

**Water and Sewerage Service
Price Control 2013-2015**

**PC13 Annex G
Sources of Revenue for PC13**

Final Determination

December 2012

Water and Sewerage Service Price Control 2013-15

Sources of Revenue for PC13

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1.0 Sources of Revenue for PC13

1.1. Key Customer Base Assumptions

1.1.1. The price limits that the Utility Regulator sets for NI Water must balance the revenue that NI Water requires, with the revenue it collects from charges and subsidy. This means that, as well as calculating the level of revenue to allow for; we need to forecast the number, mix and type of customers that NI Water will be providing services to throughout the PC13 period.

1.2. Analysis of NI Water Customer Base Assumptions

1.2.1. Within its PC13 business plan submission NI Water stated that given the prevailing economic uncertainty and the impact this could have on customer demand it proposed to provide a resubmission of customer data for use in the Utility Regulator's PC13 final determination. We also identified several inconsistencies with customer number and volume data within NI Water's PC13 business plan submission.

1.2.2. On the 3rd of August 2012 NI Water re-submitted some data relevant to customer numbers and volumes. NI Water stated within its resubmission that it would intend to provide a further update on customer data to reflect revenue forecasts as they stand at that point in time, should they differ materially from customer data provided in the draft Principal Statement submission due to be submitted to the Utility Regulator on the 28th September 2012. The key changes within the 3rd August submission were:

- Resubmitted customer numbers submitted in line with PC13 business plan information requirements guidance.
- Correction of errors contained within the original PC13 business plan submission.
- An assumption of a further forecast 1% reduction on non domestic measured and sewerage volumes in 2013-14 and 2014-15 compared to the original PC13 business plan submission.

1.2.3. NI Water re-submitted further data relevant to customer numbers and volumes on both the 28th September 2012 and 20th November 2012. The key changes in these submissions were;

- A revised assessment of average unmeasured non domestic water consumption from 170.6m³ per unmeasured property, to 176.7m³ per unmeasured property.

- A reduction in non domestic measured sewerage volumes for the 2012-13 year
- A increase in trade effluent volumes for the 2012-13 year
- A further reduction in non domestic measured water volumes of 270k m³ for each year from 2012-13 onwards.
- A further reduction in non domestic measured sewerage volumes of 70k m³ for each year from 2012-13 onwards.

The Domestic Customer Base

1.2.4. We have utilised billed domestic (equivalents) for customer numbers since this information is required to calculate subsidy (paid by the NI Executive) on behalf of domestic customers.

Growth

1.2.5. In proposing price limits, we make assumptions about the customer base we expect NI Water to serve. We make separate estimates for domestic and non-domestic customers. In making projections, we take account of historical trend changes in the customer base and NI Water's projections of growth in its investment plan. We also compare NI Water's forecasts with historical data and forecasts in Great Britain. When making comparisons with historical data in Great Britain we made comparisons over both a 10 year period i.e. 2001-02 to 2010-11 and 3 year period i.e. from 2008-09 to 2010-11 in order to ascertain the impact of the economic downturn.

Volumes of Water Consumed and Wastewater Discharged by Customers

1.2.6. We have based the allocation of revenue between the customer groups on NI Water's revised 20th November 2012 submission.

1.2.7. The volume attributable to each customer group generally take account the impact of:-

- Customer supply pipe leakage;
- Meter under-registration (for all customer groups, including domestic unmeasured consumption which is based on per capita consumption meters); and,
- An apportionment of leakage, by way of industry standard Maximum Likelihood Estimation (MLE).

Projections of Domestic Premises

1.2.8. Since NI Water does not have direct billing records for domestic customers, information on customer numbers is derived from secondary data sources, which limits confidence in these data. Table 1.1 shows NI Water's revised 3rd August PC13 Business Plan submission on domestic number equivalents that we have utilised for domestic water and domestic wastewater revenue purposes.

