

PR19 Wastewater Services business plan table commentaries

September 2018

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WWS1 – Wholesale wastewater operating and capital expenditure by business unit

Table Validation Errors

Line 9

There is a validation error in this line: “Totals in Line 9 should equal sum of Totals in Lines 8 and 16 in Bio3”
Bio3 Lines 8 and 16 both include depreciation therefore this check does not appear to be correct.

The Totals of line 6 and line 14 of Bio3 equal the totals in Line 9 for Sludge Treatment and Sludge disposal:

Bio3 - Wholesale wastewater sludge opex											
Sludge treatment opex by treatment type				17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
A	Sludge treatment type			Total	Total	Total	Total	Total	Total	Total	Total
6	Total before depreciation	£m	3	9.424	7.278	6.019	4.943	5.057	5.245	5.220	5.617
B											
14	Total before depreciation	£m	3	4.667	7.536	7.219	6.643	6.542	6.547	6.488	6.614

WWS1 - Wholesale wastewater operating and capital expenditure by business unit											
				17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25
A	Operating expenditure			Sludge treatment							
9	Total operating expenditure (excluding third party services)	£m	3	9.424	7.278	6.019	4.943	5.057	5.245	5.220	5.617
				Sludge disposal							
9	Total operating expenditure (excluding third party services)	£m	3	4.667	7.536	7.219	6.643	6.542	6.547	6.488	6.614

General comments

Wastewater Totex reduces by £2.7m from 2017-18 to 2024-25. This comprises a £5m increase in operating expenditure, a £6m reduction in capital expenditure, £1m increase in contributions and £1m lower pension deficit recovery costs.

Operating Costs increase by £5m per annum from 2017-18 to 2024-25. This is impacted by the following:

- Net £2m reduction in the annual power costs by the end of AMP7, (despite 11% Real Price Effect).
- £4m increase in the annual power income (negative opex) figure by the end of AMP7 as a result of new schemes coming on line.
- -£5m increase in the annual IRE charge by the end of AMP7, as a result of a change in the mix of work envisaged, which results in a higher proportional opex charge.
- A £4m per annum increase in rates costs as a result of the rates revaluation in 2021-22.
- A net £1.7m increase per annum in other operating costs, which results from opex from capex relating to the NEP and an increase in principal use opex recharges (4.6m) offset by a number of efficiencies relating to direct labour (£1.2m), Outsourced supplier contracts (£1.3m), support service cost reductions (£4m).
- The annual rate of capital expenditure decreases by £5.6m per annum from 2017-18 to 2024-25. This is impacted by the following:
- Maintenance Capital reduces by £34m per annum by 2024-25 compared to 2017-18. This reflects a £11m per annum capital efficiencies (resulting from a new contract with our capital partners) and completion of a number of significant maintenance investment in AMP 6 (for example the £94m sludge investment programme).
- Overall (AMP 6 to AMP 7) Maintenance capital (before adjusting for opex IRE) decreases by £149m, which is driving the year on year reductions above. A summary of the significant changes between AMP 6 and AMP 7 is detailed in tables 1 and 2 below:

Welsh Water Wastewater Services Business Plan Table Commentaries

Table 1 AMP 6 to AMP 7 - Key Movements in Maintenance Spend	£m
1) Capital Efficiencies	(49)
2) Increase Maintenance Expenditure	
Health and Safety Improvements	12
Event Duration Monitoring	38
PFF	19
Continuous/Intermittent Discharges	<u>16</u>
Sub-total	85
3) Decreased Maintenance Expenditure	
WwTW Maintenance	(15)
New development & growth (WW)	(12)
Private sewers & pumping stations	(13)
Sewage pump stations	(18)
Network intermittent discharges (M)	(11)
Sludge schemes	<u>(100)</u>
Sub-total	(169)
4) Changes in Classifications	
Sustainable Drainage Plans	(13)
Sludge Schemes	<u>(5)</u>
Sub-total	(18)
5) Other Movements	2
Total Movement	(149)

Table 2 - AMP 6 to AMP 7 - Key Movements in Other Capital Spend	£m
1) Capital Efficiencies	(58)
2) New Enhancement Investment Cases	
Loughor	94
Sewerage Resilience	18
Other (DWF/EDM)	<u>22</u>
Sub-total	134
3) Decreased/Completed Enhancement Programmes	
Completed Dunnes Lane (Intermittent Discharges) AMP 6	(41)
Completed AMP 6 Continued/Intermittent Discharges (WFD Improvement)	<u>(28)</u>
Sub-total	(69)
4) Increased NEP	73
5) Change in Classification	
Sustainable Drainage Plans	13
Sludge Schemes	<u>5</u>
Sub-total	18
6) Net other movements	(5)
Total Movement	93

Other Capital investments increase by £29m from 2017-18 to 2024-25. This reflects the £93m increase in other capital investment between AMP 6 and AMP 7. The significant movements are detailed below:

Efficiency Programmes

Our operating cost efficiency programme delivers annual savings of £7.8m by 2024-25. The programme is based upon a number of work streams, designed to identify end to end process efficiencies in our waste treatment cycle. Table 3 below summarises the work streams that comprise that end to end process efficiency review:

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	£m	£m	£m	£m	£m	£m	£m
Management Restructure	-	347	347	347	347	347	347
Treatment Works Efficiency	154	434	799	1,169	1,519	1,849	2,079
Bio Resources Efficiency	50	150	200	200	200	200	200
Scientific Team Efficiencies	-	100	100	100	100	100	100
Energy Efficiency Schemes	-	200	400	600	1,000	1,200	1,300
Maintenance Efficiency	1,728	3,452	3,557	3,557	3,557	3,557	3,557
Other	150	170	250	250	250	250	250
Water Total	2,082	4,853	5,653	6,223	6,973	7,503	7,833

Our Capital efficiency programme in Wholesale wastewater delivers savings totalling £107m in AMP 7 compared to AMP 6.

The level of efficiency is measured against the AMP 6 outturn, and captures efficiencies relating to improved ways of working, innovation, processes, procurement and challenges relating to scope. We work with Alliance partners on the majority of our capital delivery and are currently tendering for a Network Alliance to deliver our networks activity. These Alliances allow us to benefit from best practice across our and other industries and the incentives we set up allow us to share responsibility for delivery of our commitments and efficiency savings and give us the opportunity to manage workload in a flexible and efficient manner.

(Line A1-A11)

Assumptions/Judgements made

- Actual costs for 2017-18 are shown on a consistent basis with the Annual Performance Report, apart from adjusting 'Other operating expenditure' to reflect the 'Principal Use' treatment as described in the latest Ofwat guidance. The impact of this is £2.3m in 2017-18 as shown in the following table;

				For the 12 months ended 31 March 2018					
Line description			Units	Sewage collection	Sewage treatment	Sludge			Total
						Sludge transport	Sludge treatment	Sludge disposal	
7	~ Other operating expenditure excluding renewals	PER APR	£m	25.355	29.375	4.723	10.103	4.545	74.101
7	~ Other operating expenditure excluding renewals	Principal Use Adjustment	£m	0.855	0.920	0.057	0.325	0.122	2.279
7	~ Other operating expenditure excluding renewals	Per WWS1	£m	26.210	30.295	4.780	10.428	4.667	76.380

- 2018-19 – 2024-25 were allocated to the price controls based on the same percentage splits as 2017-18 actuals, except where there is a known changes in business practice/structure, in which case a change is justified on the basis that it better reflects the RAG's after the change is made.
- The material example in Waste relates to the treatment of 'Scientific' costs, where as a result of the additional work associated with maintaining BAS compliance, a greater proportion of scientific department costs have been allocated to the sludge price control from 2018-19 onwards.
- Efficiencies in direct cost budgets have been allocated to the departments to which they relate and therefore will be directly allocated to price controls.
- For efficiencies in the support services areas, the impact of these is included in 'Other operating expenditure excluding renewals' (line 7) and allocated to price controls on the basis of support service costs in total.
- Confirmation of the treatment for all years has been agreed with each Head of Department.
- Amp 6 costs are in out-turn prices and AMP 7 costs are in 2017-18 (CPIH adjusted) prices.

(Lines A5; B1-B19)

- The methodology for creating the capital disclosures in the table is consistent across AMP 6 and AMP 7 in so far as it is driven from an internal model called the 'DG Analysis' model, which builds the capital programme by investment case (which links through to price controls).
- There is considerable movement between investment cases and in the profile of the programme as a whole, a summary of which is provided below.

"Blind" years 2018-19 and 2019-20 - Specific Treatment

- The table follows the treatment in the APR, which splits Enhancement / Maintenance, Infra / Non-Infra at investment case level for year 3 (2017-18) actuals and for the blind years, based on projected spend. Differences in specific cost lines between the APR tables and the data in WWS1 are a consequence of the adoption of the 'Principal Use' accounting treatment as required by Ofwat in the PR 19 Methodology, and also with the £18m of spend on the L2 Driver projects at Loughor, being excluded from WWS1, as it is included in WWS10 as transition spend.

The difference between the Annual Performance Report and WWS1 for 2017-18 is summarised below:

		Sewage collection	Sewage treatment	Sludge			Total
				Sludge transport	Sludge treatment	Sludge disposal	
Figures Declared in 2017/18 APR Table 4K		111.231	148.916	4.930	44.924	5.788	315.789
Line 11	Principal Use Adjustment Opex	0.855	0.919	0.057	0.328	0.122	2.281
Line 13	Principal Use Adjustment Capex	-3.977	-3.869	-0.093	-1.551	-0.679	-10.169
Line 14	Transition Expenditure (L2 Driver)	-15.068	-3.099	0.000	0.000	0.000	-18.167
Figures Declared in 2017/18 WWS1 Table		93.041	142.867	4.894	43.701	5.231	289.734

Forecast years post 2020 - Specific Treatment

- The forecast investment has been primarily based on analysis of customer views / feedback, reviews of historical, current and forecast performance measures and expenditures, analysis of future performance targets, reviews of expenditures identified in high level feasibility reports to meet growth and regulatory challenges and the analysis and optimisation of risks and benefits. Judgement was made as to the base and enhancement splits for proposed investment having regard to Ofwat guidance and price controls.
 - We have allocated 75% of what we had considered to be infrastructure capex to the operating renewals line in AMP7 to be consistent with AMP6.
 - We have taken Infrastructure network reinforcement (INR) to be just the 'off-site' or 'non-site-specific' part of what used to be included in Requisitions expenditure.
 - We have treated 'network growth schemes' expenditure separately from INR. Network growth scheme expenditure is included in 'Other capital expenditure' in Table WWS1.
- The investment programme has been developed using analysis as set out in our investment cases. Projects, schemes and programmes of work associated with the investment cases and associated budgets have been allocated to the expenditure categories and sub-price controls to enable the analysis presented in this table.
- The data within Table WWS1 identifies the total value of the PR19 wastewater programme.
- We have assumed that the distribution of expenditure in APR 2J for 2017-18 (i.e. between 'Infrastructure Network Reinforcement' and 'On-site / Site-specific' and between asset types), is typical. We have applied the same distribution to our PR19 INR forecast expenditure.

Line A1 - Power

All energy costs, including the climate change levy and the carbon reduction commitment. Any cost savings from power generated internally should be netted off these costs.

Power costs reduce by £2m from 2017-18 to 2024-25. This comprises an 11% (£3m) forecast RPE relating to power based on an external report commissioned by Cornwall), the impact of our energy efficiency initiatives, which will reduce electricity consumption by 6% per annum (£2.1m) and increased renewable energy generation (£3m per year).

The spike in sewerage collection power costs in 2017-18 reflects the abnormal level of pumping station activity resulting from the multiple bouts of wet weather in that year. We anticipate the power consumption to return to more typical levels (similar to 2016-17) in our business plan

Line A2 – Income treated as negative expenditure

Income received from sales which are external to the appointed business and which directly relate to the wastewater processes. It should be input as a negative number.

- *This will include:*
- *Electricity sales from sources such as CHP to external parties.*
- *Electricity sales from back-up generators under the National Grid 'STOR'.*
- *Bio-methane gas sales to the National Grid.*
- *Renewables Obligation Certificates (ROCs) and payments made under the non-domestic RHI and Feed-in Tariff schemes.*
- *Sludge and sludge products such as cake, granules etc. to external parties.*

Power income increases from £3.3m to £7.1m from 2017-18 to 2024-25 (increase of £3.8m). Renewable generation output is forecasted to rise by approximately 45% compared to 2017-18, increasing revenue by £2.4m by 2025. This increase is mainly driven by the commissioning of Five Fords in 2018-19 and COG Moors in 2019-20 advanced anaerobic digestion, increasing gas generation outputs, resulting in higher levels of renewable electricity and gas generation. The full year effect of Five Fords is seen in 2019-20, and from Cog Moors in 2020-21. The renewable generation subsidy is also forecasted to rise, increasing revenue by £0.9m by 2025

The increase in forecasted revenue from 2017-18 to 2018-19 of £0.444m is due to planned recovery of output of existing assets (output of Afan WWTW and Cardiff WWTW) where CHP operation was below target in 2017-18 due to unscheduled maintenance.

Line A3 – Service charges / Discharge Consents

Total cost of service charges by the Environment Agency or Canal and River Trust for discharge permits.

Budget remains static until 2021-22 where we have reflected the change in charging structure that National Resources Wales have signalled their intention to implement. This new methodology follows that recently implemented by the Environment Agency and would increase charges by 23% (£1.02m). This increased level of charges is reflected from 2021-22 until the end of the Amp.

Line A4 – Bulk discharge

Total payments for bulk imports. If a supply is a shared supply and is jointly owned, the costs associated with it should not be reported here but in the appropriate cost line.

We do not have any sewerage main connection agreements and therefore have not used this line.

Line A5- Renewals expensed in year (infrastructure)

Infrastructure Renewals which are expensed rather than capitalised in statutory accounts.

Infrastructure renewals expenditure in AMP 6 is based upon actual spend incurred. For AMP 7 the costs are budgeted on a historic average proportional basis where 25% of the costs is estimated to upgrade the assets and is included in line 12 maintaining the long term capability of the assets.

Private sewers costs that have not enhanced the asset have been included in this line with private sewer enhancement costs and adopted pumping stations reported in line 12 and 13.

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	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	£m	£m	£m	£m	£m	£m	£m	£m
Private sewers and pumping stations	8.375	7.055	8.413	5.748	5.728	5.709	5.683	5.665
Split								
Line 5: Other operating expenditure- Renewals expensed in year (Infrastructure)	6.230	5.248	6.258	3.877	3.863	3.850	3.832	3.820
Line 12: Maintaining the long term capability of the assets ~ infra	0.881	0.742	0.885	1.292	1.288	1.283	1.277	1.273
Line 13: Maintaining the long term capability of the assets ~ non~infra	1.264	1.065	1.270	0.579	0.577	0.576	0.574	0.572
	8.375	7.055	8.413	5.748	5.728	5.709	5.683	5.665

Line A6 - Renewals expensed in year (non-infrastructure)

Non Infrastructure Renewals which are expensed rather than capitalised in statutory accounts.

We have not expensed any non-infrastructure renewals in our business plan (or in 2017-18 actuals). Our treatment of non-infrastructure maintenance activity is capitalised under IFRS in the APR.

Line A7 – Other operating expenditure excluding renewals

Any other operating costs.

A summary of the line 7 expenditure and the movement year on year is shown below.

Other Expenditure Excluding Renewables (only)							
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	£'m	£'m	£'m	£'m	£'m	£'m	£'m
Inflation/Deflation allocated							
Manpower	32.93	31.95	31.24	31.05	30.68	30.30	30.30
Chemicals	4.18	4.05	3.80	3.70	3.62	3.56	3.60
Materials	0.86	0.86	0.80	0.78	0.77	0.75	0.74
Transport Charges	5.21	5.19	4.71	4.62	4.57	4.43	4.35
Brought in Services	13.12	13.15	10.84	10.79	12.20	12.81	14.82
Establishment	0.88	0.90	0.83	0.82	0.78	0.78	0.74
Other	-	(0.03)	0.22	0.26	0.25	0.27	0.03
Outsourced Contract Costs	4.26	4.26	3.98	3.90	3.82	3.75	3.87
G&S	24.00	21.10	20.62	20.49	20.32	19.93	19.84
Capital Salaries & Transfers	(8.71)	(8.80)	(8.80)	(8.80)	(8.80)	(8.78)	(8.78)
PU Adjustment	3.93	5.77	6.82	8.04	8.91	8.95	8.61
Total	80.656	78.398	75.056	75.645	77.120	76.750	78.124
Year on year movement	-	(2.258)	(3.342)	0.589	1.475	(0.370)	1.374

The year on year movements are analysed below:

Other Expenditure Excluding Renewables - Year on year movement							
	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
Inflation/Deflation allocated	£'m	£'m	£'m	£'m	£'m	£'m	£'m
Manpower	-	(0.98)	(0.71)	(0.19)	(0.37)	(0.38)	0.00
Chemicals	-	(0.13)	(0.25)	(0.10)	(0.08)	(0.06)	0.04
Materials	-	0.00	(0.06)	(0.02)	(0.01)	(0.02)	(0.01)
Transport Charges	-	(0.02)	(0.48)	(0.09)	(0.05)	(0.14)	(0.08)
Brought in Services	-	0.03	(2.31)	(0.05)	1.41	0.61	2.01
Establishment	-	0.02	(0.07)	(0.01)	(0.04)	0.00	(0.04)
Other	-	(0.03)	0.25	0.04	(0.01)	0.02	(0.24)
Outsourced Contract Costs	-	0.00	(0.28)	(0.08)	(0.08)	(0.07)	0.12
G&S	-	(2.90)	(0.48)	(0.13)	(0.17)	(0.39)	(0.09)
Capital Salaries & Transfers	-	(0.09)	0.00	0.00	0.00	0.02	0.00
PU Adjustment	-	1.84	1.05	1.22	0.87	0.04	(0.34)
Total	-	(2.258)	(3.342)	0.589	1.475	(0.370)	1.374

The significant movements are as follows

- Direct Labour decreases by £2.6m from £32.9m (2018-19) to £30.3m (2024-25) as a result of the operational labour efficiency programme impacting through the AMP. See the commentary on WWS5 for more detail.
- Chemical costs reduce in 2021 as a result of our efficiency programme at treatment works. This is despite £1.8m of incremental chemical costs resulting from Phosphorus removal schemes in the NEP (National Environmental Programme).
- Transport charges decrease in 2020-21 as a result of the replacement cycle of vehicles, which reduced running costs early in new asset lives.
- Brought in services reduces in 2020-21 as a result of our efficiency programme (principally restructuring outsourced contracts to reduce activity levels and margins), but increases again from 2020-21 which is opex from capex relating to the NEP including pass forward flow treatment costs, and Waste Framework Directive costs.
- G&S reduces by £4.2m over the AMP, which reflects the net impact of the support services efficiency programme, which comprises approximately 50% manpower reductions and 50% reductions in activity levels. This is front loaded to maximise the benefits throughout the AMP 7 period. The 2019-20 saving comprise the majority of the cost efficiencies relating to targeted activity level reductions in support services, with some headcount reductions. The savings from 2020 onwards largely relate to manpower related savings which require systems improvements and changes to ways of working to achieve. See the commentary on WWS5 for more detail.
- Principal Use adjustments reflect a proportional charge relating to the use of an asset (or group of assets) by another part of the business, other than the part of the business where the asset 'resides'. The charge reflects the share of the depreciation of that asset or group of assets proportional to the estimated use of that asset by the relevant business area.
- Sludge disposal costs increase in 2018-19 and 2019-20 as a result of the Sludge Strategy investments at the end of AMP6.

Line A8 – Local authority and Cumulo rates

The cost of local authority rates. This should include both the local authority rates and cumulo rates.

The costs associated with business rates are static until the revaluation process in 2021-22. The £3.4m revaluation increase reflects the impact of adjusting for tender price indices (on a basis consistent with the last revaluation) and also reflect an increase in the decapitalisation rate from a historic low of 3.8% to a more reasonable long term average of 4.1% (compared to a recent historic high of 4.5%). We have agreed

this approach with our advisors Lambert Smith Hampton. We have not budgeted for a further rates revaluation in AMP 7.

Costs increase by a further £0.8m from 2021-22 to 2024-25, which reflects proposed changes in Welsh Government legislation, which will require DCWW to notify billing authorities of improvements to assets as they arise (currently there is no such obligation). This will result in asset improvements being reflected in rates charges more quickly and charges being incurred against assets not currently assessed (or under assessed).

Line A9 – Total operating expenditure (excluding third party services)

Total operating costs excluding third party services. Calculated as the sum of WWS1 lines 1 to 8.

Calculated as the sum of WWS1 lines 1 to 8

Line A10 – Third party services

Operating expenditure for providing third party services. See appendix 1 of RAG 4.

Sewer Location Survey costs are forecast to increase from £70k to £200k from 2017-18 to 2018-19 and then stay static until 2024-25. The increase reflects an improved process for capturing costs (and recharges) associated with this activity.

Line A11 – Total operating expenditure

Total operating expenditure for the wholesale business only within each business category. Calculated as the sum of WWS1 lines 9 and 10.

Calculated as the sum of WWS1 lines 9 and 10.

Line B12 - Maintaining the long term capability of the assets ~ infra

Capital expenditure on infrastructure assets excluding third party capex to maintain the long term capability of assets and to deliver base levels of service. Where projects have drivers both of enhancement and capital maintenance, companies should apply a method of proportional allocation to allocate costs between enhancement and capital maintenance.

We have a good understanding of the costs associated with maintaining our infrastructure assets. Whilst the AMP 7 profile differs from that in AMP 6, it reflects the scheduled maintenance programme of work required.

Private sewers costs have been included in this line where it was considered that there this resulted in enhancing the asset; line 5 commentary provides further detail

Line B13 - Maintaining the long term capability of the assets ~ non~infra

Capital expenditure on non-infrastructure assets excluding third party capex to maintain the long term capability of assets and to deliver base levels of service. Where projects have drivers both of enhancement and capital maintenance, companies should apply a method of proportional allocation to allocate costs between enhancement and capital maintenance.

In AMP 6 (years 3-5) DCWW is investing £140m in sludge schemes, which complete in 2019-20. Once complete, the non-infra spend reduces to a level of approximately £65m per year. Sewerage Collections spend increase at the end of AMP 6 and establishes a new higher rate into AMP 7 as a result of costs associated with the NEP.

The significant reduction in costs associated with Sewerage Treatment between 2019-20 and 2021-22 relates to the profiling of spend in the latter part of Amp 6, which reduces into AMP 7 as the AMP 6 programme of work is completed.

There is a £10.169m difference to the APR table on this line due to the Principal Use Adjustment.

Adopted pumping station costs have been included in this line; line 5 commentary provides further detail

Line B14 - Other capital expenditure ~ infra

Any capital expenditure on infrastructure assets other than defined in WWS1 line 11 excluding third party capex.

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There is a £13.452m difference to the APR table on this line in 2017-18 due to the exclusion of L2 Driver costs at the Loughor investment in that year from the WWS1 table.

In 2020-21 we are recognising the one off spend relating to the AMP 6 special factor investment case for Llanelli /Gowerton (£90m). The higher run rate in AMP 7 is as a result of the higher environmental programme of works required by NRW and the EA.

Line B15 - Other capital expenditure ~ non~infra

Any capital expenditure on non-infrastructure assets other than defined in WWS1 line 12 excluding third party capex.

There is a £4.715m difference to the APR table on this line in 2017-18 due to the exclusion of L2 Driver costs at the Loughor investment in that year from the WWS1 table.

The spike of cost in AMP 6 relates to a number of Wastewater Treatment Works schemes allocated to growth at sewage treatment works (excluding sludge treatment). The larger of the schemes includes Hook & Johnston, Kinmell Bay and Chester. Some schemes will have completion dates in AMP7. The higher run rate in AMP 7 is as a result of the higher Environmental Programme of works required by NRW and the EA.

Line B16 - Infrastructure network reinforcement

Infrastructure network reinforcement - a water or sewerage undertaker's capital expenditure for the provision of new infrastructure network assets or enhanced capacity in existing infrastructure network assets such as water mains, tanks, service reservoirs, sewers and pumping stations, in consequence of new connections and or new developments. This expenditure relates solely to network reinforcement works that are needed on a water or sewerage undertaker's existing network assets beyond the nearest practicable point where the connection to the water or sewerage undertaker's network has, or will be made. Capital expenditure in this line should be the same categories of expenditure that was used to calculate a water or sewerage undertaker's infrastructure charges.

This reflects a steady state of spend based on the actual costs disclosed in the APR for Developer services network reinforcement work , forecast forward based on our best view of activity levels in AMP 7.

Line B17 - Total gross capital expenditure excluding third party services

Total gross capital expenditure excluding third party services. Calculated as the sum of WWS1 lines 12 to 16. Calculated as the sum of WWS1 lines 12 to 16.

Line B18 - Third party services

Capital expenditure for providing third party services.

These relates to charges for Searches fees to developers etc. who ask for survey plans & searches etc.

These are based upon 2017-18 actuals which are forecast to the end of the AMP. We have not forecast any capital costs in AMP 7 for these.

Line B19- Total gross capital expenditure

Total gross capital expenditure. Calculated as the sum of WWS1 lines 17 and 18.

Calculated as the sum of WWS1 lines 17 and 18.

Line B20 - Grants and contributions

Grants and contributions as reported in Table 4D/4E of RAG4. Input as a positive number. This will be equal to table App 28 line 29 for years 2015-2025.

Grants and Contributions increase to the end of AMP6 in line with Developer Services activity, which we forecast to reduce back to sub £10m annual levels during AMP7. Further details are given in the commentary for App28.

Line B21 - Totex

Totex. Calculated as the sum of WWS1 lines 11 and 19 minus 20.

Calculated as the sum of WWS1 lines 11 and 19 minus 20.

Line C22 - Pension deficit recovery payments

Actual pension deficit recovery payments including costs capitalised and any group recharges for pension deficit costs.

Pension deficit recovery payments represent Wastewater's share of forecast cash payments into the defined benefit DCWW Pension Scheme over and above normal contributions. Under our extant recovery plan we are committed to making payments totalling £6.7m in both 2017-18 and 2018-19, and thereafter a total of £3.5m per annum until 2029-30. Cash payments have been allocated to regulatory business units based on the parts of the business in which scheme members work or worked.

Line C23 - Other cash items

Other cash items not including in the accounting charge.

There are no costs for this line.

Line C24 - Totex including cash items

Totex including cash items. Calculated as the sum of WWS1 lines 21 to 23.

Calculated as the sum of WWS1 lines 21 to 23.

Line D25 - Item 1 - Swansea Bay Rates refund

Please specify atypical items in the lines below. Atypical items are defined as unusual items outside ordinary activities. This would include items such as office moves and one-off reorganisations. For avoidance of doubt these items should not be included in lines 1-24 above

This relates to rates a forecast rebate for Swansea treatment works as a result of an appeal against the 2010 rates listing. This is explained in more detail in table WWS7.

Line D35- Total atypical expenditure)

Total atypical expenditure. Calculated as the sum of WWS1 lines 25 to 3.

There are no atypical cost.

Line E36 –Total expenditure

Total expenditure. Calculated as the sum of WWS1 lines 24 and 35.

Calculated as the sum of WWS1 lines 24 and 35.

WWS1a - Wholesale wastewater operating and capital expenditure by business unit including operating leases reclassified under IFRS16

We have no operating leases therefore this table is the same as WWS1a

WWS2 – Wholesale wastewater capital and operating expenditure by purpose

General comments

“Blind” years 2018-19 and 2019-20: The categorisations, used in the APR tables, of how specific areas of capital spend contribute to the delivery of defined outputs, have been applied consistently to the Blind years’ data. This is based on a project by project analysis undertaken by the company’s Regulatory Analyst and as a result of numerous interviews and meetings with Asset Planners and Asset Managers across the business. Price control and base/enhancement categorisations arrived at in the 2017-18 Annual Performance Review have been applied to the expenditure forecast for 2018-19 and 2019-20.

An exception to this general approach relates to Transferred Private Sewers and Pumping Stations, which have been included here at line 31, but which are not in the Enhancement Expenditure lines 14, 15 and 16 on WWS1 – where they have been included as maintenance costs

Transition money spent on six Loughor Schemes (L2 Driver) have been excluded from here and included in WWS10. The 2017-2018 figures therefore differ from the Annual Performance Report by £18m in respect of the transition spend in the year of that amount.

