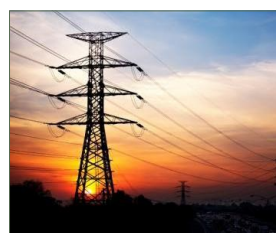![Utility Regulator logo — ELECTRICITY GAS WATER]

Water & Sewerage Services Price Control 2015-21

Draft Determination - Annex P

Opex Special Factor Report

July 2014

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Water and Sewerage Services Price Control 2015-21
Annex P – Opex Special Factor Report

1.0 Introduction

1.1. Purpose

1.1.1 As part of the Price Control process (PC15), the Utility Regulator (UR) has the responsibility of setting efficiency targets. These targets are generated based on the following:

a) The efficiency gap between NI Water and the frontier companies;

b) The rate of catch-up which is deemed achievable; and

c) On-going efficiency improvements expected of benchmark performers.

1.1.2 The efficiency gap is primarily calculated using the PR09 Ofwat opex efficiency models, with some amendments. Targets are then set accordingly in order to try and narrow this gap.

1.1.3 Unfortunately, the regressions will never be able to account for all the different factors that influence costs. Omitting variables can skew results. As a result, cost differentials can be viewed wrongly as differences in efficiency rather than operating environment disparities.

1.1.4 In order to correct for this, companies are given the opportunity to submit special factor claims. A special factor is a variable outside of management control, which results in either higher or lower costs than comparators.

1.1.5 In order to be awarded a special factor, NI Water must adequately demonstrate:

- What is different about their circumstances that cause materially different costs outside management control;

- Why these differences result in cost variances;

- The net impact on costs over and above that which would have occurred had the factor not existed; and

- Effort made by the company to mitigate against higher costs has been fully explored.

1.1.6 As part of this price control, NI Water has submitted a revised set of special factors. These include previously submitted claims and a couple of new additions.

1.1.7 The purpose of this report is to inform stakeholders of the UR's view on these issues and the subsequent allowance.

1.2. Summary of findings

1.2.1 Special factors are circumstances beyond management control that result in materially different costs to one company but not other comparators. NI Water has raised six such issues. These consist of the following:

1. **Rurality** – Extra cost incurred on the sewer network because of having a dispersed population. This consists of higher travel costs, more small treatment works and additional wastewater pumping stations;

2. **Sludge disposal** – NI Water has a legal obligation to transport sludge to PPP operators for incineration. This differs from England and Wales (E&W) companies who have the flexibility to choose their disposal method;

3. **Electricity prices** – The company has argued for a special factor due to higher power prices in Northern Ireland. NI Water cited the lack of competition and tariff structures as some of the reasons behind the difference;

4. **Regional wages** - The company provided an assessment of the advantage they gain from operating in a low wage economy. This manifests itself in a negative special factor;

5. **NDPB status** – Due to a lack of domestic charging, NI Water is classified as a non-departmental public body. This results in certain costs, which other utilities would not have to face e.g. procurement rules, public sector reporting, freedom of information compliance etc; and

6. **Sewerage funding** – NI Water has argued that the legacy of under-investment in small diameter sewers over the last 15-20 years has resulted in a poorer performing network. Therefore, the company now has to incur higher opex to mitigate against this impact.

1.2.2 NI Water has not made a claim for the water distribution network as it did in previous years. The adoption of a new model for this cost area has allayed the need to correct for the poor explanatory power of the previous model.

1.2.3 Each of the special factor claims are discussed in their individual sections. A summary of the amounts claimed and the UR allowance is provided in the table below.

Table 1.1 – Special factors – claimed versus allowed[1]

Special Factor Claim	NI Water Claimed	UR Allowed
Rural Network (Sewage)	£4.02m	£2.81m
Sludge Disposal	£0.69m	£0.00m
Electricity Prices	£5.30m	£4.73m
Regional Wages	-£1.20m	-£2.38m
NDPB Status	£1.03m	£0.00m
Sewerage Network Under-Investment	£1.09m	£0.00m
Total	**£10.94m**	**£5.16m**

Figures may not sum due to rounding

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[1] All financial figures in this report are given in 2012-13 prices unless otherwise stated.

2.0 Rurality

2.1. Basis of claim

2.1.1   When comparing against England and Wales, it can be seen that Northern Ireland has a dispersed and rural population. Because of these demographic and geographic features, NI Water has a different operating environment to most of its comparators.

2.1.2   The company has argued that the rural locality results in unavoidable extra cost. In the sewer network, this manifests itself in three ways:

1) Higher fuel, labour and vehicle costs associated with longer journeys;

2) Increased fixed costs for extra sewage treatment works needed to serve small communities; and

3) Added fixed costs due to more numerous wastewater pumping stations.

2.1.3   Whilst connection density is included in the sewer network model, NI Water are still of the opinion that a special factor exists. The company argues that the current regression will disadvantage them unfairly.   This conclusion is based on the view that a longer sewer network reduces predicted costs.

2.1.4   In order to adjust for this, the company has looked at individual cost elements affected on a bottom-up basis.

2.2. Calculation of claim – rural travel

2.2.1   This special factor is based on the premise that NI Water staff must travel further to serve a rural network. Extra travel means more fuel, vehicle maintenance and labour costs.

2.2.2   As England and Wales companies do not publish such in-depth detail, NI Water has made some internal comparisons. These show that the travel time per property is much longer in rural areas.

2.2.3   On the strength of this detail, the company selected areas that it considered similar to an average company. It then estimated what travel cost might be if all the areas were akin to this proxy.

2.2.4   As its proxy area, NI Water has chosen the Belfast, Lisburn and Derry regions. A slightly larger area including Portadown has been chosen for mechanical and electrical (M&E) operators.

2.2.5   The extra travel in the rural areas and the impact on labour costs is summarised below:

Table 2.1 – Summary of excess labour time

		Operational Areas	M&E Field Manager Areas
A	Total net driving time (000 hrs)	55.37	40.88
B	Connected properties (000's)	673.17	673.17
C	Travel time per property – all areas (hrs/prop)	0.082	0.061
D	Travel time per property – proxy areas	0.033	0.044
E	Derived travel time based on proxy (000 hrs)	22.11	29.72
F	Difference – actual/derived (A – E) (000 hrs)	33.26	11.15
G	Labour rate (£/hr)	22.29	22.63
H	**Cost impact (F * G) (£000's)**	**£741**	**£253**
I	**Total cost impact (£m)**	**£0.99m**	

Figures may not sum due to rounding

2.2.6　NI Water repeated this process for vehicle repairs and fuel costs. This resulted in a claim of £1.9m for travel expenses.

Table 2.2 – Summary of travel cost claims

	Operational Areas	M&E Field Manager Areas
Travel impact on labour (£000's)	£741	£253
Travel impact on vehicle repairs (£000's)	£509	£106
Travel impact on fuel (£000's)	£251	£70
Total travel costs special factor (£000's)	**£1,501**	**£429**
Total travel costs special factor (£m)	**£1.93m**	

Figures may not sum due to rounding

2.3.　UR allowance – rural travel

2.3.1　On a 'bottom-up' basis, the detail provided by NI Water would support a special factor. The Reporter has audited this data and found it to be robust and complete.