Table 1.1 - NI Water PC13 Revised Business Plan Data – Projection of Domestic (Equivalents)

Year	Water		Wastewater	
	Number of Billed Domestic equivalents	Percentage change in Billed Domestic equivalents	Number of Billed Domestic equivalents	Percentage change in Billed Domestic equivalents
2010-11	663,353	-	574,000	-%
2110-12	672,816	1.4%	580,815	1.1%
2012-13	677,996	0.8%	585,114	0.7%
2013-14	682,646	0.7%	589,223	0.7%
2014-15	687,896	0.7%	593,331	0.7%

1.2.9. NI Water's stated projections for PC13 at 0.7% p.a. growth are consistent with the time series data for England and Wales companies which are also at 0.7% p.a. over both a 10 year and 3 year period.

1.2.10. We note that NI Water's choice of percentage used for the number of sewerage connections to be approx 86% of properties connected to water service for the PC13 period is consistent with the choice of percentage for 2011-12 and marginally lower i.e. 1% lower than that assumed for PC10.

1.2.11. We note NI Water's key assumption for domestic revenue is that revenue will be based on capital values which will prevail for the period under analysis, with no significant revaluation of domestic property taking place. In the absence of domestic charging, the revenue will be subsidised by the NI Executive.

Projections of Non-Domestic Premises

1.2.12. The non-domestic customer base is impacted by changes in the overall number of customers, as well as changes in the mix and type of services taken by these customers.

1.2.13. NI Water projected in its PC13 business plan submission that there would be the following main impacts on its non-domestic customer base after 2012-13. These are:

- Non-domestic customers are expected to grow by 2.5% over the 2011-12 to 2014-15 period;
- New customers are in the main expected to be small businesses with very low water consumption;
- A decrease in metered water consumption from existing customers of around 2% in 2014-15 when compared to 2012-13, offset by nominal increases in metered consumption both from conversions from unmetered customers and from new connections; and,
- Trade effluent discharge volumes are expected to increase marginally in the PC13 period due to the effect of the reclassification of 200km³ of volume from measured sewerage to trade effluent in respect of discharge from hospitals, and due the effect of the forecast of an increasing number of trade effluent consents.

1.2.14. The Utility Regulator understands that NI Water has based its assumptions on forecasts of changes in the economy and how these impact on water consumption. We have adopted these assumptions in proposing price limits for the final determination.

1.2.15. These projections are summarised in Table 1.2. Our conclusions on these forecasts are shown below.

Water

1.2.16. NI Water's forecast of the number of connected premises in the PC13 period is based on the following assumptions:

- New connections of non-domestic properties with installed meters at a rate of 600 per year in the PC13 period, and;
- Installation of meters at existing properties previously without a meter, at a rate of 500 per year in the PC13 period.

1.2.17. We consider that NI Water's assumptions on new connections are broadly reasonable but that NI Water's assumptions on total non domestic numbers may be optimistic when compared to historic growth figures in non-domestic numbers in England, Wales and Scotland and historic external data (e.g. Office of National Statistics Business Demography) on business numbers in Northern Ireland.

1.2.18. We consider that NI Water's assumptions on volumes are broadly reasonable, given the current economic climate though note that NI Water forecast of total water consumption over the PC13 period is more optimistic than historic time series data available for England and Wales and historic decrease of water consumption for NI Water.

Foul Sewerage

1.2.19. NI Water's forecast of the number of connected premises in the PC13 period is based on the following assumptions:

- New connections of non domestic properties with installed meters at a rate of 498 per year in the PC13 period (i.e. 83% of that for new water connections); and,
- Installation of meters at existing properties previously without a meter, at a rate of 415 per year in the PC13 period (i.e. 83% of that for new water connections)

1.2.20. Our conclusions on NI Water's assumptions for water non domestic numbers and volumes are equally applicable to NI Water's assumptions for sewerage numbers and volumes as we consider that these provide useful proxies for growth in sewerage connections and volumes discharged.

1.2.21. We note that NI Water's 8th August resubmission reflected the reclassification of some customers e.g. hospitals from measured sewerage to trade effluent. This reduced measured sewerage volumes by 200km³ per annum over the PC13 period and increased trade effluent volume by a commensurate amount.

