – 1500	10000 – 25000
Size band 6	1500 +	25000 +

The population equivalent's are those derived by the asset performance team and include domestic and trade sources effluent, but exclude tourist population equivalents as required by the reporting guidelines.

Consent information is entered into the spreadsheet by the environmental regulation team using the appropriate water order consents from the NIEA.

Works treatment classification is as defined by NIAUR and is allocated to each works in the spreadsheet by the asset performance team.

Works loadings are calculated for each treatment works based on 60g BOD per person per day and then summed by the spreadsheet for each size band as defined above.

PPP works loading data is obtained from the operators and is calculated by direct measurement of influent BOD concentration and works flow measurement, giving a more accurate assessment of works loading.

6. Assumptions

A loading rate of 60g/c/day has been assumed in accordance with the NIAUR guidance.

Assumptions for background data, such as population are documented in our commentary to table 17c.

7. Confidence Grades

All confidence grades for NIW information are indicated as C3. These are consistent with the grades for the equivalent information given in Table 15 and reflect the degree of estimation of population equivalents used to develop the information.

Confidence grades for the equivalent PPP information are higher, at B3 throughout. This reflects the greater degree of direct and frequent measurement of loads used at these sites to obtain the reported data.

We support the confidence grades given for both sets of data.

Date: 30 July 2010

Prepared by: [x]

Table 17f – Sewage Treatment Works - Costs**Commentary by REPORTER****1. Background**

The purpose of this table is to collect background information on the costs of different types and sizes of sewage treatment works. The data collected is used to inform NIAUR's assessment of the company's relative operating efficiency.

2. Key Findings

- Costs have been assigned to individual STWs of size band 1 to 4 based on population equivalents. In the absence of better data we believe this approach is appropriate.

3. Audit Approach

The audit consisted of an interview with the table owner to discuss the methodology and review the source data extracted from the financial system.

4. Audit Findings**4.1 NI Water Only**

Data is extracted from the company general ledger system. Not all data exists at the level of detail required to populate this table. Where this is the case apportionments have been made based on management judgement and analysis. We discuss these apportionments in more detail below.

Direct costs include Power (521X), Contractors (531X), Materials (541X), Chemicals (548X) and Direct Labour (611X and 612X – Wages Overheads).

The Company advised that its ability to report data against each of the lines in this table will be greatly improved with the incorporation of the business improvement programme.

The Company provided appropriate supporting information consisting of reports extracted from the company Oracle system.

NIW has circa 1,100 individual treatment works related to sewerage and sewerage and sludge treatment.

Lines 1-4 – Direct Costs of Sewerage Treatment Works in Bands

We note that for AIR09 the Company was not able to report data separately for lines 1-4. However, for AIR10 the Company has been able to separate this information. The approach the company has used this year relies on a review of the location code. Large

works are flagged with a 'W' location code and all direct costs associated to single WWTW's can be identified. Smaller works are identified with a 'X' location code. The X Code is used to consolidate costs for a number of smaller works in a specific geographical area. In total circa 1,100 works exist, which are coded to 100 individual codes. WWTWs in bands 5 and 6 can be identified separately from the 'W' codes. In order to report data in bands 1-4 the company has used data on population equivalents for the group of works coded under the 'X' codes in order to split the costs. We believe this approach is acceptable in the absence of more direct information and is likely to result in data that is reflective of the actual position.

We note that operational staff are required to complete timesheets and hence allocation of their time to cost centres should be straightforward. The company advised that it had identified £50k of incompletely coded costs. These costs have been allocated across all six size bands.

In reporting the direct costs, the company extracted data from the general ledger related specifically to direct costs. As a result no apportionment was required to split direct and general and support costs.

Each site has only one power meter. In order to assess the power cost element specific to sewerage where a treatment work provides both sewage treatment and sludge treatment the company has used the assessment of operational staff. In the absence of more detailed information we believe this approach is appropriate.

A further apportionment was required for data related to the Belfast WWTW's and incinerator. This is because these operations share a common meter. An operational judgement of a 60:40 split was used in this instance to isolate power costs related to sewage treatment.

Lines 5-6 – Direct Costs of Sewerage Treatment Works in Bands

Costs for works within size bands 5-6 are individually coded within the Company general ledger system. As a result these costs were extracted directly from the ledger system. A judgement on power costs is used as described above to split power costs where the works provides more than just sewage treatment services.

The remainder of the allocation is as described above.

Line 7 – Total Direct Costs Sewage Treatment Works

This is a summation of data in lines 1-6. We note the total is consistent with Table 22, column 2 line 9.

Line 8 – Sludge Treatment and Disposal Costs

The Company has not reported costs under this line.

Line 9 – Sewage Treatment: Direct Costs

This is the same value as the total direct costs for all sewerage treatment works as reported in line 7 above. We note the total is consistent with Table 22, column 2 line 9.

The data contained in this line seems to be a duplicate of the data in line 7.