2.3.2　There is no debate that NI Water operates a rural network. This is borne out by connection density and census figures. The question is whether this factor is already included in the sewer network regression. This shall be considered later.

2.3.3　NI Water area data do show unit cost differentials. This indicates that they will have to incur extra travel related costs. However, it is unclear if the chosen proxy area would represent a typical company.

2.3.4   For operational field managers, the chosen proxy closely aligns with the Belfast, Derry and Lisburn council areas. This is more urban than the M&E area, a fact that appears to be reflected in the respective unit costs.

2.3.5   The table below details population density figures.

Table 2.3 – Population density comparisons

Area	Persons	Square Km	Density (Nr/sq Km)
NI Water - Proxy Area	**700,499**	**1,247**	**562**
United Kingdom	63,182,178	242,513	261
Great Britain	61,371,315	228,951	268
England And Wales	56,075,912	151,014	371
England	53,012,456	130,278	407
Wales	3,063,456	20,735	148
Scotland	5,295,403	77,937	68
Northern Ireland	1,810,863	13,562	134
UR Proxy Area	**779,073**	**2,396**	**325**

Source: ONS and NISRA

2.3.6   Assuming the proxy area aligns with the council districts, it is evident that the chosen proxy has a higher density than England and Wales. This suggests that the proxy is not representative of an average company or the frontier.

2.3.7   To correct for this the UR has undertaken the same calculations as NI Water. The only difference is that the Magherafelt district (Limavady and Magherafelt councils) has been included in the proxy area. This gives a density figure much closer to the England and Wales average.

2.3.8   The results are as follows:

Table 2.4 – Summary of excess labour time – UR calculations

		Operational Areas	M&E Field Manager Areas
A	Total net driving time (000 hrs)	55.37	40.88
B	Connected properties (000's)	673.17	673.17
C	Travel time per property – all areas (hrs/prop)	0.082	0.061
D	Travel time per property – proxy areas	0.044	0.044
E	Derived travel time based on proxy (000 hrs)	29.43	29.72
F	Difference – actual/derived (A – E) (000 hrs)	25.94	11.15
G	Labour rate (£/hr)	22.29	22.63
H	**Cost impact (F * G) (£000's)**	**£578**	**£252**
I	**Total cost impact (£m)**	**£0.83m**	

Figures may not sum due to rounding

Table 2.5 – Summary of vehicle repair costs – UR calculations

		Operational Areas	M&E Field Manager Areas
A	Total vehicle repair costs (£000's)	836.29	234.73
B	Connected properties (000's)	673.17	673.17
C	Cost per property – all areas (£/prop) (A/B)	1.242	0.349
D	Cost per property – proxy areas (£/prop)	0.658	0.192
E	Derived cost based on proxy (£000's) (B * D)	443.15	129.19
F	**Cost impact (£000's) (A - E)**	**393**	**106**
G	**Total cost impact (£m)**	**£0.50m**	

Figures may not sum due to rounding

Table 2.6 – Summary of excess fuel costs – UR calculations

		Operational Areas	M&E Field Manager Areas
A	Total vehicle fuel costs (£000's)	412.77	104.62
B	Connected properties (000's)	673.17	673.17
C	Cost per property – all areas (£/prop) (A/B)	0.613	0.155
D	Cost per property – proxy areas (£/prop)	0.325	0.086
E	Derived cost based on proxy (£000's) (B * D)	218.69	57.59
F	**Cost impact (£000's) (A - E)**	**194**	**47**
G	**Total cost impact (£m)**	**£0.24m**	

2.3.9   Adopting the NI Water approach but adjusting the proxy area gives a bottom-up special factor of £1.57m for rural travel.

2.4.   Calculation of claim – sewage treatment works

2.4.1   The second element of the rural claim is the impact on treatment works. NI Water argues that serving a dispersed populace results in a greater number of sewage works, with a smaller average load.

2.4.2   Whilst the cost of treating sewage may not necessarily be different, this situation does impose extra fixed costs for the additional works. NI Water supports this claim with detail showing the differences in sewage loads.

Table 2.7 – Comparison of WWTW loadings

	Number of Works		Load (kg/BOD5/day)		Load per works		Hypothetical Works
Area	NI Water	E&W	NI Water	E&W	NI Water	E&W	NI Water
Size Band 1	785	2,988	1,973	15,151	2.51	5.07	389
Size Band 2	59	680	1,352	15,477	22.92	22.76	60
Size Band 3	111	1,140	7,200	74,075	64.86	64.98	111
Size Band 4	53	857	13,327	248,589	251.45	290.07	46
Size Band 5	13	312	13,122	308,607	1,009.38	989.13	13
Total	**1,021**	**5,977**	**36,974**	**661,899**			**619**

Figures may not sum due to rounding

2.4.3   The table illustrates the average load per works. Across most of the bands, NI Water is similar to the average. The exception is small works (<250 p.e.) where NI Water has a less than 50% loading.

2.4.4   The basis of the special factor is that NI Water must incur fixed costs in order to operate all these small works. To calculate the special factor, the company has estimated its hypothetical number of works using England and Wales average loadings.

2.4.5   The company has then made an estimate of fixed costs by size band in order to establish the special factor.

2.4.6   Fixed cost is calculated by assuming that the variable costs are the same in adjacent bands. This allows the company to establish a cost per load figure. The remaining cost is then assumed to be the fixed element.

2.4.7   Calculation of the special factor is given below.

Table 2.8 – Cost impact calculation

Area	NI Water Works	Hypothetical Works	Change in works	Fixed Cost per Works (£)	Special Factor (£)
Size Band 1	785	389	396	225	88,919
Size Band 2	59	60	-1	3,125	-1,615
Size Band 3	111	111	0	8,079	1,557
Size Band 4	53	46	7	26,417	186,388
Size Band 5	13	13	0	26,417	-7,034
Total	**1,021**	**619**	**402**		**268,215**

Figures may not sum due to rounding

2.4.8   The special factor is calculated as the fixed costs multiplied by the change in works. The company has calculated a cost impact in each size band, even though there is sometimes no change in the works number. This is because the hypothetical works being estimated is not a whole number.

2.5. UR allowance – rural treatment works

2.5.1   NI Water has a greater proportion of very small (size band 1) works. It appears this is an unavoidable result of the rural network it operates. The Reporter has confirmed that there is limited scope to consolidate the works further, indicating that a special factor exists.

2.5.2   In order to make comparison with the latest data, the UR has used AIR13 and the PR14 August submission figures from Ofwat companies. The results support the previous findings of NI Water.