Road Drainage

1.2.22. We consider that NI Water's assumptions on Roads Drainage, annual run off volume of 64.2 million m³ is broadly reasonable. The key factors that influence this assumption are:

- Total surface area of roads, footpaths and car parks; and
- Total volume of rain falling on these surfaces and hence the run-off from roads, footpaths and car parks discharged to NI Water sewers and storm drains.

1.2.23. However, during the PC13 period, we shall be reviewing the methodology supporting NI Water's determination of foul sewerage, surface water and roads drainage volumes which are reported in its regulatory submissions.

Trade Effluent Volumes

1.2.24. NI Water has not provided any supporting evidence to support their forecasts on trade effluent volumes. NI Water has forecast a marginal increase in total trade effluent volume in the PC13 period. However part of the forecast increase in trade effluent volume will be due to the forecast increase in the number trade effluent consents and the reclassification of some customers from measured sewerage to trade effluent.

Trade Effluent Consents

- 1.2.25. Within their business plan submission, NI Water has predicted that the net movement in the number of trade effluent customers will be an additional 100 customers added each year in the PC13 period. This predicted increase in trade effluent customers is partly explained by NI Water analysis of customers which should be classified as trade effluent customers and on its experience of new customers requesting discharge consents.
- 1.2.26. It is not possible to do robust benchmarking of NI Water assumptions on trade effluent consents or volumes due to the impact of the movement of customers classified as being trade effluent customers. We note that water and sewerage companies in Great Britain have experienced declining trade effluent volumes in the last 10 years.

Table 1.2 - Projections of Non-Domestic Customer Base

Year	2011-12	2012-13	2013-14	2014-15
Water				
Number of connected premises (metered)	68745	70,927	72,027	73,127
Volume (MI)	32,082	28,938	28,837	28,735
Number of connected premises (unmeasured)	11,943	10,943	10,193	9,693
Foul Sewerage				
Number of connected premises (metered)	22,627	24,146	25,058	25,970
Volume (MI)	12,362	11,490	11,818	11,846
Number of connected premises (unmeasured)	10,109	9,309	8,709	8,309
Roads Drainage				
Road Drainage Volume (million cubic metres per annum)	64.20	64.20	64.20	64.20
Trade Effluent				
Number of connected premises (excluding large users)	374	390	491	590
Volume (MI) (excluding large user volume)	3,227	3,421	3,278	3,318

Conclusions on Key Customer Base Assumptions

- 1.2.27. We expect some movement in customer numbers and volumes to continue into the future (including the PC13 period), as NI Water continues to test and cleanse its data and receives more direct feedback from customers and operational activities.
- 1.2.28. The Utility Regulator has accepted NI Water's forecasts of customer numbers and volumes for the PC13 period. These assumptions on changes to NI Water's customer base are included in the proposed price limits.
- 1.2.29. We considered that the most accurate customer data should be employed in calculating K-factors for 2013-2014, to ensure that the impact was as fair as possible to all customer groups.

1.3. Level of Subsidy in PC13

Introduction

- 1.3.1. Our financial model allows us to forecast the required revenue from each customer group. We have assumed for the basis of this final determination that the current structure of charges will continue for the PC13 period. Based on the current structure of charges, and, where relevant the associated subsidy allocation, we have derived indicative forecast subsidy levels for the PC13 period.

The Structure of Charges in Northern Ireland

- 1.3.2. Charges (where applicable) to individual customers will vary according to the type of customer and the service they are receiving.
- 1.3.3. Customers are classified as:
- Water or wastewater;
 - Domestic (household) or non-domestic (non – household businesses, charities or public sector organisations);
 - Measured (metered), un-measured (un-metered); and,
 - Trade effluent.

Domestic Unmeasured Water (Notional)

- 1.3.4. The unmeasured domestic (household) notional charge is based on the Capital Value of each household property. This notional charge does not depend on consumption. Currently the unmeasured domestic (household) charge is paid via subsidy from DRD.