Forecast years from 2020: Our planned enhancement expenditure at the end of AMP7 is approximately £80m per year. The much higher capex (£152m) shown in 2020-21 is due to “Transition” spend, for our Loughor projects being allocated to this year. Excluding this transition impact, there is a small peak in 2022-23. Expenditure for Gwili Gwendraeth schemes (approx. £50m) runs from 2020-21 to 2022-23; expenditure for FFT and Storm Tank schemes (approx. £28m together) runs from 2022-23 to 2024-25. The single year overlap between these schemes/programmes occurs in 2022-23 and results in the higher expenditure in that year.

Line Commentary

Line A1/B48 - First time sewerage (s101A)

Capital / operating expenditure for new and additional sewage treatment and sewerage assets for first time sewerage schemes to meet the duty under s101A of the Water Industry Act 1991.

Blind Years

In 2017-18 there was expenditure on schemes for our S101a programme these including:

- S101a Conwy Road
- Bagillt S101a
- Llanafan S101a
- Ynyslas S101a
- Ynysybwll S101a

The schemes at Ynyslas and Bagillt are due to continue into 2019-20.

Forecast Years

First time sewerage (s101A) - Overall expenditure was identified on review of:

- Current named duty schemes – Middlegate and Treuddyn
- Forecast duty scheme through appeal process – Red Wharf Bay
- Forecast duty schemes – Based on historic rate of duty schemes and costs. 3 schemes forecast for AMP7.
- Management of s101A assessments.

Proposed investment is phased over AMP7 with named schemes carried out in first 2 years. Expenditure is detailed in the 5.8L First Time Sewerage Investment Case. New schemes result in opex increase – Line 48.

Line A2/B49 - Sludge enhancement (quality)

Capital / operating expenditure on sludge treatment and disposal assets and associated biogas treatment for meeting new environmental obligations listed in the WINEP / NEP. This is for both infrastructure and non-infrastructure assets.

Blind Years

There is zero enhancement capex or opex in AMP6 because our sludge schemes are maintenance only.

Forecast Years

There is zero enhancement capex or opex in AMP7 because our sludge schemes are maintenance only.

Line A3/B50 - Sludge enhancement (growth)

Capital / operating expenditure on sludge treatment and disposal assets and associated biogas treatment for providing new capacity for growth. This is for both infrastructure and non-infrastructure assets.

Blind Years

A small element of the growth scheme at Nash Wastewater treatment works satisfies the criteria for inclusion here.

Forecast Years

There is zero enhancement capex or opex in AMP7. We will have completed some major sludge schemes in AMP6 leaving only maintenance schemes in AMP7. We have identified some enhancement expenditure for strategic sludge storage in Line A27 Resilience.

Line A4/B51 - WINEP / NEP ~ Conservation drivers

Capital / operating expenditure on the primary cost driver at quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary driver is to meet the requirements of conservation drivers (the Habitats and Birds Directives, the CROW Act, the NERC Act, the Marine and Coastal Access Act, invasive non-native species and the UK Biodiversity Action Plan) over and above that on schemes and investigations for which expenditure is required to be reported elsewhere in this table (principally WWS2 lines 16 to 20).

Blind Years

Includes two schemes at Llanberis to address NEP Conservation Drivers, which culminate in 2018-19 and others which continue into AMP7.

Forecast Years

These costs include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The NEP has stated the requirement for 4 schemes to meet conservation driver improvements.

Line A5/B52 - WINEP / NEP ~ Eels Regulations (measures at outfalls)

Capital / operating expenditure on quality enhancement schemes listed in the NEP (or WINEP) to improve outfalls to prevent the entrainment of fish to meet the requirements of the Eels Regulations.

Blind Years

The WINEP and NEP have not stated any requirement for Improvements or investigation and options relating to Eels regulations, and hence no costs are included here.

Forecast Years

The WINEP and NEP have not stated any requirement for Improvements or investigation and options relating to Eels regulations.

Line A6/B53 - WINEP / NEP ~ Event Duration Monitoring at intermittent discharges

Capital / operating expenditure on quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 to provide event and duration monitoring of intermittent discharges. For AMP5 this is the Capital / operating expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 – S) driven by the revised EU Bathing Water or Shellfish Waters Directives (driver codes rB5 and S8 respectively). For AMP6 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes rB5, S8, EDM1, EDM2 and EDMW. For AMP7 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes U_MON1, U_MON2, U_MON3, SW_MON and BW_MON.

Blind Years

There are a number of schemes in the programme to address the NEP - Event Duration Monitoring at intermittent discharges. It is an ongoing programme of work that will continue throughout this AMP.

Forecast Years

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These costs include schemes new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 390 intermittent sites to install Event Duration monitors.

Line A7/B54 - WINEP / NEP ~ Flow monitoring at sewage treatment works

Capital / operating expenditure on quality enhancement schemes listed in the WINEP / NEP to provide flow monitoring at sewage treatment works (AMP6 driver code: Flow3, AMP7 driver codes: U_MON4, U_MON5).

Blind Years

In this line we have reported a scheme for Flow 2 monitors at water treatment works as this records the effluent from Court Farm WTW. This was the only suitable/best fit line that we could use. There is no line in the water table for this to be reported. The costs for this scheme 2017-18 is £46k. We have also reported Flow 3 schemes to address NEP - Flow monitoring at sewage treatment works.

Forecast Years

These costs include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 429 WWTWs to install flow monitoring.

Line A8/B55 - NEP ~ Monitoring of pass forward flows at CSOs

Capital / operating expenditure on quality enhancement schemes listed in the NEP for AMP6 to provide monitoring of pass forward flows at CSOs (driver code Flow4).

Blind Years

There are a number of schemes in our programme for Flow 4 Monitors to address the NEP - Monitoring of pass forward flows at CSOs. It is an ongoing programme of work that will continue throughout this AMP, with latest best estimate for the Flow 4 programme being around£4m.

Forecast Years

The WINEP and NEP have not stated any requirement for CSOs to have installed pass forward flow monitoring.

Line A9/B56 - WINEP / NEP ~ Schemes to increase flow to full treatment

Capital / operating expenditure on quality enhancement schemes listed in the WINEP / NEP to increase the flow the full treatment to 3PG+I+3E. Relevant Environment Agency driver code for AMP7 schemes is U_IMP5.

Blind Years

There are no sites identified to have increased flow to full treatment schemes for the remainder of AMP6, hence costs are zero.

Forecast Years

These costs include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 36 sites to have increased flow to full treatment schemes. 5 sites will be delivered in AMP7 and the remaining 31 are proposed to be delivered in AMP8. Schemes have an NEP output date in 2024-25 and are profiled to meet this date. Investigations/surveys will be carried out in AMP7 years 1 and 2 on all 36 sites. Proposed scheme delivery for the 5 sites for completion in AMP7 is for start in year 3 with completion by year 5.

Line A10/B57 - WINEP / NEP ~ Storage schemes at STWs to increase storm tank capacity

Capital / operating expenditure on quality enhancement schemes listed in the WINEP / NEP to increase the storm tank capacity to 68 l/hd or to 2 hours retention at max flow into the tanks.

Blind Years

No sites identified in remainder of AMP6 requiring storage schemes to increase storm tank capacity, hence zero costs allocated.

Forecast Years

These includes costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8 Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 112 sites to have storage schemes to increase storm tank capacity. 13 sites will be delivered in AMP7 and the remaining 99 are proposed to be delivered in AMP8. Schemes have an NEP output date in 2024-25 and are profiled to meet this date.

Investigations/surveys will be carried out in the early part of AMP7 to assess all 13 sites initially and for the 99 sites identified for delivery in AMP8. Proposed scheme delivery for the 13 sites for completion in AMP7 is for start in year 3 and completion by year 5.

Line A11/B58 - WINEP / NEP ~ Storage schemes in the network to reduce spill frequency at CSOs, etc
Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened spill frequency objectives at network assets, eg CSOs (whether or not there is an explicit spill frequency requirement) by the provision of new or additional storage volume.

Blind Years

We have a number of schemes to address NEP - Storage schemes to reduce spill frequency at CSOs, storm tanks etc. some of which have been completed in 2018-19 though a couple, will continue to the last year of the AMP.

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 6 named sites to have storage schemes in the network to reduce spill frequency at CSOs, etc linked to improvements for the Menai Shellfish waters. There is also investment allocated under the Storm Overflow Assessment Framework (SOAF) to undertake asset improvement at sites following SOAF investigations.

Line A12/B59 - WINEP / NEP ~ Chemicals removal schemes

Capital / operating expenditure on improvements listed in the NEP (or WINEP) as part of the national 'Pathway to good measures for chemicals' programme or to prevent deterioration in chemical status or to achieve standstill limits for chemicals. (Relevant Environment Agency driver codes for AMP7: WFD_IMP_CHEM, WFD_NDLS, some WFD_ND and potentially L_IMP and LWFD_IMP).

Blind Years

No sites identified to have chemical removal schemes in AMP6

Forecast Years

The WINEP and NEP have not stated any requirements for sites to have chemical removal schemes.

Line A13/B60 - WINEP / NEP ~ Chemicals monitoring / investigations / options appraisals

Capital / operating expenditure on monitoring, investigations, feasibility studies and improvements listed in the NEP (or WINEP) as part of the national Chemicals Investigation Programme (driver codes C1 - C3 in AMP5, C4 - C7 in AMP6 and WFD_INV_CHEM1-9 and WFD_MON_CHEM in AMP7).

Blind Years

Includes biological nutrient removal schemes

Forecast Years

These include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case. The WINEP and NEP have stated the requirement for 33 chemical monitoring / investigations / options appraisals to be carried out in AMP7.

Line A14/B61 - NEP ~ National phosphorus removal technology investigations

Capital / operating expenditure on monitoring, investigations, feasibility studies and improvements listed in the NEP as part of the national AMP6 Phosphorus removal technology investigations programme (driver codes P1 - Px).

Blind Years

The credit in 2017-18 relates to a reversed over-accrual. No further costs forecast to the end of the AMP, as there is no requirement for national phosphorous removal technology investigations to be undertaken.

Forecast Years

The WINEP and NEP have not stated any requirement for national phosphorus removal technology investigations to be undertaken in AMP7.

Line A15/B62 - WINEP / NEP ~ Groundwater schemes

Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet one or more requirements of the EU Groundwater Directive. For AMP5 this is the capital / operating expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 – S) associated with driver codes G1, G2 and G3. (Expenditure associated with driver code G4 should be included in table WWS2 line 16). For AMP6 it is the capital / operating expenditure associated with driver code G1. For AMP7 the relevant Environment Agency driver codes are WFDGW_ND_GWQ and WFDGW_IMP_GWQ.

Blind Years & Forecast Years

The WINEP and NEP have not stated any requirement for Improvements relating to groundwater schemes.

Line A16/B63 - WINEP / NEP ~ Investigations

Capital / operating expenditure on investigations listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 over and above that on investigations for which expenditure is required to be reported elsewhere in this table (principally WWS2 lines 13 and 14).

Blind Years

Includes a number of Investigation schemes that have been allocated to this line such as

- AMP 6 NEP Coastal Investigations
- WFD investigations
- Crow Investigations

Forecast Years

These include costs for new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case. The WINEP and NEP have stated the requirement for investigations to be carried out in AMP7 related to Water Framework Directive (WFD), coastal, SOAF and conservation drivers.

Line A17/B64 - WINEP / NEP ~ Nutrients (N removal)

Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for nitrogen.

Blind Years & Forecast Years

The WINEP and NEP have not stated any requirement for improvements relating to nutrient N removal consents.

Line A18/B65 - WINEP / NEP ~ Nutrients (P removal at activated sludge STWs)

Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for phosphorus at an activated sludge STW.

Blind Years

The costs included in the line to address NEP - Nutrients (P removal at activated sludge STWs) include two large schemes at Ruthin and Denbigh which are due to be completed in 2019-20. The latest best estimate (LBE) for costs on all P-removal schemes (lines 18 and 19) from April 2018 to the end of AMP6 totals a combined £35m.

Forecast Years

These include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case. The WINEP and NEP have stated the requirement for 7 WWTWs to meet tightened nutrient P removal consents at activated sludge WWTWs. 5 sites will be delivered in AMP7 and the remaining 2 are proposed to be delivered in AMP8.

Line A19/B66 - WINEP / NEP ~ Nutrients (P removal at filter bed STWs)

Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for phosphorus at a biological filter STW.

Blind Years

The costs included in the line to address NEP - Nutrients (P removal at filter bed STWs) mainly relate to seven schemes of which two schemes are due to be completed in 2018-19 while the remaining five (at Eglwysbach, Rhiwlas, Dyserth, Brynmaer and Llety Brongu) are due to be completed in 2019-20. As per line A18 above, the LBE for costs on all P-removal schemes (lines 18 and 19) from April 2018 to the end of AMP6 totals a combined £35m).

Forecast Years

These include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case. The WINEP and NEP have stated the requirement for 42 WWTWs to meet tightened nutrient P removal consents at filter bed WWTWs. 20 sites will be delivered in AMP7 and the remaining 22 are proposed to be delivered in AMP8.

Line A20/B67 - WINEP / NEP ~ Reduction of sanitary parameters

Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for one or more of the sanitary parameters.

There are around a dozen schemes to address NEP - Reduction of sanitary parameters, all of which are due to be completed by the end of AMP6, and include Crymych, Hirwaun and Rhydlafar. There are also additional schemes to come on stream over the last two years of AMP6 and large scale investment is planned to start at Gwili Gwendraeth during AMP6.

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 41 WWTWs to meet tightened sanitary determined consents. 13 sites will be delivered in AMP7 and the remaining 28 are proposed to be delivered in AMP8.

Line A21/B68 - WINEP / NEP ~ UV disinfection (or similar)

Capital / operating expenditure on the primary cost driver at quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for microbiological parameters to meet the requirements of the EU Shellfish Waters or revised Bathing Water Directives. Such schemes will typically involve UV disinfection but may involve alternative technologies eg membrane filtration.

Blind Years & Forecast Years

The WINEP and NEP have not stated any requirement for improvements relating to UV disinfection.

Line A22/B69 - NEP ~ Discharge relocation

Welsh Water Wastewater Services Business Plan Table Commentaries

Capital / operating expenditure on the primary cost driver at quality enhancement schemes listed in the NEP for AMP5 or AMP6 where the objective of the primary cost driver is to meet the requirements of the Habitats Directive or the CRow Act (2000) by relocating the discharge to controlled waters.

Blind Years & Forecast Years

The WINEP and NEP have not stated any requirement for improvements relating to discharge relocation.

Line A23/B70 - NEP ~ Flow 1 schemes

Capital / operating expenditure on the primary cost driver of quality enhancement schemes listed in the NEP for AMP5 where the objective of the primary driver is to ensure no deterioration in the current classification of the receiving waters as a result of increased volumes of discharge (historic) - (driver code Flow1)

Blind Years & Forecast Years

The WINEP and NEP have not stated any requirement for improvements relating to the Flow1 driver.

Line A24/B71- Odour

Capital / operating expenditure on schemes where the primary objective is to effect a step change improvement in odour control above base standards.

Blind Years

Swansea Bay Odour scheme is now scheduled for 2019-20 delivery.

Forecast Years

The odour investment – including odour mapping surveys, mitigation schemes and monitors - is described in full in our 5.8N Wastewater Network plus Enhancement Investment Case. There is zero opex impact.

Line A25/B72 - New development and growth

Capital / operating expenditure associated with the provision of new development and growth in sewerage services. Includes Capital / operating expenditure associated with the provision of local network assets for sewerage services to provide for new customers with no net deterioration of existing levels of service (new development) and Capital / operating expenditure associated with changes in sewage collected from new and existing customers whilst maintaining existing levels of service (growth). This should exclude Capital / operating expenditure for the purpose of reducing the risk to properties and external areas of flooding from sewers that should be reported in line 30, unless an increase in risk is clearly the result of new development.

Blind Years

This line reflects the profile of new development and growth schemes at the end of the AMP, including growth scheme at Johnston, and developments at Wonastow Road and St Mellons.

Forecast Years

New Development & Growth – Expenditure in this line comes from multiple sources, summarised as follows:

Investment Case	Projects/Programmes	Expenditure
5.8P Wastewater NEP	Gwili Gwendraeth transfer mains and pumping stations; EDM schemes	£12.231m
5.8K Wastewater network plus Growth	Requisitions, Infrastructure Network Reinforcement and Network Growth schemes	£9.094m
5.8G Wastewater Network Maintenance	Sewage pumping station schemes	£318m
5.8N Wastewater Network plus Enhancement	Newport Tunnel	£1.726m
5.8G Wastewater Network Maintenance	Dry Weather Flow compliance schemes (network solutions)	£0.643m
Total		£37.012m

Opex contributions to Line 72 come from Sewer Requisitions (in *Wastewater Growth*), EDM schemes (in *Wastewater NEP*) and Gwili Gwendraeth scheme (also in *Wastewater NEP*).

Line A26/B73 - Growth at sewage treatment works (excluding sludge treatment)

Capital / operating expenditure associated with meeting or offsetting changes in demand from new and existing customers at sewage treatment works but excluding sludge treatment centres. Expenditure at sludge treatment centres should be reported in table WWS2 line 3.

Blind Years

There are a number of WWTW schemes allocated to Growth at sewage treatment works (excluding sludge treatment). The larger of the schemes includes Hook & Johnston, Kinnel Bay and Chester. An element of the scheme costs across lines 18, 19 and 20 have been allocated here as Growth driven. Some schemes will have completion dates in AMP7.

Forecast Years

Expenditure in this line comes from multiple sources, summarised as follows:

Investment Case	Projects/Programmes	Expenditure
5.8P Wastewater NEP	Gwili Gwendraeth schemes, P-removal and 'Reduction of Sanitary Parameters' schemes, Increase FFT schemes	£19.409m
5.8K Wastewater Network plus Growth	WwTWs Growth-led schemes	£28.710m
5.8D Wastewater Treatment Maintenance	Planned maintenance schemes; Dry Weather Flow compliance schemes	£3.3594m
Total		£51.477m

Opex contributions to Line 73 come from WwTWs Quality-led schemes (in *Wastewater NEP*), WwTWs Growth-led schemes (in *Wastewater Growth*) and dry weather flow schemes (in *Wastewater Treatment Maintenance*).

Line A27/B74 -Resilience

Capital / operating expenditure to improve resilience. This relates to expenditure to manage the risk of failing to give consumers an appropriate level of service protection in the face of extreme events caused by hazards that are beyond their control. To include expenditure to meet new, more onerous requirements stemming from the National Flood Resilience Review. For AMP5 this is the Capital / operating expenditure to deliver the outputs included in the supplementary report for improving resilience (e.g. under driver code ESL6).

Blind Years

The AMP6 costs here relate to a resilience pilot scheme which was set-up after a serious flooding incident in Treorchy in December 2013, following a period of intense rainfall. At the subsequent 'Serious Incident Review' meeting, robust action plans were agreed, which included a review of high risk Pumping Station assets in the Rhondda Cynon Taff area.

The negative value of £0.007m returned in 2017-18 under Sludge Treatment is a reversal of an over-accrual

Forecast Years

Resilience - Expenditure in this line comes from multiple sources, summarised as follows:

Investment Case	Projects/Programmes	Expenditure (£m)
5.8N Wastewater Network plus Enhancement	Newport tunnel; Standby generation to manage flood risk in the event of power failure; Drainage & Wastewater Management Plans	35.392
5.8U Cross Service Maintenance	Improved Information Systems	9.821
Principal use adjustment		(9.296)
Total		35.917

Opex impact is zero.

Line A28/B75 - SEMD

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Capital / operating expenditure to protect CNI and NI assets and on assessments of potential further improvements to comply with the Security and Emergency Measures Direction 1998 including associated Advice Notes, and including emergency response and resilience requirements. For AMP5 this is the Capital / operating expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 - S) to comply with the SEMD (driver code SEMD).

Blind Years

There is a full programme of SEMD schemes included which is in line with our programme of works for SEMD, which increases marginally on Waste sites into 2019-20.

Forecast Years

This line – SEMD - includes work that is required to meet our obligation under SEMD 1988. The investment is described in our 5.8N Wastewater Network plus Enhancement investment case.

Line A29/B76 - Non-SEMD related security enhancement

Capital / operating expenditure on schemes driven by other (ie non-SEMD) security requirements, for example to improve cyber security or to enhance the security of network and information systems.

Blind Years

No costs incurred on this line in AMP6

Forecast Years

This line includes a programme of work to improve cyber security. The detail is included within the 5.8N Wastewater Network plus Enhancement investment case which outlines the planned programme of work.

Line A30/B77 - Reduce flooding risk for properties

Capital / operating expenditure for the purpose of enhancing the public sewerage system to reduce the risk to properties and external areas of flooding from sewers. Exclude infrastructure renewals expenditure that should be reported in table WWS1 line 12 and expenditure associated with the provision of new sewers for new development and such other expenditure required in consequence of the new development that should be reported in table WWS2 line 25.

Blind Years

Relates to the numerous schemes initiated to reduce flooding risk for properties, including significant investments at Llangoed, Neston and Birchgrove. The increase in 2019-20 is in line with increasing annual programme of works for sewer flooding.

Forecast Years

Reduce flood risk for properties – We have proposed a programme of work, rather than name specific schemes at this stage. All expenditure in this line is described in our 5.8N Wastewater Network plus Enhancement investment Case.

Line A31/B78 - Transferred private sewers and pumping stations

Capital / operating expenditure on infrastructure and non-infrastructure assets falling within the scope of the transfer of private gravity sewers and lateral drains effected by schemes made by the Secretary of State / Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. Expenditure should be reported even if for accounting purposes companies may be treating it as maintenance (rather than enhancement).

Blind Years & Forecast Years

Transferred private sewers and pumping stations are included in this table but are not reported in the enhancement lines in WWS1 where, instead, they are shown within the following lines

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	£m	£m	£m	£m	£m	£m	£m	£m
Private sewers and pumping stations	8.375	7.055	8.413	5.748	5.728	5.709	5.683	5.665
Split								
Line 5: Other operating expenditure- Renewals expensed in year (Infrastructure)	6.230	5.248	6.258	3.877	3.863	3.850	3.832	3.820
Line 12: Maintaining the long term capability of the assets ~ infra	0.881	0.742	0.885	1.292	1.288	1.283	1.277	1.273
Line 13: Maintaining the long term capability of the assets ~ non~infra	1.264	1.065	1.270	0.579	0.577	0.576	0.574	0.572
	8.375	7.055	8.413	5.748	5.728	5.709	5.683	5.665

Line A32 – A36

Other capital / operating expenditure by purpose [Company to insert other purposes as required and explain in commentary]. Regard should be had for the desirability of maintaining consistency with corresponding lines in previous data submissions when using these lines.

Line A32 Capital expenditure purpose - AMP 4 Continuous Discharges,

These lines have been added to ensure that the total expenditure in each year has been captured and that the overall expenditure is the same as reported in the APR. The expenditure reported in here are mainly for previous AMP schemes that were not completed in AMP 3/4.

Line A33 Capital expenditure purpose - AMP 4 Intermittent Discharges,

These lines have been added to ensure that the total expenditure in each year has been captured and that the overall expenditure is the same as reported in the APR. The expenditure reported in here are mainly for previous AMP schemes that were not completed in AMP 3/4.

Line A34 Capital expenditure purpose - ESL – UID,

This line relates to schemes that were included in the our PR09 Business Plan for Unsatisfactory Intermittent Discharges (UID's) that had an Enhanced Service Level (ESL) driver that could not be placed in the expenditure purposes above.

Line 35 – Llanelli/Gowerton UWWTD

Blind Years

This spend relates to a programme of works identified to address issues at Llanelli Gowerton. Whilst relating to the L2 driver, this is the element of spend not directly attributable to the driver, and will not be funded from transition monies referred to in WWS10.

The credit in Sewage Treatment relates to an over-accrual reversing in 2017-18.

Forecast years

We have not identified any projects for forecast spend therefore all forecast line entries are zero.

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Line A36/B83 - Capital expenditure purpose ~ L2 Driver for Loughor

Other capital / operating expenditure by purpose [Company to insert other purposes as required and explain in commentary]. Regard should be had for the desirability of maintaining consistency with corresponding lines in previous data submissions when using these lines.

Blind Years

AMP6 expenditure on the L2 Driver for Loughor is excluded from WWS1 and WWS2 and is included as transition spend in WWS10. As a result of this exclusion there is an £18m difference to the 2017-18 figures declared in the APR.

Forecast years

Expenditure on this line is linked to the NEP L2 driver for 3 schemes in the Llanelli and Gowerton catchments. In September 2015 the Loughor L2 drivers were included in the NEP to Welsh Water from NRW. These were not included in our PR14 submission, however we did submit a supporting document highlighting the potential risk required to meet this driver. The L2 drivers have a commitment delivery date of 31st December 2020, which we are expected to meet and Welsh Water have ensured the transparency of the costs to deliver this new driver in the transition spend also shown in table WWS10. The expenditure is further detailed in our 5.8O Llanelli and Gowerton investment case.

Line A37/B84 - Capital expenditure purpose ~ Pollution Strategy

Other capital / operating expenditure by purpose [Company to insert other purposes as required and explain in commentary]. Regard should be had for the desirability of maintaining consistency with corresponding lines in previous data submissions when using these lines.

Forecast Years

This is exclusively AMP7 spend, with no costs allocated to this line in AMP6.

This expenditure is described in our 5.8N Wastewater Network plus Enhancement investment case. The opex impact is zero.

WWS2a - Wholesale wastewater cumulative capital enhancement expenditure by purpose

Table validation errors

Validation errors remain against lines A1, A6, A10, A11, A18, A19 and A20.

In many areas our investment programme is made up of a set of budgets rather than a set of projects due to late agreement of the NEP. We have made our best efforts to estimate the profile of output delivery but in many cases there isn't a direct link between the completion of the investment spend and the outputs profile.

Table overview

General comments

For NEP4.1 we have not yet received profiling guidance from NRW. We are expecting to have guidance signed off by the 23rd October Regional Asset Strategy & Planning (RASP) meeting a joint meeting held quarterly between NRW and ourselves predominantly covering NEP discussions.

This table of enhancement Capex contains a line of costs, from 2017-18 to 2024/25 inclusive, relating to the transferred Private sewers and pumping stations, which has been reported as capital maintenance and IRE in table WWS1. The lines in table WWS1 where this expenditure is reported is explained in the Line commentary for A31 (below).

AMP6: There is a large increase in project completion over the last 2 years of the AMP6 period, with the completion and commissioning of some fairly major projects, such as in Phosphate removal and Sludge strategy. The capital delivery alliance partnership and DCWW management are confident that these projects are deliverable in the forecast timescales.

Judgements Made:

Studies will not deliver an improvement to performance on their own and so have not been considered as projects with a defined scope and forecast completion date. All the other schemes are as described in the Table WWS2 commentary. Some of the NEP programmes of schemes have named completion dates so these have been used to allocate expenditure to the appropriate year column in this table.

Our analysis for this table is based on an assessment of the wastewater enhancement programme and the identification of those enhancement schemes which have already been identified and have a forecast completion date. See Table 1 and the bullets below.

The rest of our enhancement investment programme is built up through a series of budgets designed to meet the targets set out in our business plan. These programmes are described in the Table WWS2 commentary. This gives us flexibility to prioritise the most beneficial schemes for customers with the latest information available at the time of delivery. For these areas of the plan we do not have detailed information about scheme completion dates (and in some cases a detailed scope) so the programme of work has been profiled across the whole AMP7 period and we have assumed benefits at the end of each financial year.

Table 1 below provides a summary of the investment cases, projects and the Table WWS2A line numbers of schemes which have a scope of work and a forecast completion date within AMP7.

Further information about the investment programmes can be found in the Table WWS2 commentary.