Table 2.9 – Comparison of WWTW loadings

Area	Number of Works		Load (kg/BOD5/day)		Load per works		Difference
	NI Water	E&W	NI Water	E&W	NI Water	E&W	(%)
Size Band 1	782	2,670	1,979	12,977	2.53	4.86	-48%
Size Band 2	58	625	1,325	14,118	22.84	22.59	1%
Size Band 3	106	1,108	6,685	72,843	63.06	65.74	-4%
Size Band 4	54	844	13,841	247,354	251.66	293.07	-14%
Size Band 5	14	316	14,388	315,793	1,027.73	999.35	3%
Total	**1,015**	**5,563**	**38,218**	**663,086**			

Figures may not sum due to rounding

2.5.3   What the table reveals is that only Band 1 works have a materially different load size than England and Wales. The UR therefore sees no reason to make cost adjustments for the other bandings.

2.5.4   Furthermore, it is not always clear if sewage loads are a function of a rural network. This is borne out by Thames. They have a lower than average load per works for size bands 2 - 5, yet are the most densely populated company.

2.5.5   Other factors may therefore explain the difference in NI Water loads across bands. Where this uncertainty exists, and there is not a material difference, no special factor has been allocated to the other bandings.

2.5.6   Calculation of the Band 1 WWTW special factor is given below.

Table 2.10 – Rural WWTW special factor

		Calculation	WWTW Special Factor
A	NI Water works (Band 1)		782
B	NI Water load (Band 1)		1,979
C	E&W average load		4.86
D	Hypothetical works	(B / C)	408
E	Change in works	(A – D)	374
F	Fixed Cost (£)		£225
G	Special Factor (£)	(E * F)	£84,150
H	**Special Factor (£m)**		**£0.084m**

Figures may not sum due to rounding

2.5.7   The UR does not necessarily agree with the approach adopted by the company to calculate fixed costs. It is based on the change in variable costs at a larger treatment works, which will obviously be less expensive.

2.5.8   The result is an overestimate of the size of the fixed cost element. However, in the absence of any better detail the fixed cost element is accepted. The result is a special factor of £0.08m.

2.6. Calculation of claim – pumping stations

2.6.1   Many of the same arguments are submitted for wastewater pumping stations (WWPS) as those for treatment works. A rural network requires many small stations to deal with low volumes. This leads to the company incurring high fixed costs, which cannot be avoided.

2.6.2   In order to support the argument, the company provided detail showing the difference in pumping stations per sewage volume and per connected property. Both measures indicate a higher number of stations in Northern Ireland compared to the England and Wales average.

2.6.3   From this data, NI Water calculated the hypothetical number of pumping stations. The difference is they multiplied by a fixed cost of £2,980 per station.

2.6.4 The fixed cost was based on a regression of WWPS cost against the population equivalent (p.e.) served. The intercept was deemed the fixed cost. This value is also support by an UKWIR study that estimated the maintenance costs of a small pumping station.

2.6.5 Calculations for the company claim are below.

Table 2.11 – Rural WWPS special factor

		Calc	Measure 1: Volume of sewage (Ml/d)	Measure 2: Connected Population (000's)
A	NI Water WWPS		1,256	1,256
B	NI Water WWPS per measure		3.93	0.86
C	E&W aver WWPS per measure		2.12	0.40
D	Hypothetical WWPS		679	575
E	Change in works	(A – D)	577	681
F	Fixed Cost (£)		£2,980	£2,980
G	Special Factor (£000's)	(E * F)	£1,716	£2,025
H	**Special Factor (£m)**	**Average**	**£1.87m**	

Figures may not sum due to rounding

2.7. UR allowance – sewage pumping stations

2.7.1 The Reporter has confirmed the low volume per pumping station is a result of the rural network. He has further stated that NI Water management has relatively little scope to change this. As a result, the UR agrees that a special factor exists from a 'bottom-up' perspective.

2.7.2 It is clear from the evidence that there is a fairly large divergence between NI Water and the rest of the industry. It would also appear that this is a result of geographic factors.

2.7.3 This conclusion is verified by the comparative data. When considering rural companies such as Anglian, Welsh Water or Wessex, it is evident that they have a higher than average number of pumping stations per property/volume. NI Water is even more of an outlier than these rural comparators.

2.7.4 Using the latest available data, the UR has calculated the hypothetical pumping stations given an average network.

Table 2.12 – Rural WWPS hypothetical network

		Calc	Measure 1: Sewage load entering system (000 tonnes BOD/year)	Measure 2: Connected Population (000's)
A	NI Water WWPS		1,256	1,256
B	NI Water sewage load		46.9	
C	NI Water connected population			1,438
D	NI Water WWPS per measure	(A / B or C)	26.78	0.87
E	E&W aver WWPS per measure		14.15	0.35
F	Hypothetical WWPS	(E * B or C)	664	505
G	Change in works	(A - F)	592	751

Figures may not sum due to rounding

2.7.5 These methods support NI Water findings and actually predict a slightly higher reduction in pumping stations. However, at this point the UR disagrees with the company approach to fixed costs.

2.7.6 The UR is concerned that the regression used to establish fixed costs has a wide variety of pumping stations. This includes stations with a p.e. >25,000. When split using the same size bands as treatment works, we find the following:

Table 2.13 – WWPS data by size band

	NI Water WWPS	Cost (£000's)	% of stations	Cost per WWPS (£/station)
Size Band 1 - (0-249 p.e.)	679	1,776	65.9%	£2,616
Size Band 2 - (250-499 p.e.)	125	481	12.1%	£3,849
Size Band 3 - (500-1,999 p.e.)	152	1,107	14.8%	£7,285
Size Band 4 - (2,000-9,999 p.e.)	56	1,079	5.4%	£19,260
Size Band 5 - (10,000-24,999 p.e.)	14	539	1.4%	£38,514
Size Band 6 - (25,000+p.e.)	4	640	0.4%	£160,121
Total (size 1-6)	**1,030**	**5,623**	**100%**	**£5,459**

Figures may not sum due to rounding

2.7.7 The vast majority (circa 80%) of pumping stations are in size band 1 and 2. Much like wastewater treatment works; the special factor would appear to impact on the small stations. Any change in works would have to be in these bands.

2.7.8   The fixed cost methodology adopted by NI Water takes account of all size bands. This is not considered appropriate. In particular, it can be seen that NI Water's estimate of fixed cost (£2,980) is greater than the total average cost of size band 1 stations (£2,616).

2.7.9   To amend for this, the UR adopted the same regression approach as NI Water, only with small WWPS. However, this did not provide a suitable regression.

2.7.10 By way of an alternate, the UR made the conservative assumption that fixed costs are 60% of total pumping station costs. A weighted average (80%:20%) was then adopted between size bands 1 and 2.

Table 2.14 – WWPS fixed cost estimate

	Cost per WWPS (£/station)	Fixed Cost (60%) (£/station)	Weighted Average (£/station)
Size Band 1 - (0-249 p.e.)	£2,616	£1,569	£1,255
Size Band 2 - (250-499 p.e.)	£3,849	£2,310	£462
Weighted average special factor			**£1,717**

Figures may not sum due to rounding

2.7.11 The weighted average of £1,717 was adopted as the fixed cost element of WWPS. This results in the following special factor.