Domestic Unmeasured Wastewater (Notional)

1.3.5. The unmeasured domestic (household) notional charge for wastewater is also based on the Capital Value of each household property. This notional charge includes the cost of treating surface water run-off from properties, but excludes drainage from public roads and footways etc. Currently, the unmeasured domestic (household) charge is paid via subsidy from DRD.

Domestic Measured Water (Notional)

1.3.6. Currently no domestic customers pay for water services charges based on usage.

Domestic Measured Wastewater (Notional)

1.3.7. Currently no domestic customers pay for wastewater services charges based on usage.

Non-Domestic Unmeasured Water

1.3.8. Unmetered non-domestic customers are currently charged relative to the rateable value of their property. These customers pay separate charges, neither of which reflects their consumption of water: a minimum charge for access to the network and an additional charge that is a proportion of their rateable value. Currently, there is a 50% subsidy in place for non-domestic unmeasured water charges.

Non-Domestic Unmeasured Wastewater

1.3.9. Charges for unmeasured non-domestic wastewater are also a function of the connected property's rateable value. Customers pay two separate charges: a minimum charge for accessing the network and a charge that is in proportion to their rateable value. Currently, there is a 50% subsidy in place for non-domestic unmeasured wastewater charges.

Non-Domestic Measured Water

1.3.10. Measured non-domestic customers pay a standing charge, which depends on the size of their meter connection, and a volumetric charge based on how much water they consume. Currently, there is a domestic allowance subsidy in place for non-domestic measured water charges. The domestic allowance is 200m³ for those non-domestic measured water customers who pay full business rates. There are discounts on the volumetric rate for customers who use large volumes of water i.e. annual consumption of over 100,000m³. However, eligibility for the large user tariff depends on the consumption and on the commitment of the customer to water efficiency. This may include, but is not restricted to, the installation of water saving devices, recycling plants and a review of water efficiency by independent water experts.

Non-Domestic Measured Wastewater

- 1.3.11. Non-domestic wastewater customers pay a standing charge based on the size of their water meter connection and a volumetric rate based on an assumption that 95% of their water consumption is returned to sewer. If a customer can demonstrate that less than 95% of water returns to sewer (for example, a company that uses water in its production processes) then they can apply to have the assumption of 95% reduced. Currently, there is a domestic allowance subsidy in place for non-domestic measured wastewater charges. The domestic allowance is 190m³ for those non-domestic measured wastewater customers which pay full business rates.
- 1.3.12. There are no discounts for customers who discharge large volumes of wastewater.
- 1.3.13. The cost of receiving and treating property surface water drainage for non-domestic measured wastewater is included in the tariff for measured wastewater.

Trade Effluent

- 1.3.14. Charges for trade effluent are based on the Mogden formula. This formula assesses a charge for the treatment of a particular strength and volume of effluent, based on the costs of treating this wastewater.
- 1.3.15. Trade effluent customers pay a variable rate based on the actual volume and strength of the effluent discharged.
- 1.3.16. The Mogden formula is: $C = R + V + (O_t/O_s)B + (S_t/S_s)S$

Where:

C	is the unit charge in pence per cubic metre for the trade effluent discharge.
R	is the unit cost in pence per cubic metre of reception and conveyance of sewage.
V	is the unit cost in pence per cubic metre of the volumetric and primary treatment of sewage treated and disposed of in sewage treatment works.
O_t	is the chemical oxygen demand in mg/l of the trade effluent after 1 hour quiescent settlement.
O_s	is the chemical oxygen demand in mg/l of the settled sewage standard strength.
B	is the unit cost in pence per cubic metre of the biological oxidation treatment of settled sewage.
S_t	is the total suspended solids in mg/l of the trade effluent at pH 7.
S_s	is the total suspended solids in mg/l of crude sewage – standard strength.
S	is the unit cost in pence per cubic metre of treatment and disposal of primary sludge.