Investment Cases	Project Name	Ofwat Table 2A Line No.
5.8P Wastewater NEP	Gwili Gwendraeth WwTW scheme	18, 25 & 26
5.8P Wastewater NEP	NEPA – WFD Phosphorous removal schemes	18, 19 & 26
5.8P Wastewater NEP	NEPA – WFD Reduction of sanitary parameters schemes	20 & 26
5.8P Wastewater NEP	NEPA – Conservation schemes	4

5.8P Wastewater NEP	NEPA – Chemical Investigations Programme	13
5.8N Wastewater network plus enhancement	Newport Tunnel	25 & 27

Table 1 – Summary of schemes and programmes with specific completion dates.

Line commentary

Line A1 - First time sewerage (s101A)

Cumulative capital expenditure on new and additional sewage treatment and sewerage assets for first time sewerage schemes delivered in the report year to meet the duty under s101A of the Water Industry Act 1991.

Blind Years

Peak in 2018-19 with the completion of the £2.5m s101a schemes at Ynyslas. The £1.8m scheme at Bagillt culminates in 2019-20.

Forecast Years

The first time sewerage investment has been developed at a programme level with investment phased over the AMP period. It includes forecast investment for 3 proposed duty schemes which have been programmed for the implementation in the first two years of AMP7 along with additional investment for new S101A schemes that may arise from ongoing and new assessments. Due to the inherent variability in unit costs due to each s101A scheme being unique, the programme approach to phase investment over AMP7 provides a representative view of investment forecasts.

First time sewerage (s101A) - Overall expenditure was identified on review of:

- Current named duty schemes – Middlegate and Treuddyn
- Forecast duty scheme through appeal process – Red Wharf Bay
- Forecast duty schemes – Based on historic rate of duty schemes and costs. 3 schemes forecast for AMP7.
- Management of s101A assessments.

Expenditure is detailed in the 5.8L First Time Sewerage Investment Case. New schemes will result in an opex increase which is included in Line 48.

Line A2 - Sludge enhancement (quality)

Cumulative capital expenditure on schemes to improve sludge treatment and disposal assets and associated biogas treatment for meeting new environmental obligations listed in the WINEP / NEP and delivered in the report year. This is for both infrastructure and non-infrastructure assets.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A3 - Sludge enhancement (growth)

Cumulative capital expenditure on schemes to improve sludge treatment and disposal assets and associated biogas treatment for providing new capacity for growth and delivered in the report year. This is for both infrastructure and non-infrastructure assets.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A4 - WINEP / NEP ~ Conservation drivers

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 delivered in the report year where the objective of the primary driver is to meet the requirements of conservation drivers (the Habitats and Birds Directives, the CRow Act, the NERC Act, the Marine and Coastal Access Act, invasive non-native species and the UK Biodiversity Action Plan) over and above that on schemes and investigations for which expenditure is required to be reported elsewhere in this table (principally WWS2a lines 16 to 20).

Blind Years

This includes two schemes at Llanberis (totalling £6.8m) to address NEP Conservation drivers. These are forecast to complete in 2018-19 with other smaller AMP6 schemes continuing into AMP7.

Forecast years

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These costs include schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resource Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case. The NEP has stated the requirement for 4 schemes to meet conservation driver improvements.

Line A5- WINEP / NEP ~ Eels Regulations (measures at outfalls)

Cumulative capital expenditure on quality enhancement schemes listed in the NEP (or WINEP) to improve outfalls to prevent the entrainment of fish to meet the requirements of the Eels Regulations and delivered in the report year. For AMP7 the relevant Environment Agency driver code is EE_IMP.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A6 - WINEP / NEP ~ Event Duration Monitoring at intermittent discharges

Cumulative capital expenditure on quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 to provide event and duration monitoring of intermittent discharges and delivered in the report year. For AMP5 this is the capital expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 – S) driven by the revised EU Bathing Water or Shellfish Waters Directives (driver codes rB5 and S8 respectively). For AMP6 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes rB5, S8, EDM1, EDM2 and EDMW. For AMP7 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes U_MON1, U_MON2, U_MON3, SW_MON and BW_MON.

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 390 intermittent sites to install Event Duration monitors.

Line A7 - WINEP / NEP ~ Flow monitoring at sewage treatment works

Cumulative capital expenditure on quality enhancement schemes listed in the WINEP / NEP to provide flow monitoring at sewage treatment works (AMP6 driver code: Flow3, AMP7 driver codes: U_MON4, U_MON5) and delivered in the report year.

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 429 WWTWs to install flow monitoring

Line A8 - NEP ~ Monitoring of pass forward flows at CSOs

Cumulative capital expenditure on quality enhancement schemes listed in the NEP for AMP6 to provide monitoring of pass forward flows at CSOs (driver code Flow4) and delivered in the report year.

There are a number of schemes in our programme for installing Flow 4 Monitors to address the NEP - Monitoring of pass forward flows at CSOs. It is an ongoing programme of work that will continue through AMP6.

The WINEP and NEP have stated the requirement for CSOs to have installed pass forward flow monitoring

Line A9 - WINEP / NEP ~ Schemes to increase flow to full treatment

Cumulative capital expenditure on quality enhancement schemes listed in the WINEP / NEP to increase the flow the full treatment to 3PG+I+3E and delivered in the report year. Relevant Environment Agency driver code for AMP7 schemes is U_IMP5.

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 36 sites to have increased flow to full treatment schemes. 5 sites will be delivered in AMP7 and the remaining 31 are proposed to be delivered in AMP8. Schemes have an NEP output date in 2024-25 and are profiled to meet this date. Investigations/surveys will be carried out in AMP7 years 1 and 2 on all 36 sites. Proposed scheme delivery for the 5 sites for completion in AMP7 is for start in year 3 with completion by year 5.

Line A10 - WINEP / NEP ~ Storage schemes at STWs to increase storm tank capacity

Cumulative capital expenditure on quality enhancement schemes listed in the WINEP / NEP to increase the storm tank capacity to 68 l/hd or to 2 hours retention at max flow into the tanks and delivered in the report year.

In the NEP4.1 all confirmed schemes requiring investment do not currently have NEP output dates with entries for dates stated as “profiling guidance TBA”. As such we are proposing that the investment for this line is left as phased in WWS2a over the last three years. In WWS4 line 10 we have currently identified the outputs against the proposed programme as being delivered in year 2024-25. When we have more clarity of NRW’s profiling guidance the investment and outputs can be reviewed to be reflective of the profiling guidance.

These include costs for schemes, new monitors and investigations as identified in the Environment Agency’s WINEP and Natural Resources Wales’ NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 112 sites to have storage schemes to increase storm tank capacity. 13 sites will be delivered in AMP7 and the remaining 99 are proposed to be delivered in AMP8. Schemes have an NEP output date in 2024-25 and are profiled to meet this date. Investigations/surveys will be carried out in the early part of AMP7 to assess all 13 sites initially and for the 99 sites identified for delivery in AMP8. Proposed scheme delivery for the 13 sites for completion in AMP7 is for start in year 3 and completion by year 5.

Line A11 - WINEP / NEP ~ Storage schemes in the network to reduce spill frequency at CSOs, etc

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 and delivered in the report year where the objective of the primary cost driver is to meet new or tightened spill frequency objectives at network assets, eg CSOs (whether or not there is an explicit spill frequency requirement) by the provision of new or additional storage volume.

In the NEP4.1 all confirmed schemes requiring investment do not currently have NEP output dates with entries for dates stated as “profiling guidance TBA”. As such we are proposing investment for this line be left as phased in WWS2a across AMP7.

In WWS4 line 11 we have currently identified the outputs against the proposed programme linked to shellfish drivers as being delivered in year 2024-25. When we have more clarity of NRW’s profiling guidance the investment and outputs can be reviewed to be reflective of the profiling guidance.

There is also investment identified for frequently spilling CSOs, but there are no outputs identified in WWS4 against this investment. Initially Storm Overflow Assessment Framework (SOAF) investigations need to be carried out. From these investigations highest priority assets that are cost beneficial will be identified, following which outputs will then be known. More details on are approach to SOAF can be found on page 22 of 5.8P Wastewater NEP Investment Case.

Blind Years

We have a number of schemes to address NEP - Storage schemes to reduce spill frequency at CSOs, storm tanks etc. some of which have been completed this year though a couple will continue to the last year of the AMP

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency’s WINEP and Natural Resources Wales’ NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

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The WINEP and NEP have stated the requirement for 6 named sites to have storage schemes in the network to reduce spill frequency at CSOs and other assets linked to improvements for the Menai shellfish waters. There is also investment allocated under SOAF to undertake asset improvement at sites following SOAF investigations.

Line A12 - WINEP / NEP ~ Chemicals removal schemes

Cumulative capital expenditure on improvements listed in the NEP (or WINEP) as part of the national 'Pathway to good measures for chemicals' programme or to prevent deterioration in chemical status or to achieve standstill limits for chemicals and delivered in the report year. (Relevant Environment Agency driver codes for AMP7: WFD_IMP_CHEM, WFD_NDLS, some WFD_ND and potentially L_IMP and LWFD_IMP Chem1, ND4 and ND5 in AMP7).

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A13 - WINEP / NEP ~ Chemicals monitoring / investigations / options appraisals

Cumulative capital expenditure on monitoring, investigations, feasibility studies and improvements listed in the NEP (or WINEP) as part of the national Chemicals Investigation Programme (driver codes C1 - C3 in AMP5, C4 - C7 in AMP6 and WFD_INV_CHEM1-9 and WFD_MON_CHEM in AMP7), delivered in the report year.).

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 33 chemical monitoring / investigations /options appraisals to be carried out in AMP7.

Line A14 - NEP ~ National phosphorus removal technology investigations

Cumulative capital expenditure on monitoring, investigations, feasibility studies and improvements listed in the NEP as part of the national AMP6 Phosphorus removal technology investigations programme (driver codes P1 - Px), delivered in the report year.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A15 - WINEP / NEP ~ Groundwater schemes

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 and delivered in the report year, where the objective of the primary cost driver is to meet one or more requirements of the EU Groundwater Directive. For AMP5 this is the capital expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 – S) associated with driver codes G1, G2 and G3. (Expenditure associated with driver code G4 should be included in table WWS2 line 11). For AMP6 it is the capital expenditure associated with driver code G1. For AMP7 the relevant driver codes are WFDGW_ND_GWQ and WFDGW_IMP_GWQ.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A16 - WINEP / NEP ~ Investigations

Cumulative capital expenditure on investigations listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7, delivered in the report year, over and above that on investigations for which expenditure is required to be reported elsewhere in this table (principally lines 9.1 and 9.2).

Forecast Years

New monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for investigations to be carried out in AMP7 related to WFD, coastal, SOAF and conservation drivers.

Line A17 - WINEP / NEP ~ Nutrients (N removal)

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Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7, delivered in the report year, where the objective of the primary cost driver is to meet new or tightened consent conditions for nitrogen.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero.

Line A18 - WINEP / NEP ~ Nutrients (P removal at activated sludge STWs)

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7, delivered in the report year, where the objective of the primary cost driver is to meet new or tightened consent conditions for phosphorus at an activated sludge STW.

Blind Years

The costs included here in the line to address NEP - Nutrients (P removal at activated sludge STWs) mainly relate to two schemes at Ruthin and Denbigh which are due to be completed 2019-20

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 7 WWTWs to meet tightened nutrient P removal consents at activated sludge WWTWs. Five sites will be delivered in AMP7 and the remaining 2 are proposed to be delivered in AMP8.

Line A19- WINEP / NEP ~ Nutrients (P removal at filter bed STWs)

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7, delivered in the report year, where the objective of the primary cost driver is to meet new or tightened consent conditions for phosphorus at a biological filter STW.

Blind Years

The costs included in the line to address NEP - Nutrients (P removal at filter bed STWs) mainly relate to seven schemes two of which are due to be completed in 2018-19 while the remaining are due to be completed in 2019-20

Forecast Years

These include costs for schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 42 WWTWs to meet tightened nutrient P removal consents at filter bed WWTWs. 20 sites will be delivered in AMP7 and the remaining 22 are proposed to be delivered in AMP8.

Line A20 - WINEP / NEP ~ Reduction of sanitary parameters

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7, delivered in the report year, where the objective of the primary cost driver is to meet new or tightened consent conditions for one or more of the sanitary parameters.

There are outputs identified in 2022-23 in WWn4 that are linked to the Gwili Gwendraeth programme. The primary driver for the Gwili Gwendraeth is P removal as the waterbodies are not achieving good status due to phosphorus levels in the rivers. Sanitary determined No Deterioration drivers for WWTWs in the Gwili Gwendraeth programme are identified in the NEP and hence outputs for these sites have been entered in WWn4. Through our Gwili Gwendraeth programme the impacts of No Deterioration will not be realised. These are added benefits from implementing the Gwili Gwendraeth programme and as such incur no investment cost to the overall Gwili Gwendraeth programme and only add to supporting our approach for improving the Gwili and Gwendraeth rivers.

Blind Years

A large number of schemes have scheduled completion dates in 2018-19, with several others continuing until their completion in the last year of AMP6. There are around ten schemes to address NEP - Reduction of sanitary parameters, all of which are due to be completed by the end of the AMP, a number of these,

including Crymych and Keeston, will complete in 2018-19 whilst the majority of the remaining schemes, including the two largest at Hirwaun and at Rhydlafer, are forecast to continue into 2019-20.

Forecast Years

These include costs of schemes, new monitors and investigations as identified in the Environment Agency's WINEP and Natural Resources Wales' NEP. Expenditure is detailed in the 5.8P Wastewater NEP Investment Case.

The WINEP and NEP have stated the requirement for 41 WwTWs to meet tightened sanitary determined consents. 13 sites will be delivered in AMP7 and the remaining 28 are proposed to be delivered in AMP8.

Line A21 - WINEP / NEP ~ UV disinfection (or similar)

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7, delivered in the report year, where the objective of the primary cost driver is to meet new or tightened consent conditions for microbiological parameters to meet the requirements of the EU Shellfish Waters or revised Bathing Water Directives. Such schemes will typically involve UV disinfection but may involve alternative technologies eg membrane filtration.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A22 - NEP ~ Discharge relocation

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP for AMP5 or AMP6, delivered in the report year, where the objective of the primary cost driver is to meet the requirements of the Habitats Directive or the CROW Act (2000) by relocating the discharge to controlled waters.

We have no enhanced expenditure in this area and have therefore intentionally left these cells as zero

Line A23 - NEP ~ Flow 1 schemes

Cumulative capital expenditure on the primary cost driver of quality enhancement schemes listed in the NEP for AMP5, delivered in the report year, where the objective of the primary driver is to ensure no deterioration in the current classification of the receiving waters as a result of increased volumes of discharge (historic) - (driver code Flow1)

Line A24 - Odour

Cumulative capital expenditure on schemes delivered in the report year, where the primary objective is to effect a step change improvement in odour control above base standards.

Forecast Years

The odour investment – including odour mapping surveys, mitigation schemes and monitors - is described in full in our 5.8N Wastewater Network plus Enhancement Investment Case. There is zero opex impact.

Line A25 - New development and growth

Cumulative capital expenditure associated with the provision of new development and growth in sewerage services, delivered in the report year. Includes capital expenditure associated with the provision of local network assets for sewerage services to provide for new customers with no net deterioration of existing levels of service (new development) and capital expenditure associated with changes in sewage collected from new and existing customers whilst maintaining existing levels of service (growth). This should exclude capital expenditure for the purpose of reducing the risk to properties and external areas of flooding from sewers that should be reported in table WWS2a line 30, unless an increase in risk is clearly the result of new development.

Blind Years

This line reflects this AMP's profile of new development and growth schemes at the end of the AMP, including growth scheme at Johnston, and developments at Wonastow Road and St Mellons

Forecast Years

New Development & Growth – Expenditure in this line comes from multiple sources, summarised as follows:

Investment Case	Projects/Programmes	Expenditure
5.8P Wastewater NEP	Gwili Gwendraeth transfer mains and pumping stations; EDM schemes	£12.231m
5.8Q Wastewater Network Growth	Requisitions, Infrastructure Network Reinforcement and Network Growth schemes	£9.094m
5.8M Wastewater Network Maintenance	Sewage pumping station schemes	£318m
5.8N Wastewater Network plus Enhancement	Newport Tunnel	£1.726m
5.8R Wastewater Treatment Maintenance	Dry Weather Flow compliance schemes (network solutions)	£0.643m
Total		£37.012m

Line A26 - Growth at sewage treatment works (excluding sludge treatment)

Cumulative capital expenditure associated with schemes delivered in the report year to meet or offset changes in demand from new and existing customers at sewage treatment works but excluding sludge treatment centres. Expenditure at sludge treatment centres should be reported in table WWS2a line 3.

Blind Years

Chester (£6.8m), Hook (£6.5m) and Cowbridge (£2m) will complete in 2018-19, whilst the £7.4m Kinnel Bay scheme and £1.8m Trelech scheme will complete in 2019-20. A number of other schemes have forecasted AMP7 completion dates.

Forecast Years

Expenditure in this line comes from multiple sources, summarised as

Investment Case	Projects/Programmes	Expenditure
5.8P Wastewater NEP	Gwendraeth schemes, P-removal and 'Reduction of Sanitary Parameters' schemes, Increase FFT schemes	£19.409m
5.8Q Wastewater Network Growth	WwTWs Growth-led schemes	£28.710m
5.8R Wastewater Treatment Maintenance	Planned maintenance schemes; Dry Weather Flow compliance schemes	£3.3594m
Total		£51.477m

Line A27 -Resilience

Cumulative capital expenditure on schemes delivered in the report year to improve resilience. This relates to expenditure to manage the risk of failing to give consumers an appropriate level of service protection in the face of extreme events caused by hazards that are beyond their control. For AMP5 this is the capital expenditure to deliver the outputs included in the supplementary report for improving resilience (e.g. under driver code ESL6).

Blind Years

The AMP6 costs here relate to a resilience pilot scheme which was set-up after a serious flooding incident in Treorchy in December 2013, following a period of intense rainfall. At the subsequent 'Serious Incident Review' meeting, robust action plans were agreed, which included a review of high risk Pumping Station assets in Rhondda Cynon Taff area.

The negative value of £0.007m returned in 2017-18 under Sludge Treatment is a reversal of an over-accrual

Forecast Years

Resilience - Expenditure in this line comes from multiple sources, summarised as follows:

Investment Case	Projects/Programmes	Expenditure £m
5.8N Wastewater Network plus Enhancement	Newport tunnel; Standby generation to manage flood risk in the event of power failure; Drainage & Wastewater Management Plans	35.392
5.8U Cross Service Maintenance	Improved Information Systems	9.821
Principal use		(9.296)
Total		35.917

Line A28 - SEMD

Cumulative capital expenditure on schemes delivered in the report year to protect CNI and NI assets and assessments completed in the report year of potential further improvements to comply with the Security and Emergency Measures Direction 1998 including associated Advice Notes, and including emergency response and resilience requirements. For AMP5 this is the capital expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 - S) to comply with the SEMD (driver code SEMD).

Blind Years

There is a full programme of SEMD schemes included and is in line with our programme of works for SEMD, Forecast Years

This line – SEMD - includes work that is required to meet our obligation under SEMD 1988. The investment is described in our 5.8N Wastewater Network plus Enhancement investment case.

Line A29 - Non-SEMD related security enhancement

Cumulative capital expenditure on schemes delivered in the report year, driven by other (ie. non-SEMD) security requirements, for example to improve cyber security or to enhance the security of network and information systems.

Forecast Years

This line includes a programme of work to improve cyber security. The detail is included within the 5.8N Wastewater Network plus Enhancement investment case.

Line A30 - Reduce flooding risk for properties

Cumulative capital expenditure on schemes delivered in the report year for the purpose of enhancing the public sewerage system to reduce the risk to properties and external areas of flooding from sewers. Exclude infrastructure renewals expenditure that should be reported in table WWS1 line 12 and expenditure associated with the provision of new sewers for new development and such other expenditure required in consequence of the new development that should be reported in table WWS2a line 25.

Blind Years

Some 21 schemes, including the £1.7m scheme at Neston, are due to complete in 2018-19, and whilst a fewer number, 17, are due for completion in 2019-20 – they are generally higher in value, including the £1.5m at Llangoed, plus a further 8 schemes in excess of £0.5m each

Forecast Years

Reduce flood risk for properties – all expenditure in this line is described in our 5.8N Wastewater Network plus Enhancement investment case. We have proposed a programme of work, rather than name specific schemes at this stage.

Line A31 - Transferred private sewers and pumping stations

Cumulative capital expenditure on infrastructure and non-infrastructure assets falling within the scope of the transfer of private gravity sewers and lateral drains effected by schemes made by the Secretary of State / Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011.

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Expenditure should be reported even if for accounting purposes companies may be treating it as maintenance (rather than enhancement).

In line with the above guidance, although WWS1 reports this expenditure as Capital Maintenance and IRE, the rolling programme costs of the transferred Private sewers and pumping stations are included here and in table WWS2. The lines where this is recorded in the WWS1 table are shown below

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	£m	£m	£m	£m	£m	£m	£m	£m
Private sewers and pumping stations	8.375	7.055	8.413	5.748	5.728	5.709	5.683	5.665
Split								
Line 5: Other operating expenditure- Renewals expensed in year (Infrastructure)	6.230	5.248	6.258	3.877	3.863	3.850	3.832	3.820
Line 12: Maintaining the long term capability of the assets ~ infra	0.881	0.742	0.885	1.292	1.288	1.283	1.277	1.273
Line 13: Maintaining the long term capability of the assets ~ non~infra	1.264	1.065	1.270	0.579	0.577	0.576	0.574	0.572
	8.375	7.055	8.413	5.748	5.728	5.709	5.683	5.665

Line A32-A35 - Capital expenditure purpose - AMP 4 Continuous Discharges, Capital expenditure purpose - AMP 4 Intermittent Discharges, Capital expenditure purpose - ESL – UID, Capital expenditure purpose - Llanelli/Gowerton UWWTD

Other cumulative capital expenditure by purpose on enhancement schemes delivered in the report year. [Company to insert other purposes as required and explain in commentary.] Regard should be had for the desirability of maintaining consistency with corresponding lines in previous data submissions when using these lines.

Blind Years

Line 35- A block of the work supporting & relating to the Llanelli / Gowerton L2 driver, whilst not being directly attributable to it, will culminate in 2018-19, whilst the remainder will continue into AMP7 on line 36.

Line A36 - Capital expenditure purpose ~ L2 Driver for Loughor

Other cumulative capital expenditure by purpose on enhancement schemes delivered in the report year. [Company to insert other purposes as required and explain in commentary.] Regard should be had for the desirability of maintaining consistency with corresponding lines in previous data submissions when using these lines.

Forecast years

Expenditure on this line is linked to the NEP L2 driver for 3 schemes in the Llanelli and Gowerton catchments. In September 2015 the Loughor L2 drivers were included in the NEP to Welsh Water from NRW. These were not included in our PR14 submission, however we did submit a supporting document highlighting the potential risk required to meet this driver. The L2 drivers have a commitment delivery date of 31st December 2020, which we are expected to meet and we have ensured the transparency of the costs to deliver this new driver in the transition spend also shown in table WWS10. The expenditure is further detailed in our 5.80 Llanelli and Gowerton investment case.

Line A37 - Capital expenditure purpose ~ Pollution Strategy

Welsh Water Wastewater Services Business Plan Table Commentaries

*Other cumulative capital expenditure by purpose on enhancement schemes delivered in the report year.
[Company to insert other purposes as required and explain in commentary.] Regard should be had for the desirability of maintaining consistency with corresponding lines in previous data submissions when using these lines.*

Forecast Years

This is exclusively AMP7 spend, with no costs allocated to this line in AMP6.

This expenditure is described in our 5.8N Wastewater Network plus Enhancement investment case.

The opex impact is zero.

WWS3 - Wholesale wastewater properties and population

Table validation errors

There is a validation error on line 1 which is asking for entries in units of 1000, whereas the validation checking is expecting a number.

Overview

The 2017-18 inputs align to the APR18 submission. Where applicable the 2018-19 inputs align to the assumptions behind the charge multipliers underpinning the 2018-19 scheme of charges. The forecasts for 2019-20 onwards are informed by the property and population forecasts developed for the draft Water Resources Management Plan (WRMP) published in February 2018.

The historical percentage of meter optants and new connections billed by other companies has been used to help forecast the change in billed properties each year; new connections and meter optants are uplifted to account for sewerage customers billed by other water companies. The forecast is based on historical information and it is assumed that the future rate remains the same as the historical rate. We are not forecasting a significant change in any of the data lines. The decrease in unmeasured customers until the end of AMP7 have been mitigated due to the impact of the company's PR19 void reduction strategy put in place to achieve the targets in Performance Commitment "BI4 Unbilled properties".

Line 1 Residential properties connected during the year

The number of new residential properties added for each period within the company's sewerage area during the report year.

The decrease in the forecast in 2018-19 is due to the timing of the forecast which was completed during 2017-18 using provisional numbers for 2017-18 to inform charge setting. It has been input into this line to be consistent with other tables and associated revenue forecast in the Business Plan.

There is a decline in the number of new connections from 2025-26 which reflects the assumptions in the draft WRMP.

It is noted that this line has a validation error which Ofwat have confirmed is to be ignored.

Line 2 Business properties connected during the year

The number of new business properties added for each period within the company's sewerage area during the report year. This should be the number of new connections; disconnections and demolished properties should not be netted off.

The decrease in the forecast in 2018-19 is due to the timing of the forecast which was completed during 2017-18 using provisional numbers for 2017-18 to inform charge setting. It has been input into this line to be consistent with other tables and associated revenue forecast in the Business Plan.

Line 3 Residential properties billed unmeasured sewage

Average number of residential properties billed for unmeasured sewerage within the undertaker's area. Exclude void properties. Residential are properties (normally occupied) whose domestic sewage is collected. This does not include factories, offices or commercial premises. It also excludes mixed/commercial properties, and multiple residential properties, e.g. blocks of flats.

The average number of residential properties billed for unmeasured sewage within the supply area are decreasing in line with the movement of unmeasured customers who opt to move to a measured supply and the company policy to meter all new connections. The number excludes voids but the strategy to achieve the target level of voids in performance commitment BI4 will primarily be achieved through targeting unmeasured customers so this has a dampening effect on the decline in unmeasured residential customer numbers.

Line 4 Residential properties billed measured sewage

Average number of residential properties billed for measured sewerage within the undertaker's area. Exclude void properties. Include residential billed for measured water supply where sewerage bills are based on value of water supplied.

Welsh Water Wastewater Services Business Plan Table Commentaries

The average number of billed meter residential properties are increasing reflecting forecast development from the draft WRMP and in line with the company metering policy which is to meter all new properties and provide meters to optants.

Line 5 Residential properties billed for sewage

Residential properties billed for sewage. Calculated as the sum of WWS3 lines 3 and 4.

Calculated as the sum of WWS3 lines 3 and 4.

Line 6 Business properties billed unmeasured sewage

Average number of business properties billed for unmeasured sewerage. Businesses are defined as properties whose domestic sewage is collected but are not occupied as domestic premises, i.e. domestic supplies to factories, offices and commercial premises, cattle troughs. Also include properties containing multiple households which receive a single bill, i.e. blocks of flats. Exclude void properties.

Average number of business properties billed for unmeasured sewage is decreasing slightly in line with metering policy and a low level of compulsory metering for business properties.

The decrease in the forecast in 2018-19 is due to the timing of the forecast which was completed during 2017-18 using provisional numbers for 2017-18 to inform charge setting. It has been input into this line to be consistent with other tables and associated revenue forecast in the Business Plan.

Line 7 Business properties billed measured sewage

Average number of business properties billed for measured sewerage. Exclude void properties.

The average number business properties billed for measured sewage within the supply area are increasing reflecting development and in line with the company metering policy to meter all new business connections

Line 8 Business properties billed for sewage

Business properties billed for sewage. Calculated as the sum of WWS3 lines 6 and 7.

Calculated as the sum of WWS3 lines 6 and 7.

Line 9 Void properties

Average number of properties (residential and business) within the undertaker's area which are connected to the sewerage system but do not receive a charge as there are no occupants. This should not include properties that do not receive a bill because it would be uneconomical to do so.

This line has been taken from the equivalent total in App30.

Line 10 Total number of properties

Total number of connected properties. Calculated as the sum of WWS3 lines 5, 8 and 9.

Calculated as the sum of WWS3 lines 5, 8 and 9.

Line 11 Resident population

The annual average resident population connected to the sewerage system.