Table 2.15 – Rural WWPS special factor

		Calc	Measure 1: Sewage load entering system (000 tonnes BOD/year)	Measure 2: Connected Population (000's)
A	NI Water WWPS		1,256	1,256
B	Hypothetical WWPS		664	505
C	Change in works	(A - B)	592	751
D	Fixed Costs (£)		£1,717	£1,717
E	Special factor (£000's)	(C * D)	£1,017	£1,290
F	**Special Factor (£m)**	**Average**	**£1.15m**	

Figures may not sum due to rounding

2.7.12 The overall bottom-up allowance for the rural special factor is £2.81m. This combines an assessment of the extra cost of rural travel, small treatment works and pumping stations.

2.8.   Modelling issues

2.8.1   The UR has considered the 'bottom-up' claims and found them to be robust. However, an issue remains as to whether these costs are already captured in the sewer network model.

2.8.2   The company state that the model fails to account for its particular situation. NI Water claim the population per sewer explanatory variable introduces a bias, as a long network will result in lower predicted costs.

2.8.3   In reality the issue is not as clear-cut. The network model actually predicts unit cost (i.e. cost per sewer length). Whilst an increase in sewer length will reduce predicted *unit costs*, this is largely offset when calculating predicted costs as the lower predicted unit cost is multiplied by the longer length of sewer.

2.8.4   The model also predicts extra costs for those with a large sewer district to sewer length ratio. Being one of the most rural companies, NI Water has a much larger ratio than other companies do. This variable would therefore seem to account for some of the rural impacts.

2.8.5   More modelling is required to assess if rural costs are captured in the models. For the purpose of the draft determination, the UR has accepted that a 'bottom-up' adjustment is required. This may however be challenged in the final analysis.

3.0 Sludge Disposal

3.1. Basis of claim

3.1.1 NI Water has claimed a special factor for the cost of sludge disposal. The company is contractually obligated to convert wastewater to sludge cake for incineration by a Public Private Partnership (PPP).

3.1.2 This means that, unlike others, NI Water is restricted in the method of disposal. The company claim this legal restriction results in additional opex, which it cannot avoid. The Reporter has further confirmed that,

"Having adopted this thermal destruction strategy it is not practical for NI Water to now change this or apply a different strategy."

3.1.3 The company therefore believe a special factor to be suitable.

3.2. Calculation of claim

3.2.1 The extent of the special factor is determined by two elements:

- Current NI Water sludge disposal costs; and

- Hypothetical cost of disposal to land if this was an option.

3.2.2 The company has broken down current costs into three functions.

a) Transport of liquid waste to dewatering centres;

b) Dewatering costs; and

c) Transport of sludge cake to incinerator.

3.2.3 NI Water has indicated that the contract stipulates a minimum dry solids content of 22%. This means that sludge must dry before it can be incinerated. It is this element of the disposal cost that the company believe could be avoided if other disposal routes were available.

3.2.4 For instance, if alternates were available, NI Water would use anaerobic digestion to treat sludge before disposal to farmland.

3.2.5 The premise of this argument is that digestion is cost neutral. The expense of running the digesters is offset by the energy generated from the process.

3.2.6 Under this scenario, the dewatering costs are avoided. It is assumed there is no further opex associated with disposal to land, barring transport costs.

3.2.7 Calculation of the special factor claim is provided below.

**Table 3.1 – Sludge disposal special factor claim**

NI Water Actual Cost Categories	Total (£000's)
Transport costs: liquid sludge to dewatering centres	£1,278
Sludge dewatering costs	£1,032
Transport costs: sludge cake to incinerator	£451
Total	**£2,761**
Hypothetical Cost Categories	**Total (£000's)**
Transport costs: liquid sludge to digestion centres	£1,278
Sludge digestion costs	£0
Transport costs: digested sludge to land	£820
Total	**£2,098**
Special Factor (Difference)	**£663**

Figures may not sum due to rounding

3.3. UR allowance

3.3.1 The UR recognises that a difference exists between NI Water and others due to their legal obligations. There is also recognition that sludge incineration is not a strategy that can be easily changed.

3.3.2 However, it is unclear if a special factor exists on this occasion. The Reporter looked at the hypothetical scenario described by NI Water. His opinion is that the savings would typically be less than what the company suggests. This is due to:

a) Any company disposing to land would have to incur extra storage costs when the land bank is not available; and

b) It is likely that a company may have to split their disposal strategy between liquid and cake sludge. The decision on this split depends on a variety of factors. It would of course mean incurring dewatering opex, even if disposing to land.

3.3.3 The Reporter has helpfully detailed the different processes in the graphic below.

Figure 3.1 – Sludge disposal methods
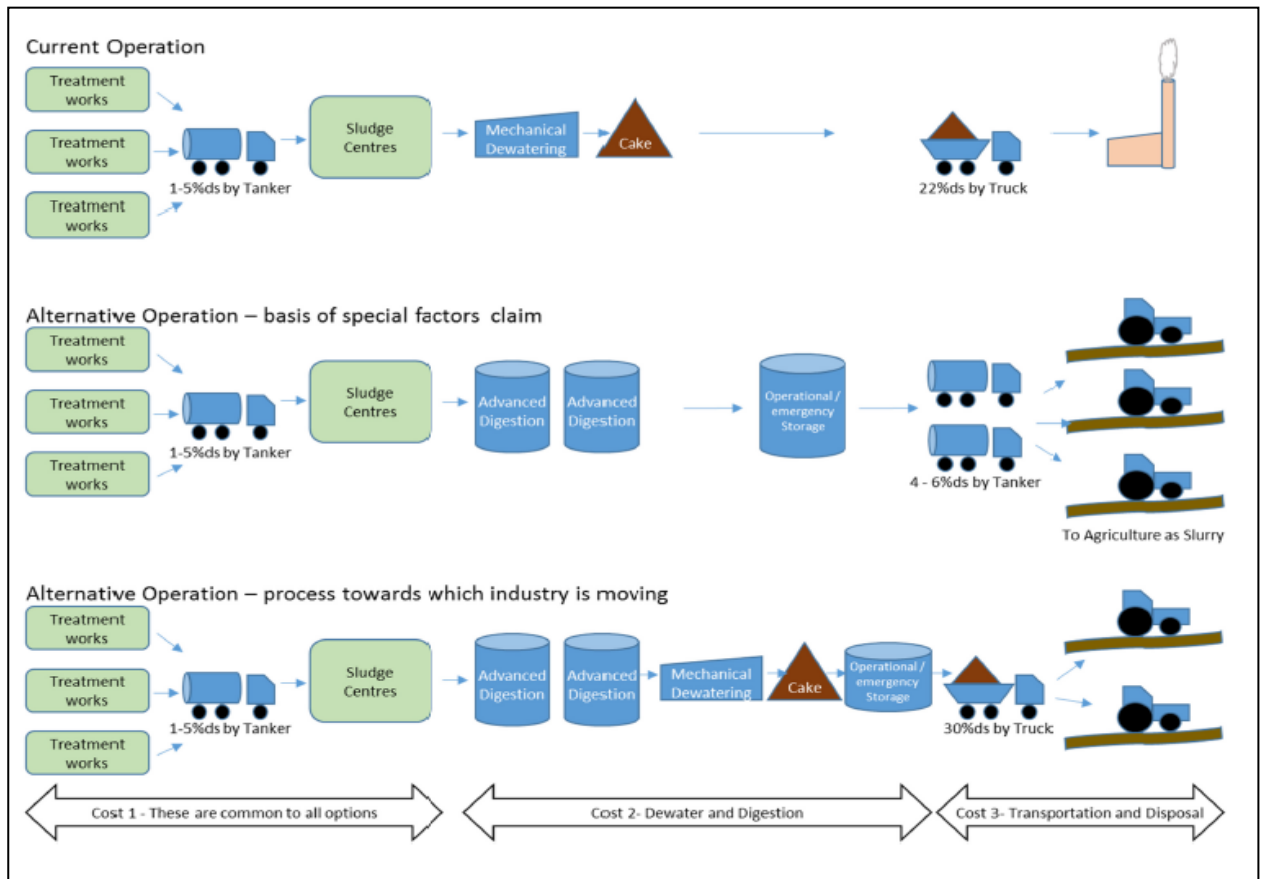
3.3.4   Based on their sums, the Reporter estimates the savings could be less then £0.3m. This falls well below the 1% service level opex materiality threshold. This threshold is set to exclude small claims, as there is always likely to be positive offsetting circumstances that the UR does not know about.