Roads Drainage

- 1.3.17. In Great Britain customers pay a proportion of their sewerage charges for the collection and treatment of surface water drainage (rainwater that falls onto properties, driveways and is channeled to the sewerage network) and highway drainage (run-off from roads and pavements). The cost of dealing with rainwater is complicated by the fact that some surface water in rural areas would be collected by separate drainage network and would be discharged directly to water-courses, whilst a proportion of urban drainage (within cities and towns) would normally be collected by the sewerage network and discharged to a sewage treatment works.
- 1.3.18. The cost of providing these facilities in Great Britain is paid for by sewerage customers. This is due to the fact that legislation in Great Britain does not permit any alternative method of cost recovery. In Northern Ireland, however, such legislation does not exist and, following the accepted recommendation of the Independent Water Review Panel, the costs of collecting and treating drainage from roads is to be recharged to DRD Roads Service and is financed through general taxation. This reduces the amount of revenue to be raised directly from NI Water's customers.
- 1.3.19. The cost of dealing with surface water is allocated across the sewerage customer groups (with the exception of trade effluent customers), in the same proportion as the relative volumes of wastewater produced. We have provided below in table 1.3 an 'indicative' forecast amount for Roads Drainage that may be recharged to DRD Roads Service in the PC13 period. The Utility Regulator intends to review NI Water's underlying assumptions used in the calculation of sewerage surface water drainage, roads drainage and trade effluent volumes during the PC13 period.

Table 1.3 – Indicative Roads Drainage Recharge Over PC13 (Nominal Prices)

	2013-14	2014-15
Forecast Roads Drainage Recharge (£m)	£19.96	£19.05

Domestic Allowance for non-domestic customers (measured)

- 1.3.20. We have assumed for the purposes of PC13 final determination that the domestic allowance for non-domestic (measured water and sewerage) will continue into PC13. The domestic allowance compensates non-domestic customers for domestic consumption, given that subsidy is being paid on behalf of domestic customers by the NI Executive.

Disposal of Tankered Waste

- 1.3.21. NI Water currently provides a discretionary service for the disposal of tankered waste. Each domestic customer was entitled to one free tank empty in a 12 month period. Subsequent requests for collection and treatment of sewage of a domestic

nature (e.g. septic tanks, domestic treatment plants and cesspools), were subject to a charge. We understand that the current regime covering disposal of tankered waste will continue in the PC13 period.

Level of Subsidy over PC13 (per Revenue Group)

1.3.22. Table 1.4 shows the indicative level of revenue from each revenue group together with the subsidy allocation for each group based on the current structure of charges.

Table 1.4 – Revenue Groups for PC13 Inclusive of Subsidy Allocation (Nominal) (£m)

Revenue Group	Forecast Revenue over PC13 (£m)	Subsidy allocation
Domestic unmeasured water	242	Subsidy and contribution through rates
Domestic unmeasured sewerage	268	Subsidy and contribution through rates
Non-domestic measured water	73	domestic allowance subsidy
Non-domestic measured sewerage	45	domestic allowance subsidy
Non-domestic unmeasured water	4	50% subsidy
Non- domestic unmeasured sewerage	5	50% subsidy
Trade effluent (includes Roads Drainage costs of approximately £40m)	47	0% subsidy
Non tariff basket revenue (includes large users)	19	0% subsidy
Total Required Revenue	703	

Note: Figures may not add due to rounding.

1.3.23. On average approximately 76% of the Revenue requirement over PC13, i.e. £537m is forecast to be paid through subsidy. The NI Water business plan forecast a subsidy level of £576m over the PC13 period. This final determination therefore provides a saving of £39m on the level of subsidy over the PC13 period.

1.3.24. Table 1.5 shows the sources of revenue over the PC13 period including revenue from subsidy, Roads Drainage re-charge to DRD Roads Service and revenue from charges (non-domestic).

Table 1.5 – Annual Subsidy Requirement in PC13 (Nominal) (£m)

	2013-14	2014-15	Overall Total
Subsidy Requirement	272	265	537
Roads Drainage Recharge	20	19	39
Revenue from charges	65	62	127
Total Revenue	357	346	703

Conclusions on Level of Subsidy in PC13

1.3.25. We have used our financial model to provide an indicative forecast of the level of subsidy required over the PC13 period, based on the current structure of charges. This draft determination provides a saving of £39m on the level of subsidy over the PC13 period.