Wastewater population growth will follow the same profile as water population growth forecast in the draft WRMP. We are not forecasting a significant change in any of the data lines.

Line 12 Non-resident population

The annual average holiday and tourist population connected to the sewerage system. Do not include daily commuters or day visitors.

This line is recalculated periodically and was last reviewed during 2015-16. We are assuming that there will be no change in holiday and tourist population over the period. This reflects the confidence grade of B3 that was assigned to the measure when we submitted the CAT tables that accompanied APR17.

WWS4 – Wholesale wastewater other (explanatory variables)

Line 1 Energy consumption ~ network plus

Measure of energy usage (electricity, gas, liquid fuels) by the network+ wholesale business unit (irrespective of the power source). Energy usage should be measured that which is either imported or self-generated and used in relevant business unit. No account should be taken of self-generated energy that is exported from the business unit where it is generated. Fleet transport and standby generation should be included as should an allowance for administrative buildings and head office function.

The financial plan assumed a year on year energy consumption reduction that is supported by the 5.8T Energy investment case and 3.6 Efficiency Programme.

The split between Network+ and Sludge for Waste Water, has changed significantly, compared to the numbers previously reported. The latter is due to a change in fleet transport energy consumption allocation (diesel & petrol use) between Network+ and Sludge. Now allocated as a proportion of head count; previously 100% allocated to Sludge. The historical usage allocation based on the new methodology is shown in the table below:

Line	Description	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Waste Water Services - Network+	218,612.486	242,527.895	233,508.334	228,070.231	242,331.182	229,844.422	242,448.457
2	Waste Water Services - Sludge	53,947.313	55,912.386	57,133.558	54,546.549	60,538.202	60,257.786	59,175.848

Line 2 Energy consumption ~ sludge

Measure of energy usage (electricity, gas, liquid fuels) by the network+ wholesale business unit (irrespective of the power source). Energy usage should be measured that which is either imported or self-generated and used in relevant business unit. No account should be taken of self-generated energy that is exported from the business unit where it is generated. Fleet transport and standby generation should be included as should an allowance for administrative buildings and head office function.

The financial plan assumed a year on year energy consumption reduction that is supported by the 5.8T Energy investment case and 3.6 Efficiency Programme..

The split between Network+ and Sludge for Waste Water, has changed significantly, compared to the numbers previously reported. The latter is due to a change in fleet transport energy consumption allocation (diesel & petrol use) between Network+ and Sludge. Now allocated as a proportion of head count; previously 100% allocated to Sludge. The historical usage allocation based on the new methodology is shown in the table below:

Line	Description	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
1	Waste Water Services - Network+	218,612.486	242,527.895	233,508.334	228,070.231	242,331.182	229,844.422	242,448.457
2	Waste Water Services - Sludge	53,947.313	55,912.386	57,133.558	54,546.549	60,538.202	60,257.786	59,175.848

Line 3 - Energy consumption ~ wholesale

Energy consumption – wholesale wastewater business. Calculated as the sum of WWS4 lines 1 and 2.

Calculated as the sum of WWS4 lines 1 and 2.

Line 4 - Population resident in National Parks, SSSIs and Areas of Outstanding Natural Beauty (AONBs)

Population resident within National Parks, SSSIs and Areas of Outstanding Natural Beauty designated by Natural England or by Natural Resources Wales. Population resident within areas designated under more

than one category eg an SSSI within a National Park, should only be counted once. All relevant designations in a company's operating area should be included, not just those on land owned by the company.

Resident population projections supplied by CACI utilised to predict populations` figures for the future years.

Latest SSSI, AOB and National Park boundaries utilised to predict populations for future years

The Reported figure for Line 4 show the resident population within the SSSI, AOB and National Park boundaries to be increasing for each year which is what is expected.

Line 5 Total sewerage catchment area

Total area of sewerage catchments. Note: This will be less than the operating area within which company as the sewerage undertaker is licensed to provide sewerage services (owing to the exclusion of unsewered areas).

The Reported figure for Line 5 show the DCWW sewerage area increasing for each year which is what is expected due to the capture of new housing sites and additional sewer network.

Line 6 - Designated bathing waters

Number of EU designated coastal bathing waters within the company's operating area. Inland bathing waters should be excluded unless i) bathing water quality is impacted by any water company discharge and ii) their designation has resulted in a tightening of the permit conditions of the discharge.

For the PR19 period an increase of 1 new BW every other bathing season has been assumed.

This is based on experience of BW designations from 2012 to 2017 (the average over this period) and the understanding that there is unlikely to be a desire by local authorities to apply for significant numbers of designations over the next 5 years. We assume that there will not be any significant changes in the desire for local authorities / WG for additional BW designations in the near future and that current trends will remain static.

Line 7 Number of intermittent discharge sites with event duration monitoring

Number of intermittent discharge sites at which event duration monitors are installed during the report year. The associated capital costs are reported in WWS2 line 6. For AMP5 these are the outputs included in the sewerage service quality enhancement schedule (Annex 4-S) driven by the revised EU Bathing Water or Shellfish Waters Directives (driver codes rB5 and S8 respectively). For AMP6 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes rB5, S8, EDM1, EDM2 and EDMW. For AMP7 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes U_MON1, U_MON2, U_MON3, U_EDMW, SW_MON and BW_MON.

For the AMP6 period, we have populated the line with our current programme of EDM outputs as defined in the AMP6 NEP.

For PR19 period, we have populated this line with outputs identified in the WINEP3 from Environment Agency and the Water Quality NEP3 from Natural Resources Wales. Work to provide clarity on environmental obligations, and hence content of the (WI) NEP, is continuously ongoing. All schemes currently have a regulatory output date of 2025. Proposed monitor installation is assumed to follow a stable delivery profile over AMP7. These schemes may change with further publications of the WINEP and NEP.

Line 8 - Number of monitors for flow monitoring at STWs

Number of STWs at which WINEP / NEP flow monitoring schemes under AMP6 driver code Flow3 or AMP7 driver codes U_MON4 or U_MON5 have been / will be delivered in the report year and for which the associated capital costs are reported in WWS2 line 7.

For the AMP6 period, we have populated the line with our current programme of Flow monitoring schemes as defined in the AMP6 NEP

For the PR19 period, we have populated the line with the latest submissions of the (WI)NEP from NRW/EA. We have identified all monitoring schemes with the U_MON4 or U_MON5 drivers to get total number of flow monitoring schemes to be installed in AMP7. There are 389 sites with U_MON4 drivers and 28 sites with U_MON5 drivers which are proposed to be delivered with a flat profile over the AMP.

Line 9 - Number of Odour related complaints

Total number of complaints received in any format during the year relating to odour from sewerage service assets.

The blind and forecast number of complaints relating to odour from sewerage service assets are set to achieve a stable performance for this measure. This remains a challenging target as encroachment on our assets from development continues and hotter drier periods are predicted as a result of climate change. The annual target is in line with recent performance, it being based upon an average of the last six years.

Line 10 - Volume of storage provided at storm tanks, etc to meet spill frequency objectives

Volume of new or additional storage provided at STWs to increase the capacity of storm tanks, delivered in the report year and for which the associated capital costs are reported in WWS2 line 10. For AMP7 schemes the relevant Environment Agency driver code is U_IMP6. Storage volumes associated with non-NEP schemes should be excluded.

The volume reported should be the volume required to meet the permit conditions (most commonly 68 litres / head or 2 hours at maximum flow into the tanks), rather than what was actually constructed (which may be different due to factors related to the design or construction).

From the latest submissions of the (WI)NEP from NRW/EA we have identified all schemes with the following driver codes: U_IMP6, W_U_IMP6 to get total number of sites requiring new or additional storage to be provided at WwTWs to increase the capacity of storm tanks. Storage volumes stated have been calculated in line to meet the required permit conditions. There are 10 sites with U_IMP6 driver and 3 sites with W_U_IMP6 driver that are forecast to require 4,953m³ of additional storage to meet permit conditions. These sites are proposed to be delivered in line with the required completion dates within the (WI)NEP.

Line 11 - Volume of new or additional storage provided in the sewerage network

Volume of new or additional storage provided in the sewerage network to meet new or tightened spill frequency objectives at network assets, eg CSOs (whether or not there is an explicit spill frequency requirement), delivered in the report year and for which the associated capital costs are reported in WWS2 line 11. Storage volumes associated with non-NEP schemes (eg that provided for the prevention of sewer flooding to properties) should be excluded.

The volume reported should be the volume required to meet the permit conditions (most commonly the storage volume that must be filled before any discharge takes place), rather than what was actually constructed (which may be different due to factors related to the design or construction)..

From the latest submissions of the (WI)NEP from NRW/EA we have identified all schemes with the following driver codes: W_U_IMP4, W_SW_IMP1, W_SW_IMP2, W_SW_ND, W_BW_IMP1, W_BW_IMP2 and aimed at intermittent assets that are required to meet a reduced spill frequency through additional storage. Storage volumes stated have been developed from the outputs of our coastal investigation models carried out in AMP6 and calculated in line to meet the required spill frequency detailed in the (WI)NEP. There are 5 sites with W_SW_IMP2 drivers that our coastal investigation models show require 3090m³ of additional storage to meet a reduced spill frequency of 10 spills. The sites are proposed to be delivered in line with the required completion dates within the (WI)NEP.

Figures for lines 11 and 13 are expected to increase over AMP7 following the outcomes of Storm Overflow Assessment Framework investigations. In Wales, Welsh Government have set a more demanding installation rate of EDM for Wales (full coverage) compared to the phased approach taken by the rest of the water industry (England). Consequently, the need to address high frequency spilling assets will arise earlier in Wales (AMP7) than in England (AMP8). Our investment identified in WWS2 line 11 will, in addition to meeting our identified W_SW_IMP2 driver schemes, address those high frequency spilling assets most at risk within our intermittent storm overflows asset base, which are shown to be having the highest environmental impact following the outcomes of SOAF investigations and are agreed with our environmental regulators. As this programme is dependent on our SOAF investigations and agreement of our regulators, the required storage volumes or scheme numbers are currently too uncertain to be forecast

for inclusion in these lines. For further details see the 5.8P Wastewater NEP investment case – section 4, heading Storm Overflow Assessment Framework Programme.

Line 12 - Number of sewage treatment works at which new or additional storage is provided

Number of sewage treatment works at which the new or additional storage reported in WWS4 line 10 is provided..

From the latest submissions of the (WI)NEP from NRW/EA we have identified all schemes with the following driver codes: U_IMP6, W_U_IMP6 to get total number of sites requiring new or additional storage to be provided at WwTWs to increase the capacity of storm tanks. Storage volumes stated have been calculated in line to meet the required permit conditions. There are 10 sites with U_IMP6 driver and 3 sites with W_U_IMP6 driver that are forecast to require 4,953m³ of additional storage to meet permit conditions. These sites are proposed to be delivered in line with the required completion dates within the (WI)NEP.

Line 13 - Number of sites in network at which new or additional storage is provided

Number of sites at which the new or additional storage reported in WWS4 line 11 is provided. For the purposes of table WWS4 Line 13, a site is defined as a specific location at which storage has been provided. For example if storage tanks have been constructed at two discrete locations within the network to meet NEP spill frequency objectives, either at a specific CSO or a group of CSOs, then this should be recorded as 2 sites.

From the latest submissions of the (WI)NEP from NRW/EA we have identified all schemes with the following driver codes: W_U_IMP4, W_SW_IMP1, W_SW_IMP2, W_SW_ND, W_BW_IMP1, W_BW_IMP2 and aimed at intermittent assets that are required to meet a reduced spill frequency through additional storage. Storage volumes stated have been developed from the outputs of our coastal investigation models carried out in AMP6 and calculated in line to meet the required spill frequency detailed in the (WI)NEP. There are 5 sites with W_SW_IMP2 drivers that our coastal investigation models show require 3,090m³ of additional storage to meet a reduced spill frequency of 10 spills. The sites are proposed to be delivered in line with the required completion dates within the (WI)NEP.

Figures for lines 11 and 13 are expected to increase over AMP7 following the outcomes of Storm Overflow Assessment Framework investigations. In Wales, Welsh Government have set a more demanding installation rate of EDM for Wales (full coverage) compared to the phased approach taken by the rest of the water industry (England). Consequently, the need to address high frequency spilling assets will arise earlier in Wales (AMP7) than in England (AMP8). Our investment identified in WWS2 line 11 will, in addition to meeting our identified W_SW_IMP2 driver schemes, address those high frequency spilling assets most at risk within our intermittent storm overflows asset base, which are shown to be having the highest environmental impact following the outcomes of SOAF investigations and are agreed with our environmental regulators. As this programme is dependent on our SOAF investigations and agreement of our regulators, the required storage volumes or scheme numbers are currently too uncertain to be forecast for inclusion in these lines. For further details see the 5.8P Wastewater NEP investment case – section 4, heading Storm Overflow Assessment Framework Programme.

Line 14 - Total volume of network storage

Total volume of network storage to include the volume enclosed by the length of pipework reported in table WWn3 lines 21 and 22 plus the usable volume of on-line and off-line storage tanks below the level of overflow weirs. The volume of manholes should be excluded.

Our annual reported totals show a slight annual increase in network volume. This is accounted for by network growth, with new sewage infrastructure digitised on our corporate mapping system.

WWS5 – Other wholesale wastewater expenditure

General comments

Blind Years (2018-19 and 2019-20) and Forecast Years (post 2020):

- Our business simplification efficiency programme reduces £63m of labour costs per annum to £51m per annum from 2018-19 to 2024-25 (19% reduction).
- FTE reduce from 1,184 to 1,125 (5% reduction). The smaller percentage reduction in FTE than manpower costs reflects the fact that our manpower efficiency programme is focused on middle and senior management rather than 'front line' operatives.
- There are some changes in allocation between 2017-18 and 2018-19 (discussed in the line by line commentary below).
- Other costs in the table remain fairly stable, apart from Environmental Agency (NRW) Service Charges which we anticipate increasing by 21% between 2020-21 and 2021-22 reflecting the change in charging structure that NRW have signalled their intention to implement. This new methodology follows that recently implemented by the Environment Agency and the increased level of charges is reflected from 2021-22 until the end of the AMP.

Line commentary

Line A1: Employment costs ~ directly attributable

The gross salaries and wages of all employees directly attributable to the water service (water resources, raw water distribution, water treatment and treated water distribution), including payments resulting from bonus and profit-related payment schemes, employer's National Insurance contributions, superannuation, pension liabilities, sick pay, sickness benefits, private health insurance, retirement awards, death in service benefits, paid leave, subsistence, travel, entertaining and conference expenses. The costs should include temporary/agency staff directly employed by the company, but should exclude the cost of contractors. This should be completed on a Total Expenditure basis

Direct FTE increase to 847 in 2019-20, which represents our 'peak FTE' year following the post 2017-18 re-allocation. This reflects an overlap in headcount numbers as we reshape the business around the required skills and capabilities for the next AMP. The number of FTE's gradually reduce over the remainder of the AMP as handovers and knowledge transfers are completed and the new organisational design and specific efficiency initiatives becomes fully operational.

The reduction in average cost per employee relates to the fact that we have reclassified trainees from indirect to direct. We believe that this improves visibility of the talent development pipeline and allows the operational business to better balance the need for efficiency now with the need to plan for the future (different skill sets and retirements).

Line A2: Employment costs ~ indirectly attributed

The gross salaries and wages of all general and support (G&S) employees indirectly attributed the water service. Where possible, such expenditure should be attributed on a causal basis, otherwise it should be apportioned in proportion to direct costs. Gross salaries and wages include payments resulting from bonus and profit-related payment schemes, employer's National Insurance contributions, superannuation, pension liabilities, sick pay, sickness benefits, private health insurance, retirement awards, death in service benefits, paid leave, subsistence, travel, entertaining and conference expenses. The costs should include temporary/agency staff directly employed by the company, but should exclude the cost of contractors. See below for a description of general and support activities. This should be completed on a Total Expenditure basis

Indirect FTE reduce by 47 from 2018-19 to 2024-25, with approximately half of this 'front loaded' as we take the benefits of efficiencies derived from some systems efficiencies that become fully operational in 2019-20. The number of FTE's is static in 2021-22 and 2021-22 with only some minor changes in actual headcount as we reshape the business around the required skills and capabilities for the next AMP. The number of FTE's gradually reduce over the remainder of the AMP as handovers and knowledge transfers are completed and the new organisational design and specific efficiency initiatives becomes fully operational.

Welsh Water Wastewater Services Business Plan Table Commentaries

The reduction in average cost per employee relates to the fact that we have reclassified trainees from indirect to direct. We believe that this improves visibility of the talent development pipeline and allows the operational business to better balance the need for efficiency now with the need to plan for the future (different skill sets and retirements).

Line A3: Number FTEs consistent with line 1

Number of full time equivalents consistent with the employment costs reported in WWS5 line 1 and averaged over the year.

See line A1.

Line A4: Number FTEs consistent with line 2

Number of full time equivalents consistent with the employment costs reported in WWS5 line 2 and averaged over the year.

See line A2.

Line A5: Costs associated with Traffic Management Act

Costs associated with the impact of the introduction of the permit schemes made pursuant to the Traffic Management Act and exclude penalties or fines incurred by the company. To be entered as £

These comprise costs associated with permits required to undertake sewer repair work requiring highway access in English Local Authorities. We have used the actual cost in 2017-18 as the best estimate for the costs we envisage incurring in AMP7 and have no reason to believe that the quantity of work will be materially different.

Line B6: Costs associated with Industrial Emissions Directive

Costs associated with industrial emissions directive.

These comprise EA/NRW permit charges for emissions from some of our Digestion site. We have used the actual cost in 2017-18 as the best estimate for the costs we envisage incurring in AMP7 and (excluding inflationary impacts) have no reason to believe that the quantity of work will be materially different.

Line B7: Canal & River Trust service charges and discharge consents

Costs associated with Canal & River Trust service charges and discharge consents.

These costs relate to discharge consent permits made by the Canal & River Trust where some sewers cross or discharge into a canal. The cost is based upon the actual costs for 2017-18 as the best estimate for the costs we envisage incurring in AMP7.

Line B8: Environment Agency service charges / discharge consents

Costs associated with Environment Agency service charges / discharge consents..

This includes the cost for Discharge consent permits made by NRW (Natural Resources Wales) and the EA (Environment Agency). The split by price control is based upon 2017-18 actual invoices and is consistent with the 2017-18 APR, and the same allocation basis has been used for the forecasts

The cost is forecast to remain relatively static until 2021-22 where we have reflected the change in charging structure that National Resources Wales have signalled their intention to implement. This new methodology follows that recently implemented by the Environment Agency and would increase overall charges across both Water & Waste by 23% (£1.02m). This increased level of charges is reflected from 2021-22 until the end of the Amp.

Line B9: Other service charges / permits

Costs associated with other service charges / discharge consents.

We have not used this line as we do not incur other service charges/permits that are not already included in other lines of the table.

WWS7 – Wholesale wastewater local authority rates

Lines 1 Wholesale wastewater business rates charge for current year before transitional relief

Local authority rates charged to the wholesale wastewater business in respect of the (then) current year, before the application of any transitional relief

Line 1 shows the wholesale wastewater business rates charges for each year. These increase for 2018-19 and 2019-20 as a result of the Uniform Business Rate (UBR) which is applied to the RV of the water business to calculate the annual business rates charge increasing by CPI inflation. There is a reduction in 2020-21 as that year (and subsequent years) are stated in 2017-18 prices (CPIH deflated). The effect of the UBR inflation is shown in line 13.

The increase in 2021-22 is a result of the April 2021 revaluation and is discussed in the commentary on line 15 below.

Rates costs also increase by approximately £300k per annum from April 2019 as a result of improvements to treatment works arising from capital investment.

For 2017-18 the rates costs in line 1 excluded an allocation of offices rates (£407k) relating to office space utilised by the wastewater business. These were instead shown as other operating expenditure. In subsequent years the allocation of office rates has been included in line 1 and the effect of this change is set-out in line 14.

Line 2 Wholesale Water business rates transitional relief

The impact of any transitional relief on the local authority rates charged to the wastewater business in respect of the (then) current year, entered as a negative

Transitional relief only applies to DCWW's English WwTWs. There is no transitional relief in Wales.

Transitional relief ensures that the impact of significant changes in RV at a revaluation are phased-in over a number of years (to avoid sharp changes), hence the adjustment gradually reduces each year in line 2.

As we only have a relatively small proportion of our WwTWs are in England and would be very small, no transitional relief has been assumed for the 2021 revaluation.

Line 3 Wholesale Water business rates charge for current year after transitional relief

Local authority rates charged to the wholesale wastewater business in respect of the (then) current year, after the application of any transitional relief. Calculated as the sum of WWS7 lines 1 and 2.

These are calculated cells (a summation of lines 1 and 2).

Line 4 Adjustments to wholesale water business rates charge for prior years

Any adjustments to the local authority rates charged to the wholesale wastewater business in respect of previous years

Line 4 shows adjustments to business rates charges which relate to prior years. The year ending 31 March 2019 includes refunds of £3.9m comprising of £3.5m relating to the ongoing appeal into rateable value of Swansea WwTWs in the 2010 list, which we hope to conclude in the current financial year. These are also refunds of £0.4m forecast from the completion of other ongoing appeals which remain from the 2010 list. Thereafter refunds from appeals are forecast to be £200k per annum, in relation to appeals against the 2017 list assessments. Appeals are likely to be far more difficult for the 2017 list assessments due to the extensive appeals and reductions which have already been achieved for the 2010 list.

The charge of £703k in relation to the year ended 31 March 2018 predominantly relates to assessments made for prior years e.g. assessments for advanced digestion plants installed at WwTWs which were assessed in 2017-18 (a number of years after they were constructed).

Line 5 - 8 [Other wholesale water business rates adjustments 1]

Any further adjustments made to reconcile to the local authority rates charge for the wholesale water business reported in the APR, Schedule 4D line 6 (please specify)

Any further adjustments made to reconcile to the local authority rates charge for the wholesale water business reported in the APR, Schedule 4E line 6 (please specify)

No further adjustments have been made hence these lines are zero.

Line 9 Wastewater wholesale business rates per APR

Local authority rates charged to the wholesale wastewater business, as reported in the APR, Schedule 4E line 6. Equals the sum of WWS7 lines 3 to 8.

These are calculated cells (a summation of lines 3 to 8). These charges reconcile to the costs shown in line 8 of table WWS1. For the year ending 31 March 2019 the £3.5m refund expected from the Swansea WwTW's appeal (referred to above) is shown as atypical income/expenditure in line 25 of table WWS1 (rather than in line 8). Therefore the cost and income in lines 8 and 25 need to be aggregated to reconcile to the amounts disclosed in table WWS7 for that year.

Line 10 Change in wholesale water business rates costs from prior year

The year-on-year change in local authority rates charged to the wholesale water business in respect of the (then) current year, before the application of any transitional relief. Calculated as the change in WS7 line 1 as compared to the previous year.

These are calculated cells to report the movement in line 1 between years.

Line 11 Change in wastewater wholesale business rates costs due to the impact of the 2017 revaluation

The change in local authority rates charged to the wholesale wastewater business arising from any expected revaluation, before the impact of any transitional relief.

This line is blank as the impact of the 2017 revaluation is already included in the 2017-18 rates charge in line 1. The impact of the 2021 revaluation is shown in line 15 (see below).

Line 12 Change in wastewater wholesale business rates costs due to change in asset stock

The change in local authority rates charged to the wholesale wastewater business arising from changes in the asset stock of the wholesale wastewater business, before the impact of any transitional relief.

We have assessed the RV implications of improvements to treatment works from a review of the AMP 7 capital investment plan and factored these into our business rates calculations from 1 April 2019. Their impact is included in line 12.

Line 13 Change in wholesale business rates costs due to inflation in UBR

Any further changes to the local authority rates charge for the wholesale wastewater business, before the impact of transitional relief (please specify)

Line 13 shows the impact of changes to rates costs arising from increases in the UBR which is applied to the RV of the WwTWs to calculate the annual business rates charge. The UBR increases by CPI inflation in the years 2018-19 and 2019-20 (as those years are stated in outturn prices). There is then a reduction in 2020-21 as that year (and subsequent years) are stated in 2017-18 prices (CPIH deflated).

Line 14 Change in wholesale business rates costs due to reallocation of costs from G&S

Any further changes to the local authority rates charge for the wholesale wastewater business, before the impact of transitional relief (please specify)

For 2017-18 the rates costs in line 1 excluded an allocation of offices rates (£407k) relating to office space utilised by the water business. These were instead shown as other operating expenditure. In subsequent years the allocation of office rates has been included in line 1. The impact of this change is shown in line 14.

Line 15 Change in wastewater wholesale business rates costs due to the impact of the 2021 revaluation

Any further changes to the local authority rates charge for the wholesale wastewater business, before the impact of transitional relief (please specify)

This shows the impact of the revaluation which will take place on 1 April 2021. We have calculated the rateable value (RV) of the wastewater business which will apply from 1 April 2021 as follows:

- Wastewater treatment works (WwTWs) are assessed using the 'contractor's method' which applies a 'decapitalisation rate' to the value of the works for rates purposes to derive a rental equivalent (i.e. rateable value).

Welsh Water Wastewater Services Business Plan Table Commentaries

- We calculated the value of the WwTWs at the last revaluation (1 April 2017) by 'grossing-up' the RV for the decapitalisation rates which had been applied by the VOA.
- We then assumed that the business rates value of the treatment works between revaluations will increase in line with the Tender Price Index ("TPI") published by the Royal Institute of Chartered Surveyors - which was the reference index used by the VOA for the April 2017 revaluation to calculate increases.
- We then applied a decapitalisation rate of 4.1% to the property values. The VOA applied decapitalisation rates of 3.8% and 4.4% to assets in Wales and England respectively at the 2017 revaluation. At the 2010 revaluation they were 4.5% and 5.0% respectively. We have discussed future decapitalisation rates with our business rates advisors (Lambert Smith Hampton) and their view is that the decapitalisation rates are likely to increase from their current levels due to changes in underlying economic factors (e.g. interest rates are likely to increase in the medium term). We therefore believe our estimate of 4.1% is reasonable.

Our calculations forecast that the rates costs of our WwTWs will increase by £3.0m at the 2021 revaluation, which is shown in this line of the table.

We have assumed that the RV of our WwTWs will remain unchanged at the 1 April 2024 revaluation.

However, there is a significant risk that the RV will increase as property values are likely to increase further between the 2021 and 2024 revaluations.

Line 16 - Change in wastewater wholesale business rates charge before transitional relief

The sum of changes in local authority rates charged to the wholesale wastewater business before transitional relief. Calculated as the sum of WWS7 lines 11 to 15.

These are calculated cells summing lines 10 –15.

Line 17 Check difference

Check difference. WWS7 line 16 should equal line 10, with a check difference of zero

This is a check difference to compare lines 10 with 16 and is zero.

WWS8 – Third party costs by business unit for the wholesale wastewater service

General comments

The costs incurred here (both Opex and Capex) relate to responses to requests from the public, from developers or local authorities for Sewer plans and network surveys etc.

Line commentary

Opex and Capex treatment

- Actual costs for 2017-18 are shown on a consistent basis with the Annual Performance Report, which is prepared on a basis in line with the Regulatory Accounting Guidelines.
- 2018-19 –2024-25 were allocated to the price controls based on the same percentage splits as 2017-18 actuals.

Line A1: Sewer location surveys

Third party wastewater service costs. Please specify in the space provided what these items refer to.

Sewer Location Survey costs are forecast to increase from £70k to £200k from 2017-18 to 2018-19 and then stay static until 2024-25. The increase reflects an improved process for capturing costs (and recharges) associated with this activity.

Line A3: Total third party wastewater service costs ~ price control (operating expenditure)

Total third party wastewater service costs included in the price control (operating expenditure). Equals the sum of WWS8 lines 1 and 2.

Calculated sum

Line B4: Bulk supplies

Please refer to RAG 4, Appendix 1.

Whilst it is recognised that there are costs per annum relating to the Wastewater Bulk Supplies at Llanilid, there is c£40k shown in the income tables, a zero figure has been returned here.

Line B5: Charges for reception and disposal of waste

Please refer to RAG 4, Appendix 1.

The income and costs relating to this are treated as non-appointed and are not included in the Business Plan submission.