3.3.5   Consequently, the UR has disallowed this special factor claim.

4.0 Electricity Prices

4.1. Basis of claim

4.1.1 NI Water has made a claim of £5.3m to account for higher industrial electricity prices in Northern Ireland.

4.1.2 It is the company's contention that these costs are unavoidable and outside reasonable management control. This is due to differences in the electricity markets of Northern Ireland and the rest of Britain.

4.1.3 The company highlighted a variety of factors, which results in them incurring inflated prices. These include:

- A lack of supplier competition in Northern Ireland compared with GB;

- The lack of indigenous fossil fuels and dependence on gas resulting in high generation costs;

- The regulated charges affect on price, which are outside company control; and

- The limited types of electricity tariffs, which differ from those used in England, Scotland and Wales.

4.1.4 Due to these factors, the company is of the opinion that electricity prices will be more expensive than for other water utilities. Since the different procurement environment is outside management control, a special factor is believed to be merited.

4.2. Calculation of claim

4.2.1 NI Water has used a couple of different methods to determine the size of the special factor. These include:

a) A comparison of NI Water's pence per kilowatt-hour (p/kWh) against the average of five England and Wales water utilities unit costs; and

b) Use of the UR's Quarterly Transparency Report (QTR) graphs on industrial electricity prices by size band.

4.2.2 The company has combined each method to establish an industrial price differential of ✂ p/kWh. This figure is multiplied by NI Water usage in 2012-13 to establish the extent of the disadvantage.

4.2.3 Following the previous price control approach, one further adjustment is made. This is an inefficiency correction. Its purpose is to account for the fact that NI Water's electricity usage may not be optimal. The level of this change is derived from the power model regression.

4.2.4   Calculation of the company claim is provided below.

Table 4.1 – Electricity price special factor claim

		Calc	Figures
A	NI Water electricity usage		✂ kWh
B	Difference in unit cost from E&W		✂ p/kWh
C	Impact on NI Water	(A * B)	£6.6m
D	Inefficiency assessment		23.9%
E	**Special Factor**	**C / (1 + D)**	**£5.3m**

Figures may not sum due to rounding

4.3.   UR allowance

4.3.1   Whilst not necessarily agreeing with all the reasons submitted by NI Water, the UR accepts that an industrial electricity price difference exists. This is borne out by the QTR.

4.3.2   It is further acknowledged that efforts to mitigate this impact have been undertaken. The UR does however believe that inefficiency still exists as more usage reductions are planned for PC15.

4.3.3   In order to establish the price differential, comparison with the five England and Wales companies has been discounted. Whilst the logic is sound, the sample size is quite small to reliably inform the actual difference.

4.3.4   The UR has therefore used figures derived from the QTR. These figures are used in the same way NI Water has done. This involves taking the price difference across the different connection types and finding a weighted average disparity particular to NI Water.

Table 4.2 – Electricity price differential (NI versus UK)

Type of connection	MWh	Annual Consumption (MWh)	NI/UK Difference (%)	Number of Sites	% of NI Water Consumption	Weighted Difference (%)
Very Small	✂	0-20	12%	2,018	5%	0.6%
Small	✂	20-499	17%	631	19%	3.3%
Small Medium	✂	500-1999	21%	55	19%	4.0%
Medium	✂	2000-19999	17%	26	32%	5.5%
Large / V. Large	✂	20000-150000	14%	3	25%	3.4%
Total	✂		**Difference in ave. price per unit (APPU)**			**16.8%**

Figures may not sum due to rounding

4.3.5   The percentage difference figures are derived from data covering 2012-13. The table indicates that a UK water company with the same consumption profile as NI Water would experience average electricity prices 16.8% lower than Northern Ireland.

4.3.6   For NI Water, this translates into an APPU difference of ✂️ p/kWh. The impact of this on their current level of consumption is £5.4m. To this figure, an inefficiency adjustment must be applied.

4.3.7   For PC15 the UR has amended its approach to this step somewhat. Recognition needs to be given to the fact that some of the inefficiency in the power regression will be due to the power price special factor. The result is the following analysis.

Table 4.3 – NI Water power model inefficiency

	Water Power Regression	Calculation	£m (2012-13 prices)
A	NI Water actual power costs (water only)		£14.67m
B	Regression predicted costs		£10.73
C	Electricity price differential impact		£5.44m
D	Proportion of power allocated to water		43.1%
E	Electricity price impact	(C * D)	£2.34m
F	Adjusted actual costs	(A – E)	£12.33m
G	Difference	(F – B)	£1.60m
H	**Inefficiency**	**(G / F)**	**13.0%**

Figures may not sum due to rounding

4.3.8   Using this lower inefficiency value gives a special factor allowance as follows.

Table 4.4 – Electricity price special factor allowance

		Calc	Figures
A	NI Water electricity usage		✂️ kWh
B	Difference in unit cost from E&W		✂️ p/kWh
C	Impact on NI Water	(A * B)	£5.44m
D	Inefficiency assessment		13.0%
E	**Special Factor**	**C * (1 - D)**	**£4.73m**

Figures may not sum due to rounding

5.0 Regional Wages

5.1. Basis of claim

5.1.1 Following a similar approach to PC13, NI Water has made an adjustment for regional wages. This results in a negative special factor due to the advantage NI Water has operating in a low wage region of the UK.