1.4. Charge Limits for PC13

Introduction

- 1.4.1. We have a legal duty to set the ‘adjustment factor’ for each year, generally referred to as the price limit or the K factor, to be applied over the Price Control period. The K factor is the percentage increase or decrease above or below inflation by which tariff basket price limits are allowed to rise or fall on an annual basis during the Price Control period.
- 1.4.2. We utilise price limits within the various tariff baskets to ensure that the correct revenue is raised from each customer group and also to assure ourselves that there is no cross-subsidy between the customer groups. In setting the price limits, we have sought to balance affordability with compliance and customer priorities.

‘K’ Factors for PC13

- 1.4.3. We are committed to improving the transparency of the regulatory regime. As part of this commitment, we believe that it is vital that non-domestic customers can more readily understand the likely impact of the Price Control on their bills (or level of subsidy).
- 1.4.4. Tariff baskets are defined in Condition B of the licence to cover the regulated (core) services provided by NI Water. The use of tariff baskets helps to ensure that the process of unwinding any cross subsidies is as transparent as possible. In addition, we consider that tariff baskets allow (directly – paying) customers to see more clearly the likely impact of the Price Control 2013 on their bills. The use

of ‘tariff baskets’ mirrors the price – setting process of other utility regulators in the UK, such as Ofgem, Ofwat and WICS.

- 1.4.5. A Price Limit regime establishes a clearer link between the Price Control and any direct bills that customers pay (currently non-domestic customers). We believe that setting price limits will allow non-domestic customers to understand the likely impact of any tariff changes on their bill for the relevant period.
- 1.4.6. The K factor is the percentage increase above inflation by which Tariff Basket price limits are allowed to rise on an annual basis during the Price Control period. For the purposes of this final determination we have assumed an inflation figure of 2.56% for each year of PC13. The final determination K factors are shown in table 1.6.

Table 1.6 – K factors for Each Tariff Basket

Tariff Basket	2013-14	2014-15
Unmeasured Water Supply	-3.4%	-3.4%
Unmeasured Sewerage Service	-7.8%	-7.8%
Measured Water supply	-5.6%	-5.6%
Measured Sewerage Service	-7.7%	-7.7%
Trade Effluent	-7.1%	-7.1%
Overall Weighted Average K-Factor	-6%	-6%

PC13 Weighted Average Charge Increase (WACI)

- 1.4.7. NI Water is allowed to increase the weighted average charge for each of its tariff baskets by up to the K-factor plus inflation. This is the weighted average charge increase, or WACI. The WACI is therefore equal to the K-factor plus the reported Retail Price Index (RPI). The RPI figure is published by the Office for National Statistics on a monthly basis. The figure for the 12 months to November in the year prior to the year in question is used as the RPI figure for the WACI.
- 1.4.8. Individual tariffs may increase by more than K, but the WACI for each tariff basket must be equal to or below the figure determined for that tariff basket. If NI Water intends to increase one or more tariffs by greater than the relevant K-factor, we may ask for justification for such an increase.

WACI (Weighted Average Charge Increase) = K factor plus inflation (RPI)

- 1.4.9. For the purpose of this final determination we have assumed an inflation figure of 2.56% for each year of PC13.

1.4.10. Taking account of this inflation figure the weighted average charge increase for each year of PC13 is shown in Table 1.7.

Table 1.7 – PC13 Weighted Average Charge Increase (WACI)

	2013-14	2014-15
Weighted Average Charge Increase (WACI)	-3.4%	-3.4%

Condition C: Infrastructure Charges

1.4.11. Under Licence Condition C we set infrastructure charge limits for connecting household premises to water and sewerage services for the first time. The infrastructure charge provides a contribution towards the cost of developing local networks to serve new consumers. NI Water can levy an infrastructure charge, as well as the direct costs of making new connections. We have determined a final infrastructure charge limit of £290 for 2013-14 (2012-13 prices).

1.5. Conclusion

1.5.1. We are mindful of the current economic situation for business customers and have based our assessment of charges on a smoothed revenue profile in the PC13 period to provide stability for non-domestic consumers.