Line B13: Total third party wastewater service costs ~ non price control (operating expenditure)

Total third party wastewater service costs outside of the price control (operating expenditure). Equals the sum of WWS8 lines 4 to 12.

Calculated sum

Line C14: Developer Services - Search Fees

Other third party wastewater service costs not covered by WWS8 lines 17 and 18. Please specify in the space provided what these items refer to.

These costs relate to charges for Searches fees to developers etc. who ask for survey plans & searches etc. These are based upon 2017-18 actuals which are forecast to the end of AMP 6.

Line C16: Total third party wastewater service costs ~ price control (capital expenditure)

Total third party wastewater service costs included in the price control (capital expenditure). Equals the sum of WWS8 lines 14 and 15.

Calculated sum

Line D17: Bulk supplies

Welsh Water Wastewater Services Business Plan Table Commentaries

Please refer to RAG 4, Appendix 1.

There are no bulk supplies within waste water services

Line D18: Charges for reception and disposal of waste

Please refer to RAG 4, Appendix 1.

No costs reported

Line D19-25: Other

Other third party wastewater service costs not covered by WWS8 lines 17 and 18. Please specify in the space provided what these items refer to.

Line D26: Total third party wastewater service costs ~ non price control (capital expenditure)

Total third party wastewater service costs outside of the price control (capital expenditure). Equals the sum of WWS8 lines 17 to 25.

Calculated sum

WWS10 - Transitional spending in the wholesale wastewater service

Line 1 - First time sewerage (s101A)

Transitional expenditure for new and additional sewage treatment and sewerage assets for first time sewerage schemes to meet the duty under s101A of the Water Industry Act 1991.

We have not identified any projects for transitional spend therefore all lines are zero

Line 4 - WINEP / NEP ~ Conservation drivers

Transitional expenditure on the primary cost driver at quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary driver is to meet the requirements of conservation drivers (the Habitats and Birds Directives, the CRow Act, the NERC Act, the Marine and Coastal Access Act, invasive non-native species and the UK Biodiversity Action Plan) over and above that on schemes and investigations for which expenditure is required to be reported elsewhere in this table (principally WWS10 lines 11 to 15).

We have not identified any projects for transitional spend therefore all lines are zero

Line 5 - WINEP / NEP ~ Eels Regulations (measures at outfalls)

Transitional expenditure on quality enhancement schemes listed in the NEP (or WINEP) either to improve outfalls to prevent the entrainment of fish, provide eel or fish passes or take alternative measures to meet the requirements of the Eels Regulations or carry out investigations required to confirm the level of entrainment and/or the appropriate technical solution. For AMP7 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes EE_IMP and EE_INV.

We have not identified any projects for transitional spend therefore all lines are zero

Line 6 - WINEP / NEP ~ Event Duration Monitoring at intermittent discharges

Transitional expenditure on quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 to provide event and duration monitoring of intermittent discharges. For AMP5 this is the capital expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 – S) driven by the revised EU Bathing Water or Shellfish Waters Directives (driver codes rB5 and S8 respectively). For AMP6 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes rB5, S8, EDM1, EDM2 and EDMW. For AMP7 these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes U_MON1, U_MON2, U_MON3, U_EDMW, SW_MON and BW_MON.

We have not identified any projects for transitional spend therefore all lines are zero

Line 7 – NEP ~ Flow monitoring at sewage treatment works

Transitional expenditure on quality enhancement schemes listed in the NEP for AMP6 to provide flow monitoring at sewage treatment works (driver code Flow3).

We have not identified any projects for transitional spend therefore all lines are zero.

Line 8 NEP ~ Monitoring of pass forward flows at CSOs

Transitional expenditure on quality enhancement schemes listed in the NEP for AMP6 to provide monitoring of pass forward flows at CSOs (driver code Flow4).

We have not identified any projects for transitional spend therefore all lines are zero

Line 9 WINEP / NEP ~ Schemes to increase flow to full treatment

Transitional expenditure on quality enhancement schemes listed in the WINEP / NEP to increase the flow the full treatment to 3PG+I+3E

We have not identified any projects for transitional spend therefore all lines are zero

Line 10 - WINEP / NEP ~ Schemes to increase storm tank capacity

Transitional expenditure on quality enhancement schemes listed in the WINEP / NEP to increase the storm tank capacity to 69 l/hd or to 2 hours retention at max flow into the tanks.

We have not identified any projects for transitional spend therefore all lines are zero

Line 11 - WINEP / NEP ~ Storage schemes to reduce spill frequency at CSOs, storm tanks, etc

Transitional expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to reduce spill frequency of CSOs, storm tank overflows etc by the provision of new or additional storage volume. Includes WINEP driver UY.

We have not identified any projects for transitional spend therefore all lines are zero

Line 12 - WINEP / NEP ~ Chemicals removal schemes

Transitional expenditure on improvements listed in the NEP (or WINEP) as part of the national 'Pathway to good measures for chemicals' programme or to prevent deterioration in chemical status or to achieve standstill limits for chemicals (driver codes Chem1, ND4 and ND5 in AMP7).

We have not identified any projects for transitional spend therefore all lines are zero

Line 13 - WINEP / NEP ~ Chemicals monitoring / investigations / options appraisals

Transitional expenditure on monitoring, investigations, feasibility studies and improvements listed in the NEP (or WINEP) as part of the national Chemicals Investigation Programme (driver codes C1 - C3 in AMP5, C4 - C7 in AMP6 and Chem 2&3 in AMP7).

We have not identified any projects for transitional spend therefore all lines are zero

Line 14 - NEP ~ National phosphorus removal technology investigations

Transitional expenditure on monitoring, investigations, feasibility studies and improvements listed in the NEP (or WINEP) as part of the national AMP6 Phosphorus removal technology investigations programme (driver codes P1 - Px).

We have not identified any projects for transitional spend therefore all lines are zero

Line 15 - WINEP / NEP ~ Groundwater schemes

Transitional expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet one or more requirements of the EU Groundwater Directive. For AMP5 this is the capital expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 – S) associated with driver codes G1, G2 and G3. (Expenditure associated with driver code G4 should be included in WWS10 line 16). For AMP6 it is the capital expenditure associated with driver code G1. For AMP7 the relevant Environment Agency driver codes are WFDGW_ND_GWQ and WFDGW_IMP_GWQ.

We have not identified any projects for transitional spend therefore all lines are zero

Line 16 - WINEP / NEP ~ Investigations

Transitional expenditure on investigations listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 over and above that on investigations for which expenditure is required to be reported elsewhere in this table (principally WWS10 lines 13 and 14).

We have not identified any projects for transitional spend therefore all lines are zero

Line 17 - WINEP / NEP ~ Nutrients (N removal)

Transitional expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for nitrogen.

We have not identified any projects for transitional spend therefore all lines are zero

Line 18 - WINEP / NEP ~ Nutrients (P removal at activated sludge STWs)

Transitional expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for phosphorus at an activated sludge STW.

Welsh Water Wastewater Services Business Plan Table Commentaries

We have not identified any projects for transitional spend therefore all lines are zero

Line 19 - WINEP / NEP ~ Nutrients (P removal at filter bed STWs)

Transitional on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for phosphorus at a biological filter STW.

We have not identified any projects for transitional spend therefore all lines are zero

Line 20 - WINEP / NEP ~ Reduction of sanitary parameters

Transitional expenditure on the primary cost driver of quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for one or more of the sanitary parameters unless the objective is associated with a specific cost driver code for which there is a dedicated line elsewhere in this table (e.g. WFD_ND_GWQ (line 15/62) or Flow1 (line 23/70)). In such cases costs should be excluded from this line and entered in the line for the relevant cost driver code.

We have not identified any projects for transitional spend therefore all lines are zero

Line 21 - WINEP / NEP ~ UV disinfection (or similar)

Transitional expenditure on the primary cost driver at quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet new or tightened consent conditions for microbiological parameters to meet the requirements of the EU Shellfish Waters or revised Bathing Water Directives. Such schemes will typically involve UV disinfection but may involve alternative technologies e.g. membrane filtration.

We have not identified any projects for transitional spend therefore all lines are zero

Line 22 - NEP ~ Discharge relocation

Transitional expenditure on the primary cost driver at quality enhancement schemes listed in the NEP for AMP5 or AMP6 where the objective of the primary cost driver is to meet the requirements of the Habitats Directive or the CRow Act (2000) by relocating the discharge to controlled waters.

We have not identified any projects for transitional spend therefore all lines are zero

Line 23 – NEP ~ Flow 1 schemes

Transitional expenditure on the primary cost driver of quality enhancement schemes listed in the NEP for AMP5 where the objective of the primary driver is to ensure no deterioration in the current classification of the receiving waters as a result of increased volumes of discharge (historic) - (driver code Flow1)

We have not identified any projects for transitional spend therefore all lines are zero

Line 24 - Odour

Transitional expenditure on schemes where the primary objective is to effect a step change improvement in odour control above base standards.

We have not identified any projects for transitional spend therefore all lines are zero

Line 25 - New development and growth

Transitional expenditure associated with the provision of new development and growth in sewerage services. Includes capital expenditure associated with the provision of local network assets for sewerage services to provide for new customers with no net deterioration of existing levels of service (new development) and capital expenditure associated with changes in sewage collected from new and existing customers whilst maintaining existing levels of service (growth). This should exclude capital expenditure for the purpose of reducing the risk to properties and external areas of flooding from sewers that should be reported in WWS10 line 30, unless an increase in risk is clearly the result of new development.

We have not identified any projects for transitional spend therefore all lines are zero

Line 26 - Growth at sewage treatment works (excluding sludge treatment)

Welsh Water Wastewater Services Business Plan Table Commentaries

Transitional expenditure associated with meeting or offsetting changes in demand from new and existing customers at sewage treatment works but excluding sludge treatment centres.

We have not identified any projects for transitional spend therefore all lines are zero

Line 27 – Resilience

Transitional expenditure to improve resilience. This relates to expenditure to manage the risk of failing to give consumers an appropriate level of service protection in the face of extreme events caused by hazards that are beyond their control. For AMP5 this is the capital expenditure to deliver the outputs included in the supplementary report for improving resilience (e.g. under driver code ESL04).

We have not identified any projects for transitional spend therefore all lines are zero

Line 28 - SEMD

Transitional expenditure on schemes to protect assets and assessments of potential further improvements to comply with the Security and Emergency Measures Direction 1998 including associated Advice Notes. For AMP5 this is the capital expenditure to deliver the outputs included in the sewerage service quality enhancement schedule (Annex 4 - S) to comply with the SEMD (driver code SEMD).

We have not identified any projects for transitional spend therefore all lines are zero

Line 29 - Non-SEMD related security enhancement

Transitional expenditure on schemes driven by other (i.e. non-SEMD) security requirements, for example to improve cyber security or to enhance the security of network and information systems.

We have not identified any projects for transitional spend therefore all lines are zero

Line 30 - Reduce flooding risk for properties

Capital expenditure for the purpose of enhancing the public sewerage system to reduce the risk to properties and external areas of flooding from sewers. Exclude infrastructure renewals expenditure that should be reported in WWS1 line 12 and expenditure associated with the provision of new sewers for new development and such other expenditure required in consequence of the new development that should be reported in WWS10 line 25.

We have not identified any projects for transitional spend therefore all lines are zero

Line 31 - Transferred private sewers and pumping stations

Transitional expenditure on infrastructure and non-infrastructure assets falling within the scope of the transfer of private gravity sewers and lateral drains effected by schemes made by the Secretary of State / Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. Expenditure should be reported even if for accounting purposes companies may be treating it as maintenance (rather than enhancement).

We have not identified any projects for transitional spend therefore all lines are zero

Line 32 - AMP 4 Continuous Discharges

Other transitional expenditure by purpose

We have not identified any projects for transitional spend therefore all lines are zero

Line 33 - AMP 4 Intermittent Discharges

Other transitional expenditure by purpose

We have not identified any projects for transitional spend therefore all lines are zero

Line 34 - ESL - UID

Other transitional expenditure by purpose

We have not identified any projects for transitional spend therefore all lines are zero

Line 35 - Llanelli/Gowerton UWWTD

Other transitional expenditure by purpose

Welsh Water Wastewater Services Business Plan Table Commentaries

We have not identified any projects for transitional spend therefore all lines are zero

Line 36 – L2 driver for Loughor

Other transitional expenditure by purpose

We have incurred expenditure from 2016, under the L2 driver, for a programme of works to resolve issues in the Loughor estuary which is being put forward as transition expenditure.

All programme expenditure from 2016-17 to 2019-20 has been aggregated and added to this transition table under year 2019-20.

Loughor actual spend profile in outturn vales

Year	2015-16	2016-17	2017-18	2018-19	2019-20
£m		4.253	18.167	31.678	21.902

Lines 36 – 46

Other transitional expenditure by purpose

We have not identified any projects for transitional spend therefore all lines are zero

Line 47 - Maintaining the long term capability of the assets ~ infra

Transitional expenditure on infrastructure assets excluding third party capex to maintain the long term capability of assets and to deliver base levels of service. Where projects have drivers both of enhancement and capital maintenance, companies should apply a method of proportional allocation to allocate costs between enhancement and capital maintenance

We have not identified any projects for transitional spend therefore all lines are zero

Line 48 - Maintaining the long term capability of the assets ~ non-infra

Transitional expenditure on non-infrastructure assets excluding third party capex to maintain the long term capability of assets and to deliver base levels of service. Where projects have drivers both of enhancement and capital maintenance, companies should apply a method of proportional allocation to allocate costs between enhancement and capital maintenance.

We have not identified any projects for transitional spend therefore all lines are zero

Line 49 - Other capital expenditure ~ infra

Any transitional expenditure on infrastructure assets other than defined in WWS10 line 47 excluding third party capex.

We have not identified any projects for transitional spend therefore all lines are zero

Line 50 - Other capital expenditure ~ non-infra

Any transitional expenditure on non-infrastructure assets other than defined in WWS10 line 48 excluding third party capex.

We have not identified any projects for transitional spend therefore all lines are zero

Line 51 - Total gross transitional expenditure

The total of all wastewater service transition capital expenditure including associated grants and capital contributions and new obligations but excluding assets adopted from third parties where no expenditure is recorded (at nil cost). Equals sum of WWS10 lines 1 to 50.

Equals sum of WWS10 lines 1 to 50

Line 52 - Grants and capital contributions for transitional expenditure

Grants and capital contributions relating to wastewater transition expenditure. This will be a subset of grants and contributions in App 28 line 29

We have not identified any projects for transitional spend therefore all lines are zero

Welsh Water Wastewater Services Business Plan Table Commentaries

Line 53 - Total net transitional expenditure

The total of all wastewater service transition capital expenditure including new obligations but excluding associated grants and capital contributions and adopted assets at nil cost. Equals WWS10 line 51 minus line 52.

Equals WWS10 line 51 minus line 52.

WWS12 - RCV allocation in the wholesale wastewater service

Overview of the table

Information was provided to Ofwat in September 2017 to support a draft proposal for the split of the wholesale wastewater RCV at 31st March 2020 for the purposes of setting separate price controls for bioresources and waste water network plus. Ofwat published feedback on the draft proposal “Economic value of bioresource assets feedback to companies” (16th February 2018).

This table sets out the update of the net MEAV for bioresources and the proposal of the wholesale wastewater RCV allocation. It explains the differences between the information in the table and that provided in September 2017 and this commentary explains how the feedback has been incorporated.

General Comments

The RCV allocated to the bioresources control has been calculated in accordance with the guidance provided in “Economic asset valuation for the bioresources RCV allocation at PR19” and incorporates feedback provided on our September early submission and information that informed answers to post submission queries in October and December 2017.

The bioresources RCV has increased from 5.5% (205.339 £m in 2016-17 FYE price base) as detailed in the September 2017 submission to 5.7% (218.075 £m in 2017-18 FYE price base) for the following reasons:

		£m	£m	Explanation
	Draft Bioresources RCV (Net MEAV) (September 2017)	205.339		
B4	Inflation to 2017-18 FYE price base		6.862	Annex C
B7	Capacity changes from data improvement programme		1.211	B7
B8	Adjustment to energy incentive revenue calculated in response to December 2017 query		(3.645)	B8
B9	Change to economic life depreciation from straight line depreciation		6.484	B9
B11	Proportional allocation of the net value of shared assets		<u>1.824</u>	Annex D
	Total change	<u>12.639</u>	12.639	
	Proposed Bioresources RCV (Net MEAV)	<u>218.075</u>		

There are no significant changes to the proposed allocation and therefore the full set of detailed tables are not being submitted with the Business Plan.

General Methodology

There is no change to the proposed methodology for calculation of the bioresources RCV. The focussed approach has been taken, setting the RCV for the bioresources sub-control to be equal to the net MEAV of bioresources assets at 31st March 2020 including shared assets.

Data improvement plan

There were a number of known uncertainties in the data submitted in September 2017. A data improvement plan was put into place, and this has been delivered and updated data included in this submission. The data improvement plan and impact on the RCV are detailed in Annex A.

Ofwat feedback on initial submissions

October 2017

Ofwat were concerned that some companies had calculated throughput inconsistently, and noted that the throughput submitted differed to that submitted in the 2017 cost assessment submission. They therefore asked for the capacity and throughput to be resubmitted in a different form. This did not lead to any changes in the calculated throughput submitted by DCWW.

December 2017

Ofwat found it difficult to reconcile the economic adjustments made for costs and income with the information provided on average annual data. They also found it difficult in some cases to reconcile information on costs and income between tables in the September 2017 submission. They therefore asked for the information to be presented in a different format.

When preparing the data for the query submission, it became apparent that the September submission had used an incorrect period for calculating the Net Present Value revenue for the energy revenues from the RHI incentive. This led to the revenue adjustment being revised upwards from £12.353m to £12.797m, an increase in the economic value of £0.444m.

This submission has since been superseded as the net present value of the costs and income was calculated using RPI (at 3.6%), and Ofwat has since directed companies to use CPIH (at 3.3%) post 2020. Final value for the ROCS adjustment is £13.422m in 2017-18 FYE price base. (entered at Row E36)

February 2018

Ofwat issued complete feedback to companies in February 2018. The overall message was that no company has to resubmit fully in September but there are a few adjustments that will be required.

The feedback document is set out with a section on each of the process steps with feedback on what companies had done in general with a few companies named. We are only named once in a section where all companies are named as there was a big variance in approach to estimating the remaining life of the hypothetical assets (our approach was considered reasonable in this context). The document then explains what they expect to see in the submission with the Business Plan.

Effect of the implementation of Ofwat's feedback

A detailed set of actions based on the feedback was produced to inform this table. These actions, how we have complied with them and the consequential impact on the submitted RCV are detailed in Annex B.

Shared assets.

In the September 2017 submission, Ofwat asked all companies to include a value for shared assets, even where the principal use was in another price control. As this is not consistent with current reporting requirements, a number of companies excluded the value of shared assets where the principal use was in another price control. The approach we took was to subdivide the site assets into bioresources and network plus components, and value the bioresources component (e.g. Roads, sites services etc.). Ofwat have now instructed all companies to provide two Net MEA Values, one excluding shared assets, and one including the value of all shared assets. On reflection we have concluded that it is appropriate to include the valuation of the shared assets in the proposed RCV. Our approach to principle use accounting only applies to shared use of Management and General (M&G) assets, primarily general offices and ICT assets. As such these will be no cross charge from bioresources to wastewater network plus from any of the operational assets that we have directly allocated to the bioresources economic value.

As our methodology subdivides the shared assets at a site level into bioresources and network plus assets, there are no 'shared assets' to be accounted for at a site level.

Values for global shared assets (e.g. head office and non-specialist vehicles) have been obtained from a recent revaluation of assets and allocated to bioresources in proportion with the proposed RCV split. This value is £46.843m. All of these assets are allocated to other price controls in regulatory accounts on a principal use basis, therefore do not form part of the economic value for the bioresources prices control. See Annex D for a breakdown of these asset values and how they have been allocated to the bioresources control. Based on a proposed RCV split of 5.7% of the wholesale wastewater RCV, the proportional value of these assets to be included in the economic value of the bioresources assets is £1.824m.

Line commentary

Block A - RCV split 31 March 2020 as submitted in September 2017

Line 1

Net MEAV for the bioresources service submitted in September 2017

Ofwat's pre-loaded figure.

Line 2

RCV allocation that the company proposed in September 2017.

Ofwat's pre-loaded figures.

Line 3

Proposed RCV for bioresources and wastewater network plus at 31 March 2020 as a percentage of the overall RCV for wholesale wastewater.

Calculation

Block B - Changes to proposed final net MEAV

Line 4

Impact on net MEAV of Inflation. The increase in the nominal value of WWS12 line 1 between March 2017 and March 2018 prices.

The effect of inflation has been calculated using March RPI (Source App23):

March 2017 = 269.3

March 2018 = 278.3

Inflation Factor = $205.339 \times 278.3 / 269.3 - 205.339 = £6.862m$

Line 5

The impact on the valuation from the reallocation of assets between business units.

There has been no reallocation of assets between business units.

Line 6

The impact on the valuation from the actual assets now expected to be in existence at 31 March 2020 (including work in progress) is different to that which the valuation in September 2017 was based upon.

Ofwat instructed companies to reconsider whether their MEAV decisions were still valid. We have reviewed the decisions made when selecting the Hypothetical new asset internally and with external challenge and find no reason to amend the hypothetical new assets chosen for the sludge assets in 2020.

The asset base in 2020 is consistent with the north and south sludge strategies. This has not changed since September 2017. Therefore there are no changes to the sludge assets expected to be in existence on March 31 2020

Line 7

The impact on the valuation from changes in the expected value of the gross equivalent assets. Exclude the impact from any difference in the underlying assets and report these in WWS12 lines 5 and 6.

The methodology for calculating the capacity of sludge assets in 2020 has been made consistent between the north and south sludge strategy. South area capacity has been recalculated using the same methodology as north area. North methodology calculates the capacity of each stage, the manufacturer's information has been used alongside the relevant DCWW Process Specification. For example, the capacity of a centrifuge at a Category 2 site is calculated by multiplying the design hourly throughput of the machine (say 25 m³/h for a 2% ds sludge) by the allowable running hours (12h/d over a 5d/week).

Using a consistent methodology has increased the capacity of the hypothetical new assets in 2020, and increased the MEAV by £1.211m.

Line 8

Welsh Water Wastewater Services Business Plan Table Commentaries

The impact on the valuation from any change in the difference in expected present value of the net income (revenue less costs) between actual assets and the modern equivalents. Note that changes that would impacts the net revenue of the actual assets and modern equivalent assets in similar ways will cancel and do not need to be considered.

In December 2017 a reassessment of the methodology applied to energy incentives led to the energy revenues being restated in the December submission to Ofwat. ROCS income had been calculated based on the 2017 throughput not the 2020 throughput as should have been the case. This adjusted the net MEAV up by £0.443m. There was a -£4.165m difference at Five Fords between submission and December submission due to RHI income being assumed to not be available for the HNA in the original submission. There is then a further increase of £0.194m when NPV is based on a factor of 3.3% (based on WACC as specified by Ofwat) rather than RPI of 3.6%.

The total change to net MEAV is -£3.645m to the September 2017 submission.

2020 throughput	0.443
RHI income (Five Fords)	(4.165)
NPV (CPI)	0.194
Adjustment (2016-17 FYE)	(3.528)
Adjustment (2017-18 FYE)	(3.645)

The total adjustment for ROCs revenue is now £13.422m.

Line 9

The impact on the valuation from any change in how the adjustment of economic life is carried out on the valuation. This includes both the method of the adjustment and the assumptions used. Note that it should not double count any impact taken into account in the above lines.

In the September 2017 RCV submission depreciation of economic value of the sludge treatment centres was based on an economic / NPV model as specified by Ofwat. At that time the depreciation of sludge thickening centres was based on a straight line depreciation. To improve consistency, and to respond to a recommendation from the auditor, and the instruction from Ofwat to reconsider remaining economic life value calculations, an economic life/NPV depreciation has been applied to other Sludge Treatment Centres and Sludge thickening plants. This increases the NMEAV by £6.484m

Line 10

The impact on the valuation of any change in the value of land. This is either the land included in the valuation or how the land is valued.

No changes have been made to the land valuation methodology. The September 2017 submission followed Ofwat's preferred approach using data published by DCLG. The cohort used was average industrial land in England outside London and the south east as there is no comparable dataset for Wales.

Line 11

Company specific defined line

The proportional allocation of the net value of shared assets calculated and entered in row E41 has been entered here to ensure that the calculated cell in row C18 matches row D29 and row E42.

The September submission included an allocation of shared on-site assets but not global shared assets which have now been calculated in compliance with the revised reporting requirements. Annex D shows the calculation and methodology for apportionment.

Lines 12 – 17

Company specific defined line

Not used

Block C - RCV split 31 March 2020

Line 18

Welsh Water Wastewater Services Business Plan Table Commentaries

Net MEAV for the bioresources service. Sum of WWS12 line 1 and lines 4 to 17.

Calculated. This does equal WWS12 lines E29 and E42

Line 19

Proposed company RCV allocation. Where the allocation to the bioresources service is different to the net MEAV in line 18, companies must explain the reasons for the difference taking into account any feedback provided by Ofwat in January 2018.

We are proposing to use the net MEAV calculated in C18 without adjustment as the focused allocation of the wholesale wastewater RCV. The wastewater network plus allocation is the balance once the bioresources RCV has been removed from the wholesale wastewater RCV sourced from the file: RCV-PR14_2018.xlsx published by Ofwat on 3rd May 2018.

Line 20

Proposed RCV for bioresources and wastewater network plus at 31 March 2020 as a percentage of the overall RCV for wholesale wastewater.

Calculation

Block D - Net MEAV at 31 March 2020 by asset type

Line 21

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 22

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 23

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 24

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 25

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 26

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 27

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 28

Net MEAV of the specified assets included in WWS12 line 18.

Annex C shows the movement in net MEAV of each asset type due to the changes identified in this commentary

Line 29

Net MEAV for the bioresources service. Sum of WWS12 lines 21 to 28. This must equal WWS12 line 18.

Calculated. This does equal WWS12 line C18

Block E - Movement from Gross MEAV to Net MEAV at 31 March 2020

Line 30

Gross cost of modern equivalent assets owned by appointed business excluding shared assets where the bioresource business unit is not the principal user.

The gross cost of the modern equivalent assets has been calculated in accordance with the methodology explained in the September 2017 initial submission. The value calculated at that time has been inflated to 2017-18 FYE price base and has been increased by £1.211m reflecting the recalculation of capacity following the data improvement plan as detailed in the commentary to line B7 above. Annex E shows the reconciliation of movement from the September 2017 submission to this submission

Line 31

Adjustment to Gross MEAV to reflect the difference in the remaining economic life of actual and modern equivalent assets at 2020.

The adjustment to the gross cost of the modern equivalent assets for remaining economic life has been calculated in accordance with the methodology explained in the September 2017 initial submission. The value calculated at that time has been inflated to 2017-18 FYE price base and has been increased by £6.484m reflecting the adoption of economic life/NPV calculation for all assets (rather than just the sludge treatment centres) as detailed in the commentary to line B9 above. Annex E shows the reconciliation of movement from the September 2017 submission to this submission

Line 32

Adjustment for the difference between actual and modern equivalent assets gross operating costs on bioresource treatment sites - By gross cost we mean the cost as if no electricity was generated on bioresource sites and no income is received from other business units or third parties.

The hypothetical assets are the same as the existing assets therefore there is no adjustment to be made for the difference between the actual and hypothetical assets

Line 33

Adjustment for the difference between actual and modern equivalent assets in capital maintenance costs on bioresource treatment sites

The hypothetical assets are the same as the existing assets therefore there is no adjustment to be made for the difference between capital maintenance costs on the actual and hypothetical assets

Line 34

Adjustment for the difference between actual and modern equivalent assets in non-treatment site costs. This includes all other differences in costs, for instance where companies have identified significant differences in the operating costs of transport, thickening at intermediate sites or disposal.

The hypothetical assets are the same as the existing assets therefore there is no adjustment to be made for the difference between non-treatment site costs between the actual and hypothetical assets

Line 35

Adjustment for the difference between actual and modern equivalent assets in income from electricity and gas produced. This includes where electricity or gas is used on site or provided to associated companies within the wider group.