5.1.2 The negative special factor adjusts NI Water costs upwards for the purposes of comparisons. The UR considers this appropriate since the company benefits from an advantage due to location rather than management action.

5.2. Calculation of claim

5.2.1 The company has largely followed the established process used to calculate the negative special factor. This consists of the following:

a) Derive wage data from the ASHE[2] survey. Focus is upon the median hourly wage (excluding overtime) for all full-time employees. This avoids potential anomalies with bonuses, working time patterns or part-time employment;

b) Compare NI wage levels against frontier regions (e.g. Yorkshire and South West);

c) Determine the percentage advantage NI Water will experience; and

d) Apply this percentage to the current wage bill, generating a negative special factor.

5.2.2 Using provisional results from the ASHE 2012 survey, the company identify the wage differential as follows.

Table 5.1 – Regional wage disparity

		Process Rule	Figures
A	South West - £ per hour		£10.36
B	Yorkshire and Humber - £ per hour		£10.29
C	**Average frontier regions - £ per hour**	**(A + B) / 2**	**£10.33**
D	Northern Ireland - £ per hour		£10.01
E	**Difference (%)**	**(C - D) / D**	**3.15%**

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[2] Annual Survey of Hours and Earnings.

5.2.3   After deriving the difference, NI Water has then applied this to an element of labour costs. Certain items are excluded.   These include capitalised salaries, atypical costs and business activity wages.

Table 5.2 – Regional wage special factor claim

		Process Rule	Figures
A	Total labour costs excluding capitalised wages and salaries (£m)		£48.8m
	Less adjustments		
B	Atypical VER/VS cost (£m)		-£3.4m
C	Atypical BI cost (£m)		-£1.0m
D	Business activities (£m)		-£5.8m
E	Staff expenses (£m)		-£1.1m
F	Total adjustments (£m)	(sum of B to E)	-£11.3m
G	**Total modelled costs (£m)**	**(A + F)**	**£37.5m**
H	Regional differential (%)		3.15%
I	**Negative special factor (£m)**	**(G * H)**	**£1.18m**

Figures may not sum due to rounding

5.2.4   The result of the NI Water process is a claim of £1.2m for the negative special factor.

5.3.   UR allowance

5.3.1   It is agreed that a negative special factor is required. Proper comparison must take account of external factors that both increase and reduce opex. The UR also supports the process adopted by NI Water, with some minor exceptions.

5.3.2   To calculate the regional pay difference, the UR has used the latest ASHE 2013 provisional data. These numbers correspond with the base year in question (2012-13).

Table 5.3 – Regional wage disparity

		Process Rule	Figures
A	South West - £ per hour		£12.07
B	Yorkshire and Humber - £ per hour		£11.94
C	**Average frontier regions - £ per hour**	**(A + B) / 2**	**£12.01**
D	Northern Ireland - £ per hour		£11.39
E	**Difference (%)**	**(C - D) / D**	**5.40%**

5.3.3   The findings show a slightly higher disparity than both NI Water and the PC13 study. There are numerous methods to compare wage rates but the UR has retained the analysis that is consistent with the PC13 approach.

5.3.4   The Reporter queried why the negative factor does not reflect the difference in pay rates between NI and GB at an average level. Ultimately, this is because the efficiency gap is defined by benchmarking against the frontier. Most of the other special factors reflect comparison against the average. However, this is more to do with data restrictions rather than choice.

5.3.5   When applying the regional adjustment the UR makes some different distinctions as to its scope. These differences include:

a) Business improvement costs are included, as they are no longer treated as atypical; and

b) Business activities are not excluded. Whilst they are removed from the efficiency gap modelling, the UR calculates the total special factor, and then makes a separate later adjustment for removal of these costs.[3]

5.3.6   Making these amendments results in the following special factor allowance.

Table 5.4 – Regional wage special factor allowance

		Process Rule	**Figures**
A	Total labour costs (£m)		£57.0m
	Less adjustments		
B	Capitalised salaries (£m)		-£9.3m
C	Atypical VER/VS cost (£m)		-£3.4m
D	Sundry items (£m)		-£0.2m
E	Total adjustments (£m)	(sum of B to D)	-£12.9m
F	**Total modelled costs (£m)**	**(A + E)**	**£44.1m**
G	Regional differential (%)		5.40%
H	**Negative special factor (£m)**	**(F * G)**	**£2.38m**

Figures may not sum due to rounding

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[3] See *Calculation of Operational Efficiency Gap* annex for further detail.

6.0 NDPB Status

6.1. Basis of claim

6.1.1   Postponement of domestic charging has resulted in NI Water being reclassified as a Non-Departmental Public Body (NDPB). The company has argued that this affects both operations and imposes financial costs. This claim focuses only on the additional cost element.

6.1.2   The claim is based on the rationale that current status requires NI Water to follow public sector rules. By default, this will impose extra costs in certain areas. For example, the company must:

a) Follow public sector procurement rules;

b) Answer assembly questions;

c) Deal with freedom of information requests; and

d) Complete public sector reports etc.

6.1.3   Governance arrangements are a political decision beyond reasonable management control. As such, the company believe a valid special factor exists.

6.2. Calculation of claim

6.2.1   Given their unique situation, there is little by way of comparative data to inform the materiality of the claim. For PC15, the company has reviewed public sector activities. It has then assessed the time spent on said duties to establish a full-time equivalent (FTE) valuation.

Table 6.1 – NDPB special factor claim

	FTE	Reason
Procurement		
Multiple quotations	0.5	Need to obtain quotations for low value purchases.
Business case & PPE	2.0	Must complete appraisals and evaluations to comply with DFP guidance.
Tender evaluations	0.5	Training to comply with DFP tender evaluation process.
Low value tenders	5.0	Obligation to run low value tenders for projects above £30k in value over a three-year period.
Meet with CPD	1.0	Liaise with Central Procurement Directorate.
Total	*9.0*	
Freedom of information and Environmental Information Regulations		
FOI unit	3.0	Dedicated team to deal with 500 FOI and EIR requests per annum.
FOI training	2.0	Training staff to deal with these requests.
Total	*5.0*	
Assembly questions		
Secretariat unit	2.5	Dedicated staff responsible for managing AQ's.
Staff input	1.0	Technical input from other parts of the business.
Total	*3.5*	
Public sector reporting		
FIS line reporting	1.5	Bespoke financial information systems reporting.
Professional guidance	1.0	Adhering to new public sector guidance from DFP.
Total	*2.5*	
Total	**20**	

6.2.2   The company estimate the impact to be 20 FTE staff. Given a cost per person of £50k, the result is a total claim of £1m. An additional £30k is added for a regularity audit required by DRD.

6.3.   UR allowance

6.3.1   In principle, the UR is of the opinion that a special factor exists. It was recognised in PC13 that the structure would mean extra opex (then valued at 12 FTE's). It is further understood that changing governance is not an option within NI Water control.

6.3.2   The position at the last price control was however based on a very high-level view. This claim drills down much further into the activities in question. When considered in more in-depth fashion, it is not certain that the claim is material.