Line 10 – Sewage Treatment: Power Costs

Power costs exclude power costs for sludge treatment and terminal pumping (where it has been possible to separate terminal pumping power costs).

Although power costs can be identified by individual site, due to time constraints, the company has simply taken the total power cost value and pro-rated this on the basis of direct costs. The company appreciates that the process could be refined and actual costs could be reported. It advised that it will address this for AIR11. In the meantime the reported power costs should be taken as broadly reflective of the actual position.

Line 11 – Service Charges

NI Water does not currently pay any service charges.

Line 12 – Sewerage Treatment – General and Support

The Company has apportioned the total general and support costs on the basis of direct costs. We note the total here is consistent with Table 22 line 10 column 2. In the absence of direct data we believe this method is appropriate and will provide data that is broadly reflective of the actual position. Further comment on general and support costs is provided in our commentary to Table 22.

4.2 PPP Only Costs

Column 2 Treatment Category – Activated Sludge

These costs are related to the Kinnegar WWTW contract.

Line 10 – Power Costs

The Company is unable to report power costs for Kinnegar. This is because these costs are internal to Kinnegar and therefore form part of the agreed charge. Kinnegar has not identified these separately to NI Water.

Line 11 – Service Charges

The company has reported a total of [x] related to service charges for Kinnegar.

Line 12 – General and Support Costs

The total support costs incurred by NI Water have been recorded in the general ledger. The company then splits these costs across the different contracts. The value here relates to the Kinnegar contract. We have commented on the method in our commentary to Table 22. The method relies on an assessment of time costs spent on managing the Kinnegar contract. In addition, consulting spend for the contract has been added to determine total costs incurred.

Columns 4 and 5: Treatment Category – A1 and A2

These costs relate to the wastewater sites on the Omega contract.

Line 9 – Direct Costs

The only direct costs reported are power costs.

Line 10 – Power Costs

These costs are extracted from the company ledger system. All large sites have a separate meter and hence it is possible to report such costs individually. It should be noted however that where a site has both sewerage and sludge facilities a judgement related to the split of costs between the two is taken.

Line 11 – Service Charges

The company has not reported any service charges.

Line 12 – General and Support Costs

The total support costs incurred by NI Water have been recorded in the general ledger. These are based on the time costs of staff working on the contracts and an assessment of the portion of their time spent on each type of contract. In addition, consulting spend for each contract has been added to determine total costs incurred for each site. The total general and support costs for the management of the sites is calculated at [x]. In total NI Water has eight sites, five of which are sewerage. The value reported here relates to the five sites that are sewerage sites. It is calculated as 5/8 of the total value. The resulting [x] is then further split with 1 site reported as an A1 site and 4 sites reported as A2.

5. Consistency Checks

- Total direct costs in line 7 (column 11) equal total direct costs for sewage treatment in Table 22, line 9 (column 2).
- Power costs in line 10 (column 11) equal power costs for sewage treatment in Table 22, line 2 (column 2).

- There is a variation of [x] in the total Service charges in line 11 (column 11) and service charges for sewage treatment in Table 22, line 7 (column 2).
- General and support costs in line 12 (column 11) equal general and support expenditure for sewage treatment in Table 22, line 10 (column 2).
- Total direct costs for works in size band 6 in line 6 (column 11) equal the sum of direct costs in Table 17b.

Date: 30 July 2010

Prepared by: [x]

Table 17g – Sludge Treatment and Disposal Information**Commentary by REPORTER****1. Background**

The purpose of this table is to collect information about sewage sludge disposal routes, and the costs of sludge treatment and disposal associated with each of these routes.

This information is used to update the modelling of sewerage services to enable the assessment of comparative operating efficiency of Company's sewerage services.

2. Key Findings

- The costing data is extracted from the Company general ledger system. Some assumptions are required to apportion costs between categories. We believe these are appropriate in the absence of more relevant data.

3. Audit Approach

The audit consisted of an interview with the table owners to discuss the methodology and review the source data extracted from the financial system.

4. Audit Findings**4.1 Resident Population and sludge volume**

The sludge treatment and disposal system is a centralised system with the intention that when the newly constructed PPP incinerator is on line all sludge will be incinerated. However, for this Report Year only 45% was disposed of through incineration the remainder was disposed of to farmland, reclamation, and coppicing.

Because the sludge system is centralised, sludge from a given STW is not necessarily disposed of by a particular route - it may be disposed of by several different routes, which may change throughout the year, and it is not possible to trace the destination of sludge from a given plant to a given route. For this reason, it is not possible to allocate the resident population from each STW to a particular sludge route, so instead the population has been allocated in proportion to the weight of sludge sent to each route.

In line with the Reporting Requirements resident population has been reported in line 1, The amount of sewage sludge produced, and reported in line 2 will be based on the greater 'connected population' so there is a disjoint between these two figures but they have been reported correctly.

Disposal to farmland (conventional) was decommissioned last year and none has been reported this year.