The hypothetical assets are the same as the existing assets therefore there is no adjustment to be made for the difference in income from electricity and gas produced, other than that explained in line E36, between the actual and hypothetical assets

Line 36

Adjustment for the difference between actual and modern equivalent assets in income received from renewable obligation certificates (ROCs).

The adjustment to the gross cost of the modern equivalent assets for income received from ROCs has been calculated in accordance with a revised methodology based on 2017 throughput. There has also been a change arising from a change of assumption at one site (Five Fords) and a change for clarification of how the NPV should be calculated (using CPIH rather than RPI). For consistency, the value calculated at that time has been inflated to 2017-18 FYE price base and this number has been decreased by £3.645m reflecting these changes, also detailed in the commentary to line B8 above. Annex E shows the reconciliation of movement from the September 2017 submission to this submission.

Line 37

Adjustment for the difference between actual and modern equivalent assets in the income received from other incentives.

The hypothetical assets are the same as the existing assets therefore there is no adjustment to be made for the difference between income received from other incentives at the actual and hypothetical assets

Line 38

Adjustment for the difference between actual and modern equivalent assets in other income including income from sale of biosolids.

The hypothetical assets are the same as the existing assets therefore there is no adjustment to be made for the difference between other income at the actual and hypothetical assets

Line 39

Other adjustment. Any further reason for a movement between gross and net MEAV. Please provide a full explanation if a value is entered in this line.

No other adjustments have been made

Line 40

Economic valuation of bioresources assets excluding the allocation of shared assets. Sum of WWS12 lines 30 to 39.

Calculated

Line 41

Proportional allocation of the net modern equivalent value of shared assets where the bioresource business unit is not the principal user.

The September submission included an allocation of shared on-site assets but not global shared assets which have now been calculated in compliance with the revised reporting requirements. Annex D shows the calculation and methodology for apportionment.

Line 42

Economic valuation of bioresources assets including an allocation of shared assets. Sum of WWS12 lines 40 and 41. This must equal WWS12 line 18.

Calculated. This does equal WWS12 line C18

Annex A - Progress on Data improvement plans in September 2017 submission

Area	Recommendation	Status	Impact on submission quality
Consistent Measurement of Throughput	Develop and implement plan for consistently measuring and reporting throughput.	Progressing as part of the readiness for the bioresources market.	No impact.
	Develop methodology for consistently forecasting future throughput.		Throughput does not affect the calculated economic value or RCV, and throughput is not required in Table WWS12
Consistent Measurement of Capacity	Jacobs identified differences in process for defining future capacity. Clear process to be defined and agreed.	<p>Completed</p> <p>Stated capacity has been calculated on the basis of maximum available throughput per year at each site so we have reported design headroom at each site as zero.</p> <p>The stated capacity is 91.4 TTDS/Yr which will provide sufficient operating headroom at a regional level for our forecast throughput of 67.8 TTDS/Yr.</p>	+£1.211m impact on Net MEAV value (See row B7)

Annex B – Review of actions arising from Ofwat feedback

Action	Outcome	Impact on NMEAV £m
Review design and operational assumptions, particularly regarding capacity.	Completed. Design capacities for south area updated	+1.211
Confirm that capacity with no economic value is excluded from the valuation.	Both CH2M and DCWW confirm that no capacity has been excluded from the calculations	0
Information shows that DCWW economic value of treatment and other sites per ttds received is the second highest of any company.	This is not unexpected given recent investment in sludge treatment assets. DCWW has one of the lower asset ages in 2020 of all the WaSCs	0
Review M&G costs. DCWW relative gross M&G costs are low in comparison to other companies.	M&G costs as submitted in September 2017 have been reviewed and confirmed as correct.	0
Comment on whether RCV allocation should include or exclude a valuation of shared assets and the impact (if any) on double counting within the bioresources business unit	Calculation methodology fully partitioned all on-site assets between Bioresources and Network plus. The revised allocation of general shared assets will not result in double counting.	0
Clearly explain asset life adjustment assumptions (ref. Section 5.12)	Asset lives methodology clearly set out in original submission document	0
Confirm that asset age is calculated as the time since the last substantial change to the asset. For example, when the accounting net value increased by more than 50% following capital works.	Approach is based on median asset age. Which in effect means that if there has been significant investment, the asset age for all processes is reset at that investment	0
Consider if it is practicable to cross check remaining lives of existing assets against information on asset condition/serviceability.	This has been investigated and is not considered practicable.	0
Check annual average income per unit of throughput (excl. incentives). DCWW is high compared to other companies.	This is due to the high % of AAD compared to other companies, and the gas exported revenue at Afan.	0

Action	Outcome	Impact on NMEAV £m
Confirm DCWW has used its average import price for the value of the energy generated and used by the appointed business, whether it is used on a bioresources site or “sold” to any co-located wastewater treatment works. Companies should not calculate the cost of the heat generated by CHP engines which they may use to heat the digestion process.	The energy revenue query in December 2017 clarified this, and the submission has been updated to this methodology	-£3.645m
Confirm DCWW has used the actual export price for the value of energy sold to National Grid.	The energy revenue query in December 2017 clarified this, and the submission has been updated to this methodology	0
Review annual costs and update to reflect 2018 APR.	Table removed in May 18 table updates - No longer required.	0
Consider if capital maintenance costs are likely to be different between actual and modern equivalent assets.	Where the MEA exists, we have used the actual MEA as a donor for future costs for AAD plants. And as all hypothetical new assets are the same as the actual assets in 2020, the impact of any differences would not be material.	0
Adjustments for inflation should reflect RPI until 31 March 2020 and CPIH from 1 April 2020.	Actioned	0
Nominal wholesale WACC is 5.37% and the real wholesale WACC on a CPIH basis is 3.3%, assuming a long term CPIH of 2%. This replaces the guidance we provided for the September 2017 submission.	All NPV calculations (economic life depreciation and revenue) now use 3.3% WACC (see commentary for line B8)	£0.194m
Revisit choice of technology for MEA and confirm as appropriate. This must be considered irrespective of sunk costs.	Choice of technology in the September 2017 submission has been challenged and it is considered appropriate.	0
Revisit assessment of impact on bills from allocation of RCV in light of feedback and confirm as appropriate. Table removed in May 18 republication. No longer required. Requirement now is for companies to explain how they have	We have assessed the impact of the focussed approach to allocating the capital value. The change would be expected to lead to a higher share of the return on the capital, all else equal. This implies an increase for customers having comparatively	0

Action	Outcome	Impact on NMEAV £m
identified if the bills of any customer are at potential risk of significant impact from the allocation of the RCV.	<p>intensive bioresource discharges Trade effluent customers tend to have higher bio-solid and strength than domestic load and strengths. We calculate that the movement in the RCV that we are proposing could lead to a relative increase in the trade effluent bill of these customers of approximately 1% by itself. We note, however that other expected movements in the wholesale wastewater cost structure will go in the opposite direction, for example we anticipate a bigger reduction in totex within the bioresources control compared to the network plus control which would offset this.</p> <p>In any event, our annual approach to setting charges includes an assessment of the effect of the proposed charges on customers and groups of customers, noting that changes to tariffs can be driven by many considerations, and if this incidence would be material (currently a 5% change is considered to be material) then an appropriate handling strategy is put in place, for example a glide-path over a number of years.</p>	
Quantify and explain reasons for any significant changes in asset valuations over time (on both a gross and net basis).	There are no significant changes over time	0
Consider which cross-checks would have most value for DCWW's circumstances. The cross checks that appeared to provide most confidence in asset valuations were the sensitivity of the valuation to alternative assumptions and cross checks on the gross values of modern equivalent assets companies had assumed.	We used sensitivity of valuation to alternative assumptions as cross checks and these were fully documented in the September 2017 submission	0

Action	Outcome	Impact on NMEAV £m
Consider whether an alternative allocation of the RCV would better protect customers including by promoting a level playing field for markets.	Alternative approaches were considered for the September 2017 submission. The conclusion was that the proposed allocation would not be inappropriate for customer protection or markets.	0

Annex C Breakdown of differences in net MEAV between September 2017 submission and PR19 table WWS12

Asset type	Bioresources Net MEAV (September 2017)	Difference attributable to inflation	Bioresources Net MEAV (September 2017)	Difference attributable to capacity	Difference attributable to economic life	Difference attributable to ROCs	Difference attributable to proportional allocation of shared assets	Attributable differences sub-total	Bioresources Net MEAV (September 2018)
	A	B	A+B	C	D	E	F	C+D+E+F	A+B+C+D+E+F
Price base	Mar 17 prices	Mar 17 to Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices
Sludge transport plant	2.731	0.091	2.822	-	-	-	-	-	2.822
Sludge transport management and general	0.031	0.001	0.032	-	(0.003)	-	-	(0.003)	0.029
Intermediate sludge thickening plant	48.330	1.615	49.945	1.211	7.340	-	-	8.551	58.496
Thickened sludge transport plant	-	-	-	-	-	-	-	-	-
Sludge treatment plant	152.566	5.099	157.665	-	(0.853)	(3.645)	-	(4.498)	153.167
Sludge treatment management and general	1.681	0.056	1.737	-	-	-	1.824	1.824	3.561
Sludge disposal plant	-	-	-	-	-	-	-	-	-
Sludge disposal management and general	-	-	-	-	-	-	-	-	-
Net change in bioresources net MEAV at 31 March 2020		6.862		1.211	6.484	(3.645)	1.824	5.874	
Bioresources net MEAV at 31 March 2020	205.339		212.201						218.075

Annex D – Calculation of shared asset value for allocation to the Bioresources RCV

Shared asset type	Number	Unit	Gross MEAV (£m)	Net MEAV (£m)	Land value (£m)
ICT assets	1,800	nr	2.969	2.489	-
Offices and Depots	5	nr	64.699	30.461	4.239
Other tangible assets ¹			-	-	9.069
Transport (vehicles not allocated to upstream service)	117	nr	1.730	0.585	-
Total			69.398	33.535	13.308
Net MEAV + Land Value for allocation					46.843

Note 1: This relates to land registry deeded areas where we were unable to match to a specific site for MEAV purposes so have been treated as shared assets for these purposes.

The calculated shared assets for allocation have been split between wholesale water and wholesale wastewater in proportion to the closing RCV of the respective service in 2019-20, as shown in the table below:

	RCV (£m)	% of RCV	Shared Assets (£m)
Wholesale RCV 2019-20	5,599	100.00%	46.843
Wholesale Water 2019-20	1,777	31.74%	14.866
Wholesale Wastewater 2019-20	3,822	68.26%	31.975

The shared assets for wastewater are allocated 5.7% to bioresources calculated from “net MEAV of bioresources assets excluding shared assets” (£40 £216.251m) as a proportion of the wholesale wastewater RCV net of shared assets (i.e. £3,822.224m – £31.975m).

Annex E Breakdown of differences between the analysis of movement from Gross MEAV to Net MEAV at 31 March 2020 (Block E) between September 2017 submission and PR19 table WWS12

E	Movement from Gross MEAV to Net MEAV at 31 March 2020	Bioresources Gross MEAV to Net MEAV September 2017	Difference attributable to inflation	Bioresources Net MEAV September 2017	Difference attributable to capacity	Difference attributable to economic life	Difference attributable to ROCs	Bioresources Gross MEAV to Net MEAV September 2018
		A	B	A+B	C	D	E	A+B+C+D+E
	Price base	Mar 17 prices	Mar 17 to Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 18 prices	Mar 17 prices
3 0	Gross MEAV of assets at 31 March 2020 excluding shared assets	271.262	9.066	280.328	1.211			281.539
3 1	Adjustment for remaining economic life	(82.439)	(2.755)	(85.194)		6.484		(78.710)
3 6	Adjustment for income received from renewable obligation certificates (ROCs)	16.515	0.552	17.067			(3.645)	13.422
4 0	Net MEAV of assets at 31 March 2020 excluding shared assets	205.339	6.862	212.201	1.211	6.484	(3.645)	216.251

WWS13 - PR14 wholesale revenue forecast incentive mechanism for the wastewater service

Line 1 - Company name

Company details for WRFIM model

Pre-populated

Line 2 - Company type

Company details for WRFIM model

Pre-populated

Line 3 - Company has accepted WRFIM licence modification

Company details for WRFIM model

We have accepted the licence modification

Line 4 - Penalty rate scaling minimum threshold (+/-)

WRFIM model parameters as defined in the PR14 reconciliation rulebook

Pre-populated

Line 5 - Penalty rate scaling maximum threshold (+/-)

WRFIM model parameters as defined in the PR14 reconciliation rulebook

Pre-populated

Line 6 - Penalty rate (+/-)

WRFIM model parameters as defined in the PR14 reconciliation rulebook

Pre-populated

Line 7 - Specified discount rate

WRFIM model parameters as defined in the PR14 reconciliation rulebook

Pre-populated

Line 8 - Threshold for additional variance analyses (+/-)

WRFIM model parameters as defined in the PR14 reconciliation rulebook

Pre-populated

Line 9 - Allowed revenue - wastewater

2014-15 allowed revenue from company final determination letter, as adjusted for ODIs or IDoK in accordance with the licence

Pre-populated. Data from the PR14 Final Determination Letter

Line 10 - Actual RPI: November index year on year change

Year on year increase in November RPI for the November prior to the start of the financial year
Calculation

Line 11 - K ~ wastewater

Annual K factor from the PR14 final determination, as adjusted for in-period ODIs or interim determination of K in accordance with the licence

Pre-populated and calculation. Data is from the PR14 Final Determination Letter

Line 12 - Total revenue forecast ~ wastewater

Total revenue forecasted in PR14. Calculated as 2014-15 allowed revenue (WWS13 line 9) compounded by RPI (WWS13 line 10) and K (WWS13 line 11).

Calculation

Line 13 - RCM blind year 2014-15 adjustment for implementing via WRFIM ~ wastewater

Revenue Correction Mechanism (RCM) 2014-15 blind year adjustment implemented via WRFIM. As published in December 2016

Pre-population. Data from Ofwat WRFIM Consultation in December 2016

Line 14 - Percentage of RCM adjustment by year ~ wastewater

Profile for applying the RCM adjustment. This should be in accordance with the choice made (as published) in December 2016.

Pre-population. Data from Ofwat WRFIM Consultation in December 2016

Lines 15-20 Revenue recovered

Actual revenue recovered from metered and unmetered customers' wastewater charges, household and non-household over the 2015-2020 price review period. Annual wholesale wastewater charge revenue as reported in company's regulatory reporting 21.

Actual Revenue is obtained from Table 21 of the APR for 2015-16 to 2017-18. Revenue for 2018-19 and 2019-20 is set to achieve the allowed revenue less a planned under-recovery in 2018-19 to avoid significant incident effects at a time of high inflation. Our current assumption is that the abated revenue will be repeated in 2019-20 as outlined in section 4 of the supporting document submitted in July with the Reconciliation Rulebook. Revenue recovered from different customers is based on historical data and the expected rate of meter optants.

Line 21 - Wastewater: Revenue collected from household and non-household

Calculated. Sum of WWS13 lines 15 to 20

Calculation

Line 22 - Wastewater: Grants and contributions

Actual wastewater grants and contributions revenue recovered. As defined in the RAGs for 2017-18 21, total of price control grants and contributions irrespective of accounting treatment. We raised several queries on grants and contributions reporting in the 2016 APR or 2017 APR. As a result of these queries, if a company is aware that previous year's data has not been correctly reported, they should restate the figures in the pre-populated cells using the definition in the RAGs for 2017- 18 reporting.

Data for 2015-16 to 2017-18 is based on the APR figures. In the Annual Performance Report new connections were allocated to third party to ensure the Grants and Contributions align new connections has been allocated to Grants and Contributions as outlined in section 4 of the supporting document submitted in July with the Reconciliation Rulebook.

Line 23 - Wastewater: Revenue recovered

Calculated. Sum of WWS13 lines 21 and 22

Calculation

Line 24 - Wastewater: Capital contributions from connection charges and revenue from infrastructure charges (PR14 FD)

Total grants and contributions that are included in the allowed wastewater revenue totals.

Pre-populated. Data obtained from the Final Determination

Line 25 - Wastewater: Grants and contributions

Relevant wastewater capital contributions from connection charges and revenue from infrastructure charges, defined in the final determination as covered by the price control. As defined in RAG 4.07 2I.
Calculation

Line 26 - Wastewater: Grants and contributions variance

Difference in outturn prices between line 24 and line 25 for wastewater grants and contributions. Line 24 is adjusted to outturn prices using data in App23
Calculation

Line 27 - Main revenue adjustment as incurred ~ Wastewater:

Main revenue adjustment as incurred. These values are calculated in the PR14 reconciliation WRFIM model on 'WRFIM - Waste' sheet in row 41. The values are in outturn prices
Data obtained from the WRFIM Model in 'WRFIM-Water' sheet in row 49 (Row 41 in the previous version of the model)

Line 28 - Penalty adjustment as incurred ~ Wastewater:

Penalty adjustment as incurred. These values are calculated in the PR14 reconciliation WRFIM model on 'WRFIM - Waste' sheet in row 51. The values are in outturn prices.
Data obtained from the WRFIM Model in 'WRFIM-Water' sheet in row 59 (Row 51 in the previous version of the model)

Line 29 - WRFIM adjustment as incurred ~ water

WRFIM adjustment as incurred. These values are calculated in the PR14 reconciliation WRFIM model on 'WRFIM - Waste' sheet in row 56. The values are in outturn prices.
Data obtained from the WRFIM Model in 'WRFIM-Water' sheet in row 64 (Row 56 in the previous version of the model)

Line 30 - WRFIM Total reward / (penalty) at the end of AMP6 ~ water

WRFIM Total reward / (penalty) at the end of AMP6. These values are calculated in the PR14 reconciliation WRFIM model on 'WRFIM - Waste' sheet in row 73. The values are in outturn prices
Data obtained from the WRFIM Model in 'WRFIM-Water' sheet in row 84 (Row 73 in the previous version of the model)

Line 31 - WRFIM Total reward / (penalty) at the end of AMP6 ~ water network plus

WRFIM Total reward / (penalty) at the end of AMP6 expressed in 2017-18 FYA (CPIH deflated) prices. This is an output item from the revenue adjustments feeder model. The value entered is prior to profiling.
Data obtained from the revenue feeder model

WWS15 - PR14 wholesale total expenditure outperformance sharing for the wastewater service

Line 1 – Company type

Company type is either WaSC or WoC

Pre-populated. WaSC

Line 2 – Is company enhanced?

Enhanced or Non-enhanced status in PR14.

Pre-populated. Non-enhanced at PR14

Line 3 – Financing rate

Financing rate. The PR14 final determination weighted average cost of capital.

Pre-populated. PR14 Wholesale Real WACC

Line 4 – Sewerage: implied menu choice

The implied menu choice number for water from PR14 final determination company specific appendix

Pre-populated. Ofwat PR14 Menu Model

Line 5 – Sewerage: FD pension deficit recovery costs allowed

The final determinations pension deficit recovery costs allowance for water from PR14 final determination – company specific appendix

Pre-Populated. PR14 Final determination

Line 6 – Sewerage: Final menu choice

The submitted final menu choice for water from Menu choice confirmation letter 16th January 2015.

Pre-Populated. Final Menu choice confirmation letter

Line 7 Sewerage: Baseline Totex

Ofwat's view of the menu cost baseline at final determinations from PR14 populated final determination menu model.

Pre-Populated. Ofwat PR14 Menu Model

Line 8 - Sewerage: FD allowed totex inclusive of menu cost exclusions, less PDRC allowance

The allowed expenditure in final determinations for input to PAYG from PR14 populated final determination menu model.

Pre-Populated. Ofwat PR14 populated final determination model

Line 9 – Sewerage : Actual Totex

Reported actual totex for water from annual regulatory reporting.

Actual Totex for 2015-16 is obtained from the 2016-17 Cost Assessment Tables as this was restated from the published Annual Performance Report figure. Actual Totex for 2016-17 and 2017-18 are from the Annual Performance Report with 2017-18 amended for the Principal Use Adjustment (PUA) in table WWS1. Forecast Totex is in line with our business plan in WWS1, with the difference being the Principal Use Adjustment posted in respect of Head Office costs and ICT Assets. Expenditure for Llanelli and Gowerton has been removed for 2016-17 and 2017-18 as detailed in section 3 of the support document submitted in July with the Reconciliation Rulebook. The reconciliation between table WWS15 (Line C9) and WWS1 (Line E36) is as follows

Table	Line		2015-16	2016-17	2017-18	2018-19	2019-20
WWS15	C9	Sewerage : Actual Totex	232.4	285.1	297.6	336.9	350.3
	PUA				-7.9	-6.5	-5.5
	Adjusted Total				289.7	330.4	344.9
WWS1	E36	Total expenditure			289.7	330.9	345.0
	Movement in IRE Forecast in WWS1				0.0	0.5	0.2

The remaining difference of £0.5m in 2018-19 and £0.2m in 2019-20, is due a slight movement in the Forecast IRE for those years since the submission of the Reconciliation Rulebook in July.

Lines 10 – 14 Adjustments to Totex

Totex exclusions. Actual totex line items to be excluded in menu totex: third party costs, pension deficit recovery costs, other cash items, disallowables as set out in the PR14 reconciliation rulebook guidance.

Actual Exclusions for 2015-16 to 2017-18 are obtained from the Annual Performance Report.
Forecast exclusions are in line with our business plan.

Line 15 - TTT control: logging up / (down) of scope swaps

TTT Control: logging up / (down) of scope swaps. Costs associated with the reallocation of scope from the Infrastructure Provider to Thames Water that are subject to the logging up process.

N/A

Line 16 - TTT control: Land - 100:0 (customer: company) cost sharing factor

TTT control: Land - 100:0 (customer: company) cost sharing factor. TTT control land costs are not subject to the standard menu incentives and have a customer sharing rate of 100:0 to ensure customers benefit from future land disposals.

N/A

Line 17 - Sewerage: Transition expenditure

Totex inclusions – Transition expenditure in 2014-15 (confirmed in final 2010-15 reconciliation decision document).

Pre-Populated. Transition expenditure confirmed in the 2010-15 reconciliation publication. The pre-populated value has been updated see appendix H of the supporting document.

Line 18 - Sewerage: PAYG ratio

The profile of PAYG ratio allowed in final determinations from PR14 final determination – company specific appendix.

Pre-populated. Obtained from the PR14 final determination

Line 19 - Wastewater: revenue adjustment from totex menu model

Output item from totex menu model as appears on the Totex menu adjustments sheet.

Output from the Totex menu model 'Calc' tab line 198

Line 20 - Wastewater: RCV adjustment from totex menu model

Output item from totex menu model as appears on the Totex menu adjustments sheet.

Output from the Totex menu model 'Calc' tab line 203

Line 21 - Wastewater: Totex menu revenue adjustment at 2017-18 FYA CPIH deflated price base

Output item from revenue adjustments model. Totex menu revenue adjustment - Wastewater network at 2017-18 FYA CPIH deflated price base. The value entered is prior to profiling.

Output from the revenue feeder model

Line 22 - Wastewater: Totex menu RCV adjustment at 2017-18 FYA CPIH deflated price base

Output item from RCV adjustments model. Wastewater: Totex menu RCV adjustment at 2017-18 FYA CPIH deflated price base.

Output from the RCV feeder model

WWS18 - Explaining the 2019 Final Determination for the wastewater service

Table Cell Adjustments

Line 7 Please note we have over written the decimal point compliance for the cells shown below as rounding's were causing the total to show an additional kilometre of improvement to that which we have agreed in the NEP.

2020-21	2021-22	2022-23	2023-24	2024-25	Total
0	4.8	20	0	269.6	294.4

Line Commentary

Line 1 Number of external sewer flooding incidents

The actual and forecast total number of external sewer flooding incidents in accordance with the definition of external sewer flooding published on UKWIR's website. This includes flooding due to overloaded sewers (hydraulic flooding) and due to other causes (FOC). Incidents caused by sewers transferred under the Transfer of Private Sewers Regulations 2011 and pumping stations transferred in 2016 should also be included.

For 2018-19 and 2019-20 the issued guidance is consistent with our existing methodology. We have not excluded any incidents on the basis of 'severe weather'. Our reported performance on external flooding has improved year-on-year, from over 7,000 properties/areas flooded externally in 2012-13. Of the 5,056 properties/areas externally flooded in 2017-18 (this excludes repeat incidents at a property and incidents in severe weather) the 3,929 is the total number of incidents (including repeat flooding and several weather incidents but excludes outside the property boundary) indicating that around 70% were within the boundary of a domestic or non-residential property. For 2020-25 the data will follow the Ofwat definition for external flooding within the curtilage. The targets for individual years follow a straight line between the end of AMP6 target and the end of AMP7 target. This aligns with our performance commitment for external flooding, Rt2 - Sewer flooding on customer property (external).

The definition includes reported external flooding incidents that were not confirmed on site by our response team, such as a flooding incident that has been cleaned up prior to the team arriving. We have not estimated or included an estimate for the number of incidents associated with 'unsubstantiated flooding'. Further clarification and a change in process would be required to capture any additional flooding incidents that should be included as our issue.

Line 2 Number of category 1 & 2 serious pollution incidents

Total number of category 1 & 2 pollution incidents defined by EA/NRW as follows - The total number of serious pollution incidents (categories 1 and 2) in a calendar year which overlaps with the greater part of the report year, emanating from a discharge or escape of a contaminant from a company sewerage asset affecting the water environment. This does not include incidents impacting on air or land. Incidents affecting amenity of the water environment, e.g. Bathing Waters, are included. This does not include pollution incidents from transferred/adopted private pumping stations or transferred/adopted private rising mains (transferred in 2016). Pollution incidents attributed to the clean water distribution system and water treatment works are not included in this serious pollution incidents sewerage definition. Assets included in the sewerage service are:

- sewage treatment works;
- foul sewers, including private sewers transferred to the water companies in Oct 2011 (used in the EPA from 1 Jan 2016);
- combined sewer overflows;
- rising mains;
- pumping stations;
- storm tanks;

- surface water outfalls;
- other.

This is not an exhaustive list. The 'other' category is an optional categorisation used in the Environment Agency National Incident Recording System (NIRS) database for recording incidents where the incident source does not fit in any of the other categories. It is generally used very infrequently but is used occasionally. Figures from 2015-16 to 2019-20 copied from line 7 of table App31.

It is assumed that all of the pollution incidents caused by ourselves are identified and reported. A target for self-reporting is in place and will help to ensure any incident first identified by us is reported and recorded correctly. There are also a number of projects, such as Event Duration Monitoring, in place to help support the identification of issues with our assets that may cause pollution.

It is assumed that attendance by operational teams leads to the cessation of any polluting discharge and the issue being resolved. Pollution Technicians monitor all reports of pollution and tasks in their geographical area to ensure that no notifications and orders in SAP remain open and unresolved. It is assumed that agreement can be reached between ourselves and NRW or the EA on the future classification, premises type and responsibility (Welsh Water, third party or misconnection) for each incident by the NRW set deadline. If an agreement cannot be reached by this deadline, the NRW decision is final.

It has been assumed that the impacts of extreme weather events upon pollution performance as a result of predicted climate change are transient and localised.

2020-2025 figures are in line with our PR19 targets. We are targeting zero category 1 or 2 incidents within the 2020-25 period.

Line 3 Number of category 3 pollution incidents

Total number of category 3 pollution incidents defined by EA/NRW as follows - The total number of pollution incidents (category 3) in a calendar year which overlaps with the greater part of the report year, emanating from a discharge or escape of a contaminant from a company sewerage asset affecting the water environment. This does not include incidents impacting on air or land. Incidents affecting amenity of the water environment, e.g. Bathing Waters, are included. This does not include pollution incidents from transferred/adopted private pumping stations or transferred/adopted private rising mains (transferred in 2016). Pollution incidents attributed to the clean water distribution system and water treatment works are not included in this serious pollution incidents sewerage definition.

Assets included in the sewerage service are:

- sewage treatment works;
- foul sewers, including private sewers transferred to the water companies in Oct 2011 (used in the EPA from 1 Jan 2016);
- combined sewer overflows;
- rising mains;
- pumping stations;
- storm tanks;
- surface water outfalls;
- other.