6.3.3   When considering each of the duties in question, the UR would make the following points:

a) It is recognised that extra compliance in the form of appraisals and evaluations will cost money. However, these procedures are used in the public sector as an aid to decision-making. Used properly, there should be offsetting savings, which may even outstrip costs.

b) The same point can be made for low value tenders where the exercise should help ensure a better value-for-money outcome.

c) Whilst not specifically subject to FOI/EIR legislation, private water companies do incur cost in this area. The tribunal ruling on this matter stated,

"The water companies always strive to be open and provide information to the public where possible. They will continue to consider voluntary provision of information notwithstanding the fact that the EIR do not apply."[4]

This suggests that NI Water costs are not fully additional.

d) Parliamentary questions are not specific to NI Water alone. The company estimate queries of 400 per annum. This translates to 3.7 queries per assembly member.

When considering this same issue in SR06, WICS obtained data on five water companies. They found average parliamentary queries of 186 per company or 3.1 per politician. This does not indicate a substantial divergence.

6.3.4   Taking these offsetting factors into account, the extra cost is likely to be quite a bit less than the 20 FTE's estimated.

6.3.5   Another factor not fully explored in PC13 is potential costs incurred by WaSC's but not NI Water. The company has argued that these are limited as it still fulfils normal governance requirements.

6.3.6   Though difficult to accurately define, some opex will be avoided. For instance, as there is no domestic charges, NI Water avoid the need to make guaranteed, enhanced and customer charter service standard payments.

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[4] Smartsource Drainage and Water Searches Ltd vs. The Information Commissioner

6.3.7   Using the most recent Ofwat data (2010), these payments amounted to £175 per 1000 population. For NI Water this could be avoided costs of up to £300k. Obviously such payments aren't certain as they are linked to performance. It does however illustrate the potential for differences.

6.3.8   Given such offsetting factors to NI Water's valuation and the uncertainty around the quantum of avoided costs, the UR has made no allowance. This is based on the view that the claim, whilst valid, falls below the materiality threshold.

6.3.9   In matter of fact, the NDPB allowance in PC13 fell below this threshold and was incorrectly accounted for. This has been amended for the PC15 analysis.

7.0 Sewer Network

7.1. Basis of claim

7.1.1 The final claim relates to the performance of the sewer network. The company provides data illustrating a big disparity between England and Wales and themselves in certain metrics.

7.1.2 When looking at sewer blockages, collapses and rising main failures, it is clear that NI Water lags behind.

Table 7.1 – Network performance in 2012-13[5]

Metric	NI Water	E&W Average
Sewer blockages (Nr/000 km)	1,364	966
Sewer collapses (Nr/000 km)	71	16
Rising main failures (Nr/000 km)	2.7	1.9

7.1.3 Poor performance is attributed to a legacy of 15-20 years of under investment in small diameter sewers. The company argue that capital budget restrictions have played a part in this. Given recent focus on water quality targets, the combined result is a lack of sewer network investment.

7.1.4 The consequence of a badly performing network is higher levels of opex dedicated to reactive maintenance.

7.2. Calculation of claim

7.2.1 Costs associated with sewer network issues are provided below.

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[5] Figures calculated for E&W are taken from the PR14 August submission. The data relates to total failure rates per network length (excluding lateral drains).

Table 7.2 – Network activity and cost in 2012-13

Metric		2012-13 Total
Sewer blockages	Nr	20,810
	£m	1.54
Desilting	Metres	304,187
	£m	0.85
CCTV Survey	Metres	17,438
	£m	0.05
Sewer and manhole repairs	Nr	936
	£m	1.19
Emergency tankering	Nr	697
	£m	0.24
Total	£m	**3.88**

Figures may not sum due to rounding

7.2.2   Of the £3.9m opex, the company only has comparable activity data for sewer blockages and manhole repairs where it can say with certainty that performance differences exist. Taking this value (£2.7m), NI Water has estimated additional opex in the region of 40%, giving a special factor of £1.1m.

7.3. UR allowance

7.3.1   The company demonstrates that there is a gap in the number of network issues. This fact is accepted by the UR. However, it has failed to provide any financial data linking this with a lack of capital investment.

7.3.2   It is not clear whether absolute capital budgets were restricted compared to England and Wales. It is also unknown if the impact could have been mitigated by more efficient capital spending (which is within the control of Water Service / NI Water managers).

7.3.3   The absence of any financial data supporting NI Water's position is a problem. The UR cannot assume that a special factor for legacy investment is certain or even the key factor in network under performance.

7.3.4   How then can the performance gap be explained? The mostly likely influence is lateral drains and private sewers. NI Water has always had responsibility for these assets. Companies in England and Wales only adopted them in October 2011.