Disposal to farmland (advanced) commenced last year and accounts for 42% of the total disposed of in the year.

Disposal to land reclamation has continued from last year as a temporary measure while the disposal route to the incinerator is unavailable.

Disposal to “other” consists of disposal to forestry and coppicing.

We can confirm that disposal of grit and screenings has been included in the figures for disposal to landfill.

NI Water does not have any sludge digestion, so there will be no gas production to be accounted for.

NI Water does not have any significant sludge storage facilities because fresher sludge is easier to incinerate, so in a given year, the assumption that the amount of sludge treated and disposed are equal is valid.

4.2 Costs

Line 3 – Sludge Treatment Direct Costs

Incineration

The Company advises that these costs can be separately identified as all are coded to activity code 636 on its general ledger. Within this direct costs can be identified from each cost centre related to this activity code.

Power costs at the Belfast WWTW's had to be estimated as only one meter exists at the site and the site provides waste water treatment and incineration. The Company used a 60:40 split in order to estimate these costs.

Other

These costs relate to sludge treatment and waste water treatment works. These costs can be identified separately from activity code 621. The Company has extracted the relevant direct costs for this line from the general ledger.

Where a treatment works provides both sewage and sludge treatment it is necessary to apportion the power costs as only one meter exists per site. These apportionments are based on professional judgement of the field managers responsible for each works. An element of judgement is therefore involved. However in the absence of more accurate information we believe this is an appropriate method to report these costs.

Line 4 – Sludge Disposal Direct Costs

Sludge disposal includes 'Farmland Advance', 'Incineration', 'Landfill', 'Land Reclamation' and 'Other'. Data for each of these activities was taken from the accounting system. The activity codes are 630 through to 639 and are identified in our

commentary to Table 22. Data is extracted directly from the oracle system in order to report these costs.

Line 5 – Sludge Treatment and Disposal Direct Costs

This is a calculated line.

Line 6 – Sludge Treatment and Disposal Direct Costs

Power costs are apportioned on the basis discussed above under line 4, sludge disposal, direct costs.

Line 8 – Sludge Treatment and Disposal, General and Support Expenditure

The data is simply extracted from Table 22, NI Water only column 3 line 10 and apportioned across this table on the basis of direct labour costs (59% incineration) with the remainder going to other.

5. Company Methodology

Resident population served is assigned to each disposal route in proportion to the weight of sludge produced. The total resident population is taken from Table 13 line 10, less the non-resident population. The figure is consistent with the value given in Table 17a line 1.

The amount of sludge produced is calculated based on sewage sludge disposal data produced by Area Sludge Officers. The data originates from reconciled dockets upon which the contractors are paid.

The Company methodology to calculate thousand tonnes of dry solids uses an annual average % to convert wet tonnes to dry solids. This is an average of all their sludge processing plants. The overall average used for this years return is 23.78% the range for the individual works varies from 20.25% to 27.71%. Although this will give a reasonable estimation of the ttlds by this method, the overall accuracy could be improved by applying the annual average for each works to the production volume for each works instead. This information is known to the Company and it would be a relatively easy improvement to undertake this alternative calculation method. The Company should consider this approach for AIR11.

Some of the sludge from the incinerator has been transferred to other locations and not incinerated. This has been accounted for within the spreadsheet.

The sludge resulting from septic tanks is included in the total as the sludge volumes are calculated on tonnes leaving the facilities not effluent arriving. In previous years an adjustment has been made for septic tanks to remove this volume but this has been reviewed following the audit and the volume has been left in.

The cost data has been downloaded from the financial system for collation and input into this table. The financial system coding generally allows the costs to be captured for each of the categories in this table.

6. Assumptions

It is assumed that the resident population served is proportional to the amount of sewage sludge produced.

A dry solids content of 30% has been assumed for grit and screenings.

7. Confidence Grades

No confidence grades are required for data in the financial lines.

8. Consistency Checks

- The amount of sewage sludge disposed of in Table 17g (Line 2, Column 10) equals the total sewage sludge disposed of in Table 15 (Line 16).
- Sludge treatment and disposal: direct costs in Table 17g (Line 5, Column 10) are equal to the total direct costs for sludge treatment and disposal in Table 22 (Line 9 Column 3).
- Sludge treatment and disposal: power costs in Table 17g (Line 6, Column 10) equals power costs for sludge treatment and disposal in Table 22 (Line 2, Column 3).
- Sludge treatment and disposal: Service charges in Table 17g (Line 7, Column 10) equals service charges for sludge treatment and disposal in Table 22 (Line 7, Column 3).
- Sludge treatment and disposal: general and support expenditure in Table 17g (Line 8, Column 10) equals general and support expenditure for sludge treatment and disposal in Table 22 (Line 10, Column 3).
- Sludge treatment and disposal: functional expenditure in Table 17g (Line 9, Column 10) equals general and support expenditure for sludge treatment and disposal in Table 22 (Line 11, Column 3).

Date: 30 July 2010

Prepared by: [x]