This is not an exhaustive list. The 'other' category is an optional categorisation used in the Environment Agency National Incident Recording System (NIRS) database for recording incidents where the incident source does not fit in any of the other categories. It is generally used very infrequently but is used occasionally. Figures from 2015-16 to 2019-20 copied from line 8 of table App31.

It is assumed that all of the pollution incidents caused by ourselves are identified and reported. A target for self-reporting is in place and will help to ensure any incident first identified by us is

reported and recorded correctly. There are also a number of projects, such as Event Duration Monitoring, in place to help support the identification of issues with our assets that may cause pollution.

It is assumed that attendance by operational teams in future will continue to lead to the cessation of any polluting discharge and the issue being resolved. Pollution Technicians monitor all pollution reports and tasks in their geographical area to ensure that no notifications and orders in SAP remain open and unresolved.

It is assumed that agreement can be reached between ourselves and NRW or the EA on the future classification, premises type and responsibility (Welsh Water, third party or misconnection) for each incident by the NRW set deadline. If an agreement cannot be reached by this deadline, the NRW decision is final.

It has been assumed that the impacts of extreme weather events upon pollution performance as a result of predicted climate change are transient and localised.

During 2020-2025 our performance improvement will exhibit a steady trend of continuous improvement over the five year forecast period as set out in our PR19 Performance Commitment En3 - Pollution incidents from wastewater.

Block B Resilience

Line 4 Asset Health total number of sewer blockages

Total actual and forecast number of sewer blockages on the current network (ie. the sewerage network including private sewers and lateral drains transferred as a result of schemes made by the Secretary of State / Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011. This line is copied from WWn3 line 5.

2015-16 and 2016-17 numbers have been extracted from APR submissions.

2017-18 to 2024-25 are a direct copy from WWn3 line 5.

Block C Affordability

Line 5 Number of people receiving help paying their wastewater bill

The actual and forecast number of customers receiving financial assistance through the company's special social tariffs and schemes such as Watersure to help them with paying their wastewater bill.

The reason that this line does not reconcile to the Performance Commitment BI2 - Vulnerable customers on social tariffs (BI2) is that BI2 presents the total number of unique customers receiving help with their bill. This is the sum of dual customers plus water only customers plus waste only customers. The entry for this line, on the other hand, is the unique number of dual service and wastewater only customers.

Customers receiving help paying their bill		15-16	16-17	17-18	18-19	19-20	20-21	21-22	22-23	23-24	24-25	20-25
A	Water only customers	526	633	984	1355	1515	1549	1584	1618	1652	1685	1618
B	Dual customers (Water and wastewater)	36,540	52,703	89,241	117,588	131,520	134,485	137,449	140,414	143,378	146,244	140,394
C	Wastewater only customers	43	31	34	57	64	66	67	69	70	71	69
MoS BI2												
A+B+C	Total number of "unique" customers receiving help paying their bill	37,109	53,368	90,259	119,000	133,100	136,100	139,100	142,100	145,100	148,000	142,080
WS18 C4												
A+B	Number of people receiving help paying their water bill	37,066	53,337	90,225	118,943	133,036	136,034	139,033	142,031	145,030	147,929	142,011
WWS18 C5												
B+C	Number of people receiving help paying their wastewater bill	36,583	52,735	89,275	117,645	131,585	134,551	137,516	140,482	143,448	146,315	140,462

Block D Markets

Line 6 Number of direct procurement wastewater service schemes

The number of direct procurement wastewater schemes meeting the technical criteria and for which expenditure is reported in App21.

We have reviewed our investment plan and, at this stage, have not found any schemes that we are putting forward for direct procurement. The details of our assessment are set out in the supporting information provided with our submission. 5.7 Direct procurement report.

Block E Environmental

Line 7 Length of rivers improved as a result of WINEP Water Quality schemes

The actual and forecast length of rivers improved as a result of WINEP Water Quality schemes. Figures entered in this line should be consistent with those recorded in the Environment Agency's 2020-25 WINEP spreadsheet. "Improved" shall have the same meaning as in the Environment Agency's technical guidance document "Completing the WINEP spreadsheet supplementary guidance: Environmental outcomes", November 2017. For transparency to customers and for regulatory confidence, companies should use the environmental outcome data in WINEP3 if they have an ODI for WINEP delivery.

We have assumed here that this line should include both our NEP (Wales) and WINEP (England) schemes.

Both 2018-19 and 2019-20 include the concluded schemes that result in an improvement to the river as stated by EA/NRW on their NEPs. These figures are for the km of river improved as stated by the NEP that relate to schemes delivered and predicted still to be delivered during AMP6.

The 2020-2025 figures relate to the schemes that will be delivered as part of NEP/WINEP to improve river water quality and have been calculated by the EA/NRW. This line states the Length of river improved as quoted in the NEP/WINEP and stated as required to be achieved by the completion date given the NEP/WINEP and is discussed within the 5.8F Water Quality

Please note we have overwritten the decimal point compliance for the cells shown below as rounding's were causing the total to show an additional kilometre of improvement to that which we had agreed in the NEP.

2020-21	2021-22	2022-23	2023-24	2024-25	Total
0	4.8	20	0	269.6	294.4

Line 8 Greenhouse gas emissions from wastewater operations

The actual and forecast measurement of the annual operational GHG emissions from the company's wastewater operations.

We are proposing a year on year energy consumption reduction that is supported by the 5.8T Energy investment case

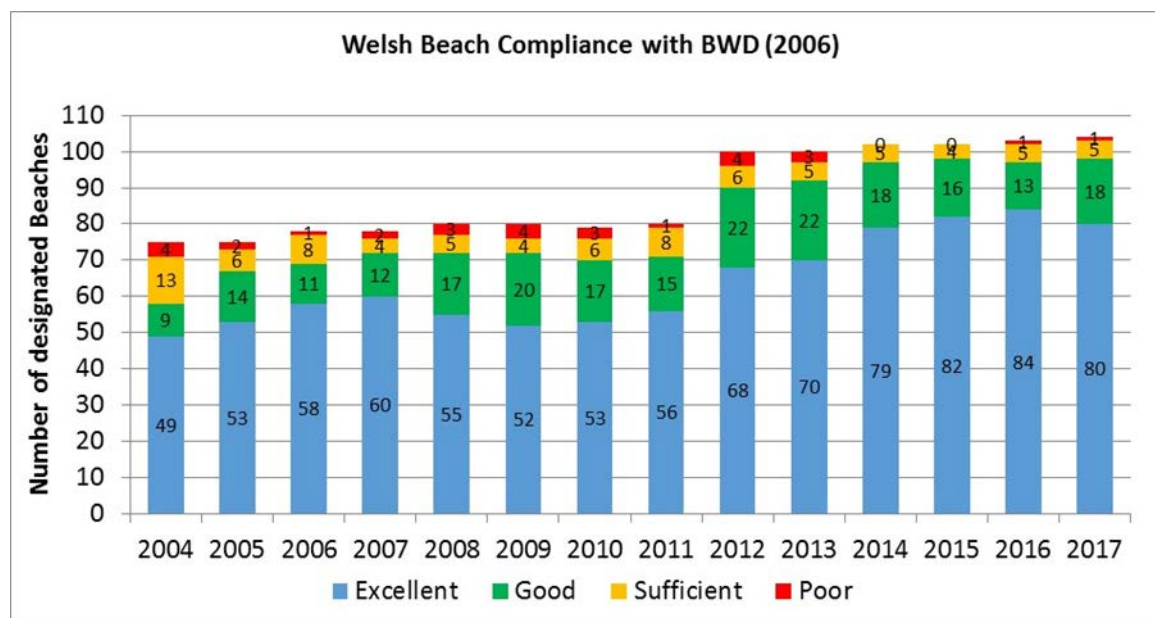
Until 2017-18 our operational carbon emissions were dominated by energy consumption from the grid. Our carbon emissions fell by 71%% percent to 62 ktCO₂ (from 212kt in 2016-17) against an internal target for 196 ktCO₂ by 2020. This dramatic fall is largely due to a change in our electricity supply contract which changed on 1st April 2017 to Orsted which provides supply of "REGO backed" electricity. The REGO (Renewable Energy Guarantees of Origin) enables a company to show named sources for all its electricity and declare these supplies as being carbon free.

Line 9 Number of designated coastal bathing waters passing EU standards

The actual and forecast number of designated coastal bathing waters assessed as 'Sufficient' or better according to the classification system set out in Schedule 5 of the Bathing Water Regulations 2013 (Statutory Instrument No.1675).

Numbers of bathing waters passing the minimum standard have remained high (98.5%) and consistent (within the range 96% to 100%) since 2012 and at least 98% since implementation of the

directive in 2015. Improvements in the number passing since 2012 are largely the result of wet summers, dropping from the assessment period in 2014 and 2015. Higher rainfall in future could cause a reduction in the number of passing bathing waters to 2012 levels. Although this is partly mitigated by recent investment in AMP5 and AMP6, the effects of diffuse runoff from agriculture remain a threat to compliance with the minimum bathing water standard at a number of sites in Wales, especially Cemaes, Rhyl and New Quay Traeth Gwyn.



Class	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Excellent	49	53	58	60	55	52	53	56	68	70	79	82	84	80	
Good	9	14	11	12	17	20	17	15	22	22	18	16	13	18	
Sufficient	13	6	8	4	5	4	6	8	6	5	5	4	5	5	
Poor	4	2	1	2	3	4	3	1	4	3	0	0	1	1	
Total	75	75	78	78	80	80	79	80	100	100	102	102	103	104	
percent pass	94.7	97.3	98.7	97.4	96.3	95.0	96.2	98.8	96.0	97.0	100	100	99.0	99.0	
Average Percent pass	96.8								98.5						

Line 10 Percentage discharge permit compliance (STW and WTW discharges compliant with numeric permits)

The actual and forecast performance of sewerage service and water service assets to treat and dispose of wastewater in line with the discharge permit conditions imposed on, respectively, sewage treatment works and water treatment assets for the water supply service. Figures should be input on a calendar year basis. Calculation should follow the methodology set out on page 5 of the Environment Agency's Environmental Performance Assessment (EPA) Methodology v2, February 2017.

There is no change by NRW and EA to the methodology for the calculation of percentage discharge compliance - currently set out in the Environment Agency's Water & Sewerage Company Environmental Performance Assessment (EPA) Methodology (version 3), November 2017.

The methodology required in the guidance notes references the Environmental Performance Assessment (EPA) Methodology (version 2), February 2017. It is assumed that this is a mistake and

should refer to the more up-to-date version 3 document from November 2017 as stated in the guidance for App31 Line 10.

We have previously reported the percentage of sewerage treatment works compliance in our PR14 Measure of Success B2: Treating Used Water. This line goes further and includes water treatment works in the calculation.

The discharge permit compliance target identified in Table WWS18 for 2020-2025 is 100%. This is consistent with regulatory requirements to be compliant with discharge numeric permit requirements.

Block F Bill impacts

Line 11 Change in the average residential customer wastewater bill over the period

The change in the average residential customer wastewater bill over the period between 2024-25 and 2019-20 based on wastewater bills calculated in 2017-18 prices (FYA CPIH deflated). The calculation of the average residential customer bill should be consistent with the calculation of the average bill as used in Discover Water.

The average residential customer wastewater bill in 2024-25, calculated consistently with the average bill as used in Discover Water, is £250.08 (in 2017-18 FYA CPIH deflated prices) . This is not the same as the average total bill – water in App7 of £259.18 (also FYA CPIH deflated prices) due to the retail component of the latter being calculated as the retail single service revenue for wastewater divided by wastewater only customers in line with the Ofwat financial model. The average residential customer wastewater bill in 2019-20 is £253.03 (2017-18 FYA CPIH deflated prices) giving a change of -1.16% over the period.

Block G

Total expenditure (real prices 2017-18 FYA CPIH deflated).

Line 12 Wastewater totex including cash items and atypical expenditure

The actual and forecast total wastewater expenditure (totex) including cash items and atypical expenditure. Totex for 2017-20 is calculated from WWS1 line 36 deflated to the 2017-18 prices using FYA CPIH as contained in App23. Totex for 2020-25 is copied from WWS1 line 36.

Query ref 114 has been acknowledged

It is only the costs for years 2015-16 and 2016-17 that have to be entered as all the later years are calculated cells.

The costs have been inflated to 2017-18 CPIH price base.

The tables have been prepared on the same basis as the CAT tables and includes adjustments made to the reported APR figure as well as principal use adjustment.

The adjustments are as follows:

	Waste 2015-16 £m	2016-17 £m
Waste totex including cash items and atypical expenditure Per APR	236.399	289.316
Less grants and contribution not in price control that was not included in 2015-16 reports (as per guidance at that time)	-3.39	
	233.009	289.316
Adjustment for rates relating to retail property CAT tables	-0.649	
	232.36	289.316
Principal use adjustment		
Depreciation	0.164	0.875
Financing charge	0.006	0.046
Other operating expenditure	0.170	0.921

Welsh Water Wastewater Services Business Plan Table Commentaries

Principal use Capex adj	-2.300	-7.652
Revised TOTEX (after CAT and Principal use adjustment)	230.230	282.584
Restated to 2017-18 CPIH	239.421	290.101

The APR tables for AMP 6 will be prepared on a different basis to the business plan tables regarding principal use. The APR only includes principal use in table 2A segmental income statement and not in the totex price control units (which is prepared on a causal basis). We have made Ofwat aware of this and they have included this in their query feedback.

The principal use adjustment included in table 2A APR has been prepared on an accelerated depreciation basis (i.e. full cost recharge) whereas the business plan tables use depreciation and financing charge incurred in the year.

Line 13 Total number of residential and business customers who receive a wastewater bill

The actual and forecast number of residential and business wastewater customers who receive a bill. This is a calculated line from the sum of WWS3 lines 5 and 8.

2015-16 and 2017-18 cells have been populated from previously submitted APR tables 2f and 2h. All other cells in this line are calculated.

Line 14 Amount of planned wastewater investment per customer billed

The actual and forecast planned total wastewater expenditure per customer. This is calculated from taking the total wastewater expenditure in WWS18 line 12 multiplied by 1000, divided by the total number of customers who receive a wastewater bill in WWS18 line 13.

This is a calculated line.

WWn1 – Wholesale wastewater sewage treatment operating expenditure

Table Validation

There are no validation errors in this table

Table Overview

The 2017-18 operating cost for Sewage treatment is consistent with the data in WWn4 and was calculated as follows:

Direct costs for WWTWs in bands 3 to 6 have unique cost centres and therefore these costs can be allocated directly to the bands. For band 1 and 2 WWTWs, the costs are apportioned across the bands using a model which is based on direct costs and population equivalent.

The 2017-18 revised table includes costs for scientific services and other business activities but excludes local authority rates after receiving confirmation from Ofwat that these costs should be excluded.

The costs for 2018-19 to 2024-25 have been prepared on the same basis as the table prepared for the Annual Performance Report. The differences between 2017-18 APR table and WWn1 relate to the principal use adjustments of £0.920m.

Difference between APR 2017-18 to WWn1 due to principal use adjustment	£000
Direct costs of WWTWs in size band 1	92
Direct costs of WWTWs in size band 2	48
Direct costs of WWTWs in size band 3	95
Direct costs of WWTWs in size band 4	138
Direct costs of WWTWs in size band 5	121
General & support costs of WWTWs in size bands 1 to 5	0
Direct costs of WWTWs in size band 6	426
General & support costs of WWTWs in size band 6	0
Service charges for WWTWs in size band 6	0
Estimated terminal pumping costs size band 6 works	0
Estimated sludge costs size band 6 works	0
Total operating expenditure (excluding 3rd party services)	920

Line commentary

Line A1: Direct costs of WWTWs in size band 1

Sum of direct costs of WWTWs in band 1. See additional guidance below for WWTW banding

Band 1 Direct costs increase by £0.268m between 2018-19 and 2024-25 mainly due to the increase in Renewals Expenditure.

Line A2: Direct costs of WWTWs in size band 2

Sum of direct costs of WWTWs in band 2. See additional guidance below for WWTW banding

Band 2 Direct costs increase by £0.152m between 2018-19 and 2024-25 mainly due to the increase in Renewals Expenditure.

Line A3: Direct costs of WWTWs in size band 3

Sum of direct costs of WWTWs in band 3. See additional guidance below for WWTW banding.

Band 3 Direct costs increase by £0.041m between 2018-19 and 2024-25 mainly due to the increase in Renewals Expenditure.

Line A4: Direct costs of WWTWs in size band 4

Sum of direct costs of WWTWs in band 4. See additional guidance below for WWTW banding.

Band 4 Direct costs increase by £0.373m between 2018-19 and 2024-25 mainly due to the increase in Renewals Expenditure.

Line A5: Direct costs of WWTWs in size band 5

Sum of direct costs of WWTWs in band 5. See additional guidance below for WWTW banding

Band 5 Direct costs increase by £0.384m between 2018-19 and 2024-25 mainly due to the increase in Renewals Expenditure.

Line A6: General & support costs of WWTWs in size bands 1 to 5

Sum of general and support expenditure for all WWTWs in bands 1 to 5 (see additional guidance). Where possible, such expenditure should be attributed on a causal basis; otherwise it should be apportioned in proportion to direct costs.

General and support costs in 2017-18 was apportioned in proportion to direct costs when the costs could not be attributable on a causal basis. The same allocation of costs have been used for 2018-19 to 2024-25. The increase in costs from 2017-18 to 2018-19 relate to increase in support services relating to facilities, HR support and IT spend. General & Support reduces from 2018-19 to 2024-25 by £2.1m which reflects the net impact of the support services efficiency programme.

Line A7: Direct costs of WWTWs in size band 6

Sum of direct costs of WWTWs in band 6. Calculated from WWn2 (Large WWTW).

Band 6 Direct costs increase by £2.2m between 2018-19 and 2024-25 mainly due to the increase in Renewals Expenditure plus and additional Band 6 asset within 2022-23.

In line with the above commentary, we have shown that there is one increase in 2022-23 in line with WWn4. All direct costs exclude Local Authority rates.

Line A8: General & support costs of WWTWs in size band 6

Sum of general and support expenditure for all WWTWs in band 6 (see additional guidance). Where possible, such expenditure should be attributed on a causal basis; otherwise it should be apportioned in proportion to direct costs.

General and support costs in 2017-18 was apportioned in proportion to direct costs when the costs could not be attributable on a causal basis. The same allocation of costs have been used for 2018-19 to 2024-25. General & Support costs reduce from 2018-19 to 2024-25 by £2m which reflects the net impact of the support services efficiency programme.

Line A9: Service charges for WWTWs in size band 6

Sum of service charges (EA and BWB) for the WWTWs in band 6 included in the direct costs (line 7) above.

For 2017-18 the EA charges were reported against each band 6 works and the same percentage of service charge (A1 WWS1) has been used for 2018-19 through to 2024-25.

Line A10: Estimated terminal pumping costs size band 6 works

Sum of estimated costs of terminal pumping stations pumping to WWTWs in band 6 included in the direct costs (line 7) above.

This is based on an estimate of the terminal costs identified at that site. The same allocation has been used for 2017-18 to 2024-25.

Line A11: Estimated sludge costs in size band 6 works

If the costs of sludge treatment are included in the direct costs (line 7) above, companies should enter an estimate of the costs involved (otherwise, zero)

There are no sludge costs included in these costs.

Line A12: Functional Expenditure

Functional Expenditure. Calculated as the sum of WWn1 lines 1 to 8 inclusive.

The tables have been completed so that the costs agree to Table WWS1 line 9 – total operating expenditure (excluding third party services) less Local Authority and Cumulo Rates (A9 – A8 WWS1 = A12 WWn1).

WWn2 - Wholesale wastewater large sewage treatment works explanatory variables and operating expenditure)

Table validation errors

There are a number of validation errors as it appears that the validation check is looking at all cells rather than the cells with named works.

General comment

Principal use adjustment has not been applied as this is all APR 18 data.

Line 1 - works name

Name of sewage treatment works

The name of the sewage treatment works.

Line 2 - Classification of treatment works

Classification of treatment works

P = Primary treatment; SAS = Secondary Activated Sludge; SB = Secondary Biological; TA1 = Tertiary A1; TA2 = Tertiary A2; TB1 = Tertiary B1; TB2 = Tertiary B2

Where a works' load is split into two treatment streams, the works should be reported in this line as the higher of the two proportions. For example, a works with a split of 60% Secondary Activated Sludge and 40% Secondary Biological should be classed as Secondary Activated Sludge (SAS) in this line. Further information on the classification of treatment works can be found in WWn4.

Classification of treatment works.

Line 3 Population equivalent of total load received

The average equivalent population of the total load received by the treatment works during the report year. Total load will be comprised of both resident and non-resident population loads.

The population equivalent of the works as defined by Ofwat, this is recalculated annually for each waste water treatment works.

Line 4 - Suspended solids consent

The value of the effluent consent standard (95%ile) with respect to suspended solids. This figure must be as determined by the Environment Agency and not a company's own assessment of the consent standard.

The consented amount for suspended solids taken from the Environmental Permit issued for that works.

Line 5 - BOD5 consent

The value of the effluent consent standard (95%ile) with respect to BOD5. This figure must be as determined by the Environment Agency and not a company's own assessment of the consent standard.

The consented amount for BOD taken from the Environmental Permit issued for that works.

Line 6 - Ammonia consent

The value of the effluent consent standard (95%ile) with respect to ammonia, if applicable at the works in question. This figure must be as determined by the Environment Agency and not a company's own assessment of the consent standard.

The consented amount for ammonia taken from the Environmental Permit issued for that works.

Line 7 - Phosphorus consent

The value of the effluent consent standard with respect to phosphorus (annual mean), if applicable at the works in question. This figure must be as determined by the Environment Agency and not a company's own assessment of the consent standard.

The consented amount for Phosphorus taken from the Environmental Permit issued for that works.

Line 8 - UV consent

The value of the consent process standard with respect to intensity of UV irradiation, if applicable at the works in question. This figure must be as determined by the Environment Agency and not a company's own assessment of the consent standard.

The intensity of UV irradiation as taken from the Environmental Permit issued for that works.

Line 9 Load received by WWTW

The average daily organic load (in kgBOD5) received by the treatment works during the report year. Calculated on the basis of a contribution of 60g BOD5 per head of equivalent population per day. Calculated values should agree with those reported in WWn4 line 6.

Calculated field.

Line 10 - Flow passed to full treatment

The average daily flow (in m3-d) passed to full treatment at the treatment works during the report year.

The average daily flow passed to treatment.

Line 11 - Direct expenditure

The total direct cost of sewage treatment (The costs directly attributable to each works). Where the works also undertakes sludge treatment, the costs associated with sludge treatment should be excluded. If terminal pumping costs are included here, the costs should be estimated in WWn2 line 15.

This includes two new large works - Aberystwyth and Flint. Direct cost no longer include Local Authority rates and the total of line 11 is consistent with line 7 on WWN1 (2017-18).

Line 12 - General and support expenditure

The general and support expenditure allocated to each sewage works (see additional guidance). Where possible, such expenditure should be attributed on a causal basis; otherwise it should be apportioned in proportion to direct costs.

The total of line 12 is consistent with line 8 on WWN1 (2017-18).

Line 13 - Functional expenditure

Functional expenditure is the sum of direct expenditure (in WWn2 line 11) and general and support expenditure (in WWn2 line 12).

Line 13 Calculated cells.

Line 14 - Service charges

The total service charges (EA and BWB) for the WWTW included in the direct costs above. Note: values reported in WWn2 line 14 and line 15 are components of the value reported in line 13 (but do not sum to it).

Large works element of the Environment Agency-Natural Resource Wales service charges – The total of line 14 is consistent with line 9 on WWN1 (2017-18).

Line 15 - Estimated terminal pumping expenditure

The estimated direct cost of terminal pumping stations pumping to the works in question, for which costs are included in WWn2 line 11.

The total of line 15 is consistent with line 10 on WWN1 (2017-18).

WWn3 - Wholesale wastewater network (explanatory variables)

Table validation errors

There is a validation error in line 12 as the unit of input is ML/d and the validation check is expecting ML/yr.

Line 1 Connectable properties served by s101A schemes completed in the report year

The number of connectable properties (either identified as "polluting" or "likely to pollute") associated with s101A schemes completed in the report year and for which the capital costs are reported in WWS2 line 1.

We are currently forecasting the completion of two duty schemes in the remaining two years of the AMP (Blind Years). These are at Ynyslas (2018-19) and Bagillt (2019-20), with 31 and two property connections (or allowing connection) respectively.

For AMP7 we are currently forecasting a total of six 'forecast' duty schemes that will connect or allow the connection of 58 properties across the whole programme.

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	
	Properties							
Ynyslas	31							
Bagillt		2						
Middlegate				6				
Treuddyn				3				
Red Wharf Bay					16			
Forecast Arisals					11	11	11	
Sub-Total	31	2	0	9	27	11	11	7 year Total
								91

Line 2 Number of s101A schemes completed in the report year

The number of s101A schemes completed in the report year and for which the capital costs are reported in table WWS2 line 1.

See line 1 above.

Line 3 Total pumping station capacity

Total installed pumping capacity of all in-line pumping stations (including standby pumps). Include foul, combined, stormwater and terminal pumping stations. Exclude capacity of pumps delivering flows to or from off-line storm tanks and of inter-stage pumping within a sewage treatment works or sludge treatment centre. Report capacity of all installed pumps (irrespective of the number that may be working at any one time.)

The data exhibits minor changes over the blind and forecast reporting periods. This reflects the scale of our capital programmes relating to both AMP6 and proposed AMP7 SPS enhancement - quality driven schemes.

		2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	
WWn3 Lines 3&4		Capacity Kw							
	Station Road, Llanelli	367							
	Northumberland		480						
	Former private pumping stations	2	2						
	Cross Hands				102				
	Cwmgwili				9				
	Cwmtawel					1			
	Pontyberem					141			
	Pontyates					74			
	Carway					2			
	Trimsaran					6			
	Norton - Presteigne				15				
	No Mans Heath - Malpas						20		
	Newport				960				
Chester					200				
Event Duration Monitoring (forecast sites)				73	73	73	73	73	7 year Total
Sub-Total		369	482	73	1158	495	93	73	2743

Line 4 Number of network pumping stations

Number of in-line pumping stations on sewerage network on 31 March of the reporting year including surface water pumping stations that drain directly to receiving waters (rivers etc) and all terminal pumping stations. Pumping stations delivering flows to or from off-line storm tanks, FLIPS devices, sludge pumping stations and inter-stage pumping within sewage treatment works should all be excluded.

See line 4 above.

Line 5 Total number of sewer blockages

Total number of sewer blockages on the current network (i.e. the sewerage network including private sewers and lateral drains transferred as a result of schemes made by the Secretary of State - Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011.

We forecast our blockage numbers from historical performance and our prediction of blockage reduction from our programme of works such as "Stop the Block". We have improved our performance by an average of 7% each year over the last three years. We predict our performance to continue a linear improvement in blockage numbers, but at a more stabilised average rate of 3% each year. This equates to us reducing blockages by 19.2% from our latest actual blockage count in 2017-18 to the end of 2024-25.

Line 6 Total number of gravity sewer collapses

Total number of gravity sewer collapses on the current network (i.e. the sewerage network including private sewers and lateral drains transferred as a result of schemes made by the Secretary of State - Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011.

We will target stable performance in AMP7 for both line 6 & 7 which together form our performance commitment Rt3 - Sewer Collapses. In line with the assumptions and judgements described above, this will equate to 67 bursts for rising mains and 188 collapses for gravity sewers.

There is a change in definition of gravity sewer collapses as part of the 'convergence' programme. The new definition has been used from 2020-21 in this line. Using the new definition, we have calculated the AMP6 performance to be:

2017-18 at 272, 2018-19 at 255 and 2019-20 at 255.

Line 7 Total number of sewer rising main bursts - collapses

Total number of rising mains bursts - collapses on the current network (ie. the sewerage network including private sewers and lateral drains transferred as a result of schemes made by the Secretary of State - Welsh Ministers under the Water Industry (Schemes for Adoption of Private Sewers) Regulations 2011.

We will target stable performance in AMP7 for both line 6 & 7 which together form our performance commitment Rt3 - Sewer Collapses. In line with the assumptions and judgements described above, this will equate to 67 bursts for rising mains and 188 collapses for gravity sewers.