7.3.5   Since then, latest data suggests that the gap is closing. Whilst NI Water is steadily improving, the England and Wales position is getting worse as they deal with formerly private sewer issues.
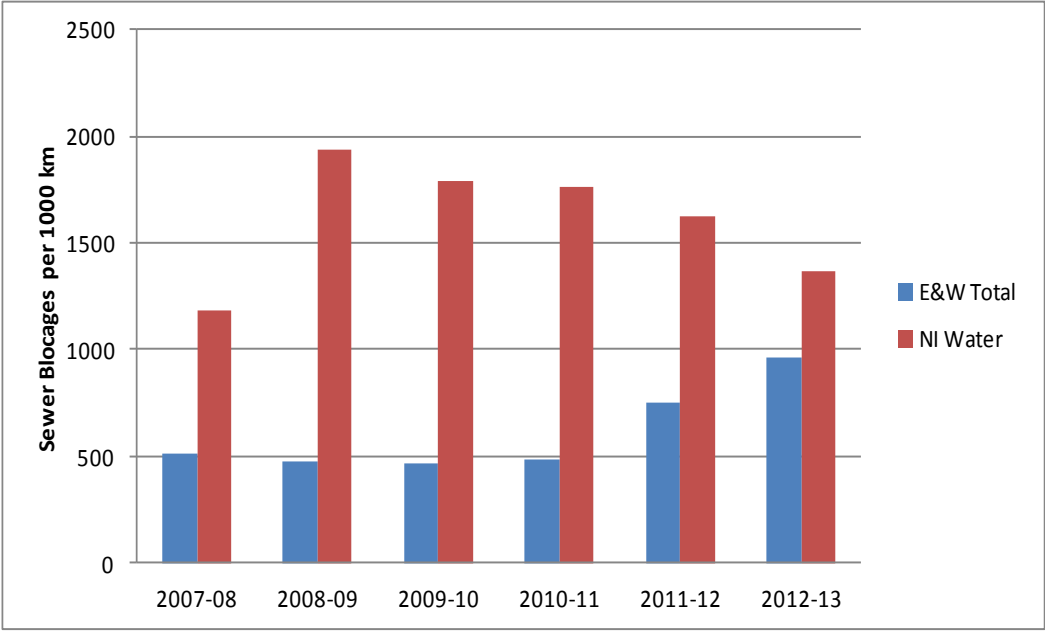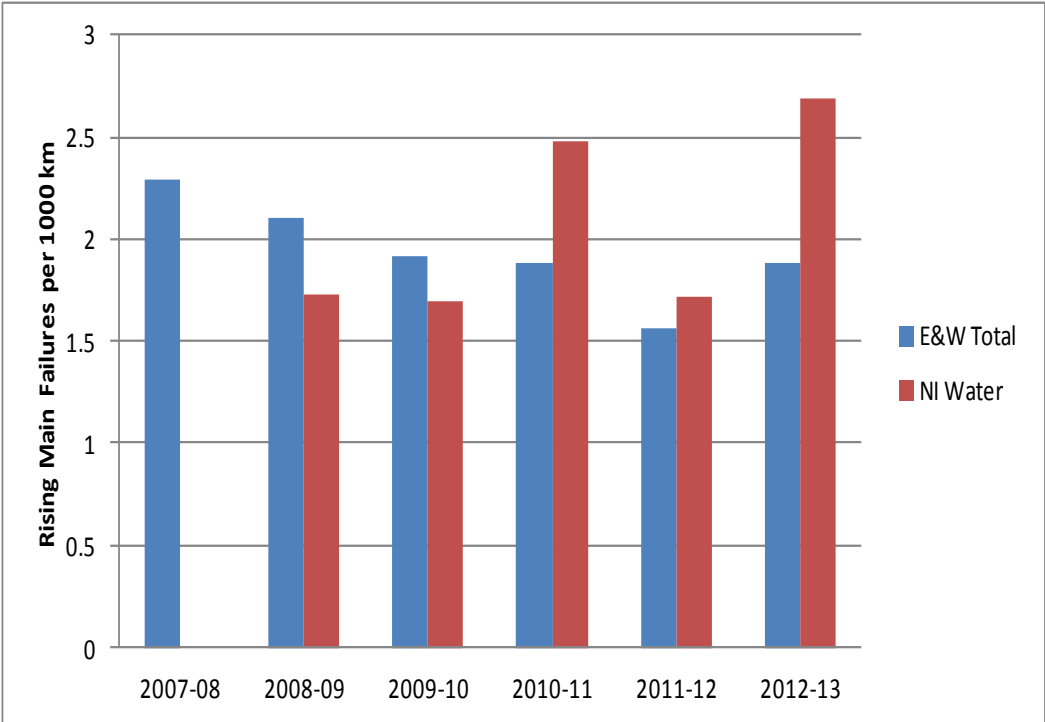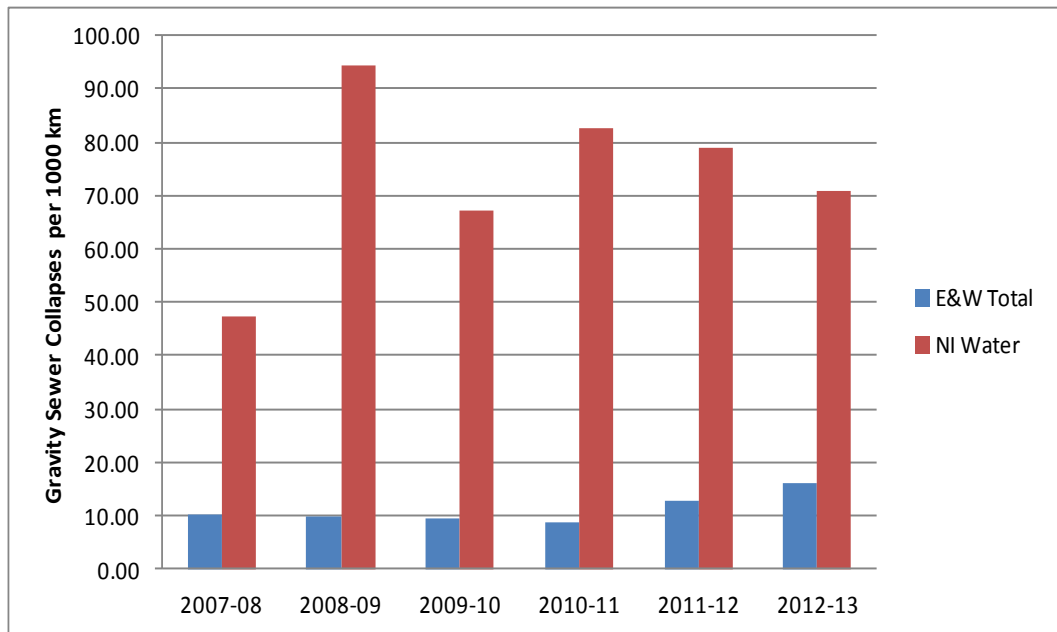
Figure 7.1 – Sewer blockages

Figure 7.2 – Rising main failures

Figure 7.3 – Sewer collapses

7.3.6   It should be noted that the graphs for NI Water and England and Wales include the private sewer failures but not the additional sewer lengths. The reason is uncertainty around these values.

7.3.7   When compared against England and Wales, the impact of lateral drains and private sewer length is markedly different. Including sewer laterals increases the 'ordinary' network size of NI Water by 14%. For England and Wales, the average increase is 66%.

7.3.8   On a length per property basis, the lateral drains in England and Wales are 9.4m long. For Northern Ireland, the comparable figure is 3.5m per billed property. The gap is even greater when compared to rural companies.

7.3.9   If these differences can be confirmed, there is the possibility a negative special factor may be appropriate. More work would need to be undertaken to discern this detail.

7.3.10   Collapses aside, the graphs do however suggest that the gap is falling now that responsibilities are aligned.

7.3.11   Ofwat companies provide detail on the opex incurred because of the private sewer transfer. On average, this amounts to £2.40 per property.

7.3.12   This suggests that a sewer network special factor did exist, and should have been accounted for, prior to 2011. As the UR incorporates updated costs in its comparisons, this is not considered an issue for PC15.

7.3.13   As regards the under investment claim, the company has failed to evidence this properly. No allowance has therefore been made.

8.0 Conclusions

8.1. Summary

8.1.1   The UR has considered the evidence and concluded an allowance around 47% of the amount claimed.

Table 8.1 – Special factors – claimed versus allowed

Special Factor Claim	NI Water Claimed	UR Allowed
Rural Network (Sewage)	£4.02m	£2.81m
Sludge Disposal	£0.69m	£0.00m
Electricity Prices	£5.30m	£4.73m
Regional Wages	-£1.20m	-£2.38m
NDPB Status	£1.03m	£0.00m
Sewerage Network Under-Investment	£1.09m	£0.00m
Total	**£10.94m**	**£5.16m**

Figures may not sum due to rounding

8.1.2   Further work will be required, particularly with respect to the rural network. This allowance is in some respects unique, as the UR has made an adjustment without evidence of comparator companies.

8.1.3   The UR is of the opinion that the determination takes full account of the detail submitted, but would however welcome any data that can provide further clarity.