Line 8 Number of combined sewer overflows

The total number of combined sewer overflows - a storm overflow (with no significant settlement) on a gravity sewer, a pumping station or WWTW inlet.

The change to the number of combined sewer overflows and storm tank overflows of significance (2022-23) in the forecast period is from our proposed Gwili Gwendreath scheme. This scheme has the rationalisation of seven Wastewater Treatment Works to one new works, with the replacement of five existing storm tank overflows (a storm overflow with significant settlement at a WWTW) with five new combined sewer overflows. We are proposing two other rationalisation schemes – one for delivery in 2021-22 pumping-away Norton WWTW to Presteigne WWTW adding a new CSO at the new pumping station and the other for delivery in 2024-25 pumping away No Man's Heath WWTW to Malpas WWTW adding a new CSO at the new pumping station.

Line	Description	2020-21	2021-22	2022-23	2023-24	2024-25
8	Number of combined sewer overflows	0	1	5	0	1
9	Number of emergency overflows	0	0	0	0	0
10	Number of settled storm overflows	0	0	-5	0	0

Details of additions and disposals:

- **2021-22** Norton WWTW pump away to Presteigne WWTW. CSO for new PS replacing Norton WWTW
- **2022-23** Gwili Gwendraeth Programme – Remove 5 SSOs at Crosshands WWTW, Cwmgwili WWTW, Pontyberem WWTW, Carway WWTW and Trimsaran WWTW. Five CSOs for new PS at Cwmgwili, Cwmtawel, Pontyates, Carway and Trimsaran.
- **2024-25** No Mans Heath WWTW pump away to Malpas WWTW. Add CSO to new PS replacing No Mans Heath WWTW

Line 9 Number of emergency overflows

The total number of emergency overflows at sewage pumping stations - an emergency overflow does not normally operate in storm conditions but is designed to operate in the event of asset failure i.e. electrical power failure, mechanical breakdown, rising main failure or blockage downstream. Must not be included if already counted as a CSO in line 8 (some overflows are permitted to operate as both an EO and a CSO) i.e. no overflows should be double counted. All emergency overflows at pumping stations should be included irrespective of whether they are located on the network or at a sewage treatment works.

As per Line 8.

Line 10 Number of settled storm overflows

The total number of storm tank overflows - a storm overflow with significant settlement at a WWTW.
As per Line 8.

Line 11 Sewer age profile (constructed post 2001)

Total length of sewer (including rising mains) laid or structurally refurbished post 2001. Reported length should include both legacy assets and formerly private sewers and lateral drains transferred into the company's ownership on (or in the case of rising mains, from) 1 October 2011.

The reported figure for Line 11 shows an increase in the following years over the reported lengths in 2016-17. This increase is an expected change to the total length and is due to the capture of formally unmapped sewers, new housing sites and developments and capital schemes within GIS.

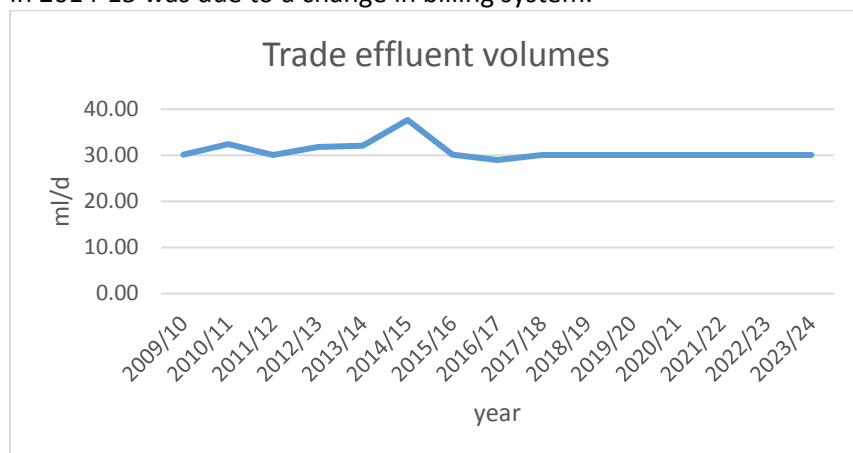
Historical average annual increase between 2013-14 and 2017-18, applied to the forecast years, 2020-2025.

Line 12 Volume of trade effluent

Total volume of trade effluent.

We have entered the figures as Ml/d to Odp as per the Ofwat query email dated 9 August 2018. We have also disregarded the validation check as the units were expecting Ml/yr.

After reviewing the recent volumes, we are forecasting trade effluent volumes to remain constant over the next AMP. The graph below show fairly constant trade effluent volumes received, the spike in 2014-15 was due to a change in billing system.

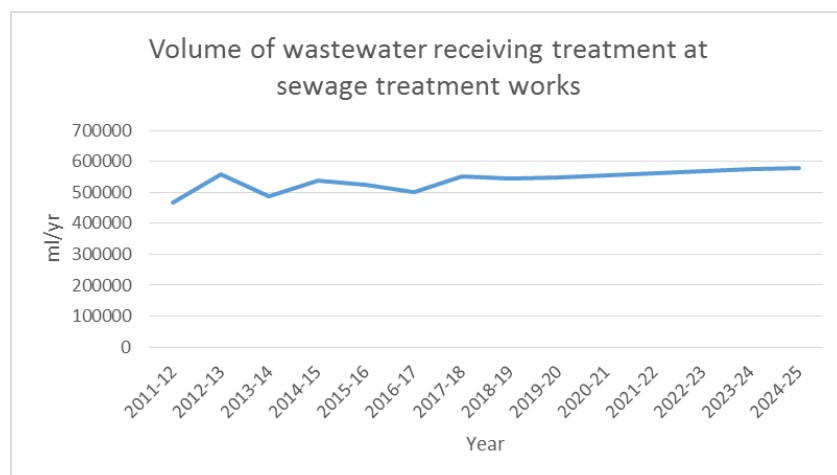


Line 13 Volume of wastewater receiving treatment at sewage treatment works

The flow to be reported will generally comprise domestic foul flow, trade effluent, surface water inflow and infiltration.

2017-18 figure is actual, measured, as per 2017 APR 4R.13.

Future figures are projected and based on 2011-12 to 2017-18 trend. The 2018-19 figure is lower than 2017-18 because the latter appears to be above the long-term trend line, due to a wetter year.



Line 14 Length of gravity sewers rehabilitated

Total length of sewer renovated or replaced in the report year.

The sum total of these lines is expected to deliver a similar output to AMP6 (130km), in line with our expenditure profiles for sewer rehabilitation. We expect an even split of replacement-refurbishment throughout the AMP, which gives an estimate of 26km per year.

The length remaining from 130km total over Lines 14 and 15, split evenly over the five years. This gives a total of 23km per year through AMP7.

Line 15 Length of rising mains replaced or structurally refurbished

Total length of sewer rising mains replaced or structurally refurbished in the report year. The term 'structurally refurbished' is intended to capture any pipeline rehabilitation technique which results in an improvement in the structural integrity of the pipe such that its expected service life has been materially extended. The term has been used in the definition of data items in previous submissions (e.g. Table S5 Line 15 of the 2013 business plan) and companies should interpret the term in a way that is consistent with such submissions. However, for the avoidance of uncertainty, companies are invited to clarify the way in which they've interpreted the term 'structurally refurbished' in the accompanying commentary. If a company is unable to identify the actual length of rising main that has been replaced - structurally refurbished, then it should submit an estimate and fully explain the methodology used and the assumptions made in the accompanying commentary.

The sum total of these Lines is expected to deliver a similar output to AMP6 (130km), in line with our expenditure profiles for sewer rehabilitation. We expect an even split of replacement-refurbishment throughout the AMP, which gives an estimate of 26km per year.

Length of rising mains replaced or structurally refurbished:

Average yearly length for AMP6 for each year in AMP7. This gives a total of 3km per year through AMP7.

Line 16 Length of foul (only) public sewers

Length of gravity foul (only) public sewers on 31 March of report year excluding formerly private sewers transferred into the company's ownership on 1 October 2011.

Average increase of 24.83km each year through AMP7, based on the average increase in foul public sewers between 2011-12 and 2017-18.

Line 17 Length of surface water (only) public sewers

Length of gravity surface water (only) public sewers on 31 March of report year excluding formerly private sewers transferred into the company's ownership on 1 October 2011.

Average increase of 22.83km each year through AMP7, based on the average increase in surface water public sewers between 2011-12 and 2017-18.

Line 18 Length of combined public sewers

Length of gravity combined public sewers on 31 March of report year excluding formerly private sewers transferred into the company's ownership on 1 October 2011.

Average increase of 22.67km each year through AMP7, based on the average increase in combined public sewers between 2011-12 and 2017-18. In addition to this, year 2020-21 includes half the 9.121km of additional combined sewer planned as part of the Gwili Gwendraeth scheme. Year 2021-22 includes the other half of the 9.121km of the Gwili Gwendraeth scheme. We consider the scale of this scheme to be atypical when compared to those delivered in the period 2011-12 to 2017-18 and warrants treatment as an addition above the trend.

Line 19 Length of rising mains

Length of rising mains on 31 March of report year excluding formerly private sewers transferred into the company's ownership from 1 October 2011.

Average increase of 8.83km each year through AMP7, based on the average increase in raising mains between 2011-12 and 2017-18. In addition to this, year 2020-21 includes half the 12.583km of additional combined sewer planned as part of the Gwili Gwendraeth scheme. Year 2021-22 includes the other half of the 12.583km of the Gwili Gwendraeth scheme. We consider the scale of this

scheme to be atypical when compared to those delivered in the period 2011-12 to 2017-18 and warrants treatment as an addition above the trend.

Line 20 Length of other wastewater network pipework

Length of other wastewater network pipework on 31 March of report year excluding formerly private sewers transferred into the company's ownership on 1 October 2011 that are not captured in WWn3 lines 16 to 19 (e.g. sludge mains, overflow pipes).

Average increase of 2.67km each year through AMP7, based on the average increase in other Wastewater network pipework between 2011-12 and 2017-18.

Line 21 Total length of "legacy" public sewers as at 31 March

Total length of "legacy" public sewers as at 31 March. Calculated as the sum of WWn3 lines 16 to 20 inclusive.

Calculated as the sum of WWn3 lines 16 to 20 inclusive.

Line 22 Length of formerly private sewers and lateral drains (s105A sewers)

Length of other wastewater network pipework on 31 March of report year excluding formerly private sewers transferred into the company's ownership on 1 October 2011 that are not captured in WWn3 lines 16 to 19 (e.g. sludge mains, overflow pipes, etc).

There is no change in our estimate of the length of formerly private sewers and lateral drains.

WWn4 - Wholesale wastewater sewage treatment (potential explanatory variables)

Table validation errors

We have completed each cell of the table but it is still producing a validation error of 'Please complete all cells in Row'. In-order to stop a further validation error we have put all our values in rows 1 to 15 to more than one decimal place.

We note there is a Validation error on Line 16 'Unexpectedly low value given the resident population reported in Table WWS3 and the trade effluent load.' The values in this line are all higher than the trade effluent load divided by 0.06 plus resident population in the correct decimal places so believe that this is similar to the verification check in table WWn3 expecting MI/yr for trade effluent flow.

General Methodology

The layout of the table as a matrix does not lend itself to a line by line commentary so the commentary for this table is set out in blocks of lines.

Lines 1 - 16

The first year reported on Table WWn4, 2017-18, corresponds to the 2017-18 APR Table 4S. This first year's data is the starting point for deriving future years' data, through application of population growth, scheme-driven permit changes etc. In checking the 2017-18 APR Table 4S background data for use in WWn4, some discrepancies were noted in the Phosphorous limits. These have been corrected for WWn4.

The data profile from year to year for a particular category, e.g. Load received at STWs in size band 4 with 'No permit' for Phosphorous, is a function of (a) the current STW load treated in 2017-18, (b) the local authority forecast population growth rate, (c) any planned schemes that will change the permit status.

The total number of works is forecast to reduce from 835 at 31st March 2018 to 825 at 31st March 2025. This is due to planned pump-away schemes, where existing works are abandoned and flows transferred to either an existing works nearby or to a new works. The largest pump-away scheme is Gwili Gwendraeth, in which seven existing works will be replaced by one new works. This scheme is due for completion in 2022-23. Our total number of works falls from 833 to 827 in this year.

The verification check is that the totals in the 'Load received' sections should be equal across columns N, T, Z & AF, to avoid a warning in the 'Validations' column AL the entries in these lines have been made at more than the stipulated number of decimal places.

Lines 17 – 24

Lines 18, 19, 23 - The data for these lines has been built on outputs identified in the WINEP3 from Environment Agency and the Water Quality NEP4.1 from Natural Resources Wales. Work to provide clarity on environmental obligations, and hence content of the (WI)NEP, is continuously ongoing. Schemes input in these lines are based on customer and environmental need. However these schemes may change with further publications of the WINEP and NEP.

The data for these lines has been built on outputs identified in the WINEP3 from Environment Agency and the Water Quality NEP4.1 from Natural Resources Wales. We are planning the delivery profile to meet any specific dates referred to in the (WI)NEP. We anticipate that during delivery of the programme some schemes will be moved around, in agreement with our environmental regulators, to take into account opportunities to achieve synergies with our maintenance and growth programmes or potential supporting actions of other stakeholders. So the profile of actual delivery may alter and the impact will be discussed in our annual performance reports.

The population figures for the above lines tie in with the related capital costs for WWTW improvements in table WWS2 lines 19,18 and 20 respectively.

The exception to this is for 7 WWTWs related to our Gwili Gwendraeth programme. In this table the population figures for each of the individual WWTWs identified in the WQ NEP4.1 related to the Gwili Gwendraeth programme have been input against the related line 18 and 19 according to whether they are activated sludge or filter bed sites. In table WWS2 the costs have been allocated to the activated sludge line as our preferred solution is to rationalise all the individual WWTWs related to this programme into one new WWTW that is currently planned to be an activated sludge plant. The primary driver for the Gwili and Gwendraeth rivers not achieving WFD good status is due to phosphorus pressures, and so the removal of our WWTWs discharges into these rivers will reduce the phosphorus pressure in the rivers.

There is a secondary driver of meeting no deterioration related to tightening sanitary determinands for the WWTWs that discharge to the Gwili and Gwendraeth rivers, but our preferred solution removes the continuous discharges from the Gwili and Gwendraeth rivers to a single WWTW discharge to transitional/coastal waters, thus the no deterioration driver will not be applicable on the new WWTW and a judgement has been made that no investment allocation be attributed to WWS2 line 20 for our Gwili Gwendraeth programme. However, as for WWn4 lines 18 and 19, population figures for each of the individual WWTWs identified in the WQ NEP4.1 as requiring tighter sanitary determinands limits to meet WFD No deterioration related to the Gwili Gwendraeth programme have been input against WWn4 line 23.

Lines 17, 20-22, 24 - We have not identified any projects that fall under these lines therefore all lines are zero.

Line 25 Population equivalent treatment capacity enhancement

The increase in treatment capacity, from company action, measured in population equivalent. The increase must be measured from the previous year's capacity of existing sewage treatment works and the previous capacity at each works must be the higher of the then current design capacity or the company's revised understanding of actual capacity before the company's action.

The data profile is a function of planned schemes, estimated design capacities and estimated completion dates. Due to the high variation in capacity enhancement values from scheme to scheme, the profile is highly variable from year to year.

WWn5 - Wholesale revenue projections for the wastewater network plus price control

Table Validation

There are no validation errors in this table

This table includes all revenue expected by provision of our wholesale wastewater network plus activities at 2017-18 financial year average prices.

Line Commentary

Lines 1 - 12

These lines contain the wholesale revenue requirement aggregated by building blocks. The line in each sub-control tables Wr3, Wn3, WWn5 and Bio4 are calculated in the Ofwat financial model. The lines in App17 are calculated lines from the individual income recorded in the sub-control tables Wholesale revenue projections for the price controls: Wr3, Wn3, WWn5 and Bio4.

Line 1 PAYG ~ wholesale wastewater network plus

*Projected total pay as you go (PAYG) for wholesale wastewater network plus costs. Equals WWS1 line 21 * WWn6 line 14.*

Calculated.

Line 2 Pension deficit repair contributions ~ wholesale wastewater network plus

Projected total cost of pension deficit repair contributions for wholesale wastewater network plus.

In line with information notice IN 13-17 the final revenue allowance for pension deficit repair will be applied in 2019-20. We have not included a contribution from customers toward the pension deficit repair costs included in the plan during 2020-25. The company will bear the costs of the pension deficit repair costs included in WS1 and WWS1.

Line 3 Run off on post 2020 investment ~ wholesale wastewater network plus

Projected run off (depreciation charge) on post 2020 wholesale wastewater network plus totex additions incurred in the 2020-25 period and not recovered through PAYG.

These values are calculated in the Ofwat financial model.

Line 4 Return on post 2020 investment ~ wholesale wastewater network plus

Projected return on post 2020 wholesale wastewater network plus totex additions incurred in the 2020-25 period and not recovered through PAYG.

These values are calculated in the Ofwat financial model.

Line 5 Run off on RPI inflated 2020 RCV ~ wholesale wastewater network plus

Projected run off (depreciation charge) on the proportion of the RCV at 1 April 2020 indexed by RPI.

These values are calculated in the Ofwat financial model.

Line 6 Return on RPI inflated 2020 RCV ~ wholesale wastewater network plus

Projected return on the proportion of the RCV at 1 April 2020 indexed by RPI.

These values are calculated in the Ofwat financial model.

Line 7 Run off on CPIH inflated 2020 RCV ~ wholesale wastewater network plus

Projected run off (depreciation charge) on the proportion of the RCV at 1 April 2020 indexed by CPIH.

These values are calculated in the Ofwat financial model.

Line 8 Return on CPIH inflated 2020 RCV ~ wholesale wastewater network plus

Projected return on the proportion of the RCV at 1 April 2020 indexed by CPIH.

These values are calculated in the Ofwat financial model.

Line 9 Current tax ~ wholesale wastewater network plus

Forecast current tax payable for wholesale wastewater network plus.

These values are calculated in the Ofwat financial model and are nil for all wholesale price controls as the business generates a taxable loss in each year of the price control driven by capital allowances (see App29 – Wholesale tax).

Line 10 Re-profiling of allowed revenue ~ wholesale wastewater network plus

The impact of re-profiling the wholesale wastewater network plus allowed revenue.

We have used the revenue re-profiling functionality in the Ofwat financial model to re-profile revenue on an NPV neutral basis to deliver a total combined residential bill which is broadly constant in real terms between 2020-21 and 2024-25. This is in line with a clear customer preference for a more or less constant bill profile evidenced on page 40 of the PR19 Customer Engagement: Bills and affordability research ref 1.1D.

Line 11 PR14 reconciliation revenue adjustments ~ wholesale wastewater network plus

The PR14 reconciliation revenue adjustments associated with wholesale wastewater network plus.

These values are obtained from the revenue adjustment feeder model and are profiled across 2020-21 to 2014-25 on a constant annuity basis.

Wastewater Network Plus revenue adjustments (17-18 CPIH deflated prices)	2020-2021 £m	2021-2022 £m	2022-2023 £m	2023-2024 £m	2024-2025 £m
End of Period ODIs	2.533	2.533	2.533	2.533	2.533
Totex	-1.751	-1.751	-1.751	-1.751	-1.751
WRFIM	0.407	0.407	0.407	0.407	0.407
Blind year	-0.215	-0.215	-0.215	-0.215	-0.215
Total Revenue Adjustments	0.974	0.974	0.974	0.974	0.974

Line 12 Total wholesale wastewater network plus revenue requirement

The company's projected total wholesale wastewater network plus revenue requirement. Equals the sum of WWn5 lines 1 to 11.

2020-21 to 2024-25 are calculated cells in 2017-18 FYA (CPIH) deflated price base.

2019-20 Value input in Outturn (nominal price base).

Revenue requirement for 2019-20

The FD14 revenue requirement was set at the wholesale level and, therefore, needs to be split for input into tables Wn5 Wholesale wastewater network plus and Bio4 Bioresources. For the purposes of completing this cell we have calculated the revenue requirement for 2019-20 from WWS13 and the FD14 financial model as shown in the table below. This calculation ensures that the 2019-20 Revenue Requirement is comparable to the Revenue Requirement calculation for PR19 in the years 2020-21 to 2024-25. The wholesale wastewater revenue requirement for 2019-20 has then been split between the sub-controls in proportion to the AMP7 weighted average split of revenue requirement also shown in the table below. This gives an outturn wholesale wastewater revenue requirement of £406.728m which has been split 91.1% Wastewater network plus and 8.9% Bioresources to give outturn revenue requirement for 2019-20 of £370.366m for Wastewater network plus and £36.361m for Bioresources.

Welsh Water Wastewater Network Business Plan Table Commentaries

Wholesale Wastewater

WWS13	Wholesale wastewater	2019-20	
12	Allowed Revenue	413.418	
25	G&C actual		7.366
26	G&C over recovery		0.565
calc (25-26)	G&C allowed	(6.801)	
Fin Mod (FD14)	Other income (inc 3rd party)		0.092
			1.198
			<Waste Real AR> row 56: Other income (incl 3rd party income)
			Inflate 12-13 to 19-20 outturn
	3rd Party income	0.110	
	Revenue Requirement	<u>406.728</u>	
A12 (2019-20)	Split of FD14 19-20 Rev Req		
Bio4	A12 (2019-20)	36.361	8.9%
WWn5	A12 (2019-20)	370.366	91.1%
		<u>406.728</u>	

	Revenue Requirement (£m)	20-21	21-22	22-23	23-24	24-25	20-25
Bio4 Line 12	Bio resources	35	35	35	34	34	174
WWn5 Line 12	Wastewater network plus	346	350	354	360	365	1,774
	Revenue Requirement	381	385	389	394	399	1,948
		9.2%	9.1%	9.0%	8.8%	8.6%	8.9%
		90.8%	90.9%	91.0%	91.2%	91.4%	91.1%

Lines 13 – 19

These lines contain the “miscellaneous” income received by the appointed business. The lines in App17 are calculated lines from the individual income recorded in the sub-control tables Wholesale revenue projections for the price controls: Wr3, Wn3, WWn5 and Bio4. The total position and the entries in each of these tables together with the method of allocation is shown in Annex 1 at the end of this commentary. For ease of reference these tables are repeated at the end of the commentaries for each of the revenue projections tables.

Line 13 Third party revenue ~ wastewater network plus

Projected third party revenue covered by the wholesale wastewater network plus price control. Appendix 1 of RAG4.07 provides further information on the income to be categorised as third party. This category is for non-potable water so there is no income in this line in the wastewater service.

Line 14 Bulk supplies ~ wastewater network plus

Income from bulk supplies (for wastewater) to another wastewater undertaker.

Income from wastewater bulk supplies has been allocated 50:50 between wastewater network plus and the bioresources sub-control as the income is very small (c£30k).

Line 15 Not used.

Line 16 Rechargeable works ~ wastewater network plus

Rechargeable works, as listed in Appendix 1 of RAG4.07.

All rechargeable works income for wholesale wastewater has been allocated to the wastewater network plus control.

Line 17 Other non-price control third party services ~ wastewater network plus

All other non-price control income for third party services e.g. excluded charges, as listed in Appendix 1 of RAG4.07.

No other 3rd party income is forecast for wastewater network plus sub-control.

Line 18 Total non-price control income (third party services) ~ wastewater network plus
Projected total income from third party services outside of the wholesale wastewater network plus price control. Equals the sum of WWn5 lines 14 to 17.
 Calculated.

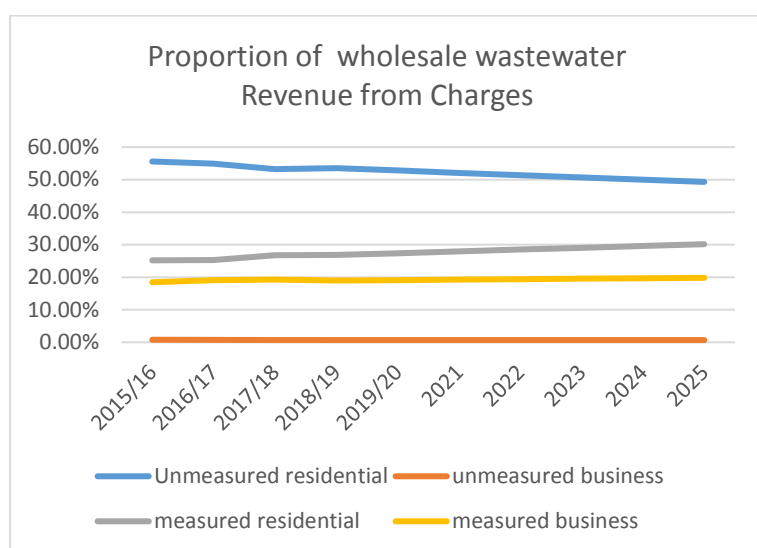
Line 19 Wholesale wastewater network plus non-price control income (principal services)
Projected income from principal services for which costs are not covered by the wholesale wastewater network plus price control e.g. recreational use of protected land, as listed in Appendix 1 of RAG4.07.

This is the rental income from mobile phone masts on appointed assets land. The income is allocated to sub-control in proportion to weighted average site income from 2015-16 to 2017-18.

Line 20 – 23 wastewater network plus charges (business & residential)
The proportional allocation of the projected wholesale wastewater network plus allowed revenue to unmeasured residential customers (line 20) unmeasured business customers (line 21), measured residential customers (line 22) measured business customers (line 23), from wholesale wastewater network plus charges.

Wholesale wastewater change in proportion of residential revenue due to meter optants and new connections is calculated to be 0.7% from unmeasured residential which moves to 0.55% to measured wastewater and 0.15% to measured business. Unmeasured business remains static. It is assumed that the revenue from network plus and bioresources charges change by the same amount annually.

The tables in Annex 2 show the analysis behind these forecasts. The level of recovery from 2015-16 to 2024-25 is shown in the graph below.



Line 24 Total wholesale wastewater network plus allowed revenue
Projected total wholesale wastewater network plus allowed revenue from wholesale wastewater network plus charges. Charges income should be equal to building blocks income less price control income from other sources. Equals WWn5 line 11 minus line 12.
 Calculated.

Line 25 Wastewater network plus grants and contributions (price control)

Projected grants and contributions covered by the wholesale wastewater network plus price control. This represents the wholesale wastewater network plus element of the total grants and contributions received for the wholesale wastewater service contained in App28 lines 7 to 10.

All grants or contributions within the price control have been allocated to the wastewater network plus control.

Line 26 Wastewater network plus grants and contributions (non-price control)

Projected grants and contributions not covered by the wholesale wastewater network plus price control. This represents the wholesale wastewater network plus element of the total 'other' non-price control grants and contributions received for the wholesale wastewater service contained in App28 line 12.

All non-price control contributions are expected for services provided by the wastewater network plus control. No grants have been forecast to be received.

Line 27 Total revenue ~ wholesale wastewater network plus control

Projected total wholesale wastewater network plus revenue requirement for the wholesale wastewater network plus price control including projected grants and contributions covered by the wholesale wastewater network plus price control. Equals WWh5 line 12 minus line 18 minus line 19 plus line 25.

Calculated.

Annex 1 Lines 13 – 19 and 25 & 26

The total “miscellaneous” income in the Business plan is shown in the Summary table below:

	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m
			17-18 FYA (CPIH deflated)			
<u>Summary</u>						
Total Grants & Contributions (price control)		21.360	21.589	21.809	21.880	21.920
Total Grants & Contributions (non-price control)		<u>3.040</u>	<u>1.185</u>	<u>1.198</u>	<u>1.201</u>	<u>1.204</u>
Total Grants & Contributions		24.400	22.774	23.007	23.081	23.124
 Total Other Income (price control)		6.477	6.477	6.477	6.477	6.477
Total Other Income (non-price control)		<u>18.049</u>	<u>18.069</u>	<u>18.088</u>	<u>18.108</u>	<u>18.128</u>
Total Other income		24.526	24.546	24.565	24.585	24.605
 Price control income		27.837	28.066	28.286	28.357	28.397
Non-price control		<u>21.089</u>	<u>19.254</u>	<u>19.286</u>	<u>19.310</u>	<u>19.333</u>
Total "miscellaneous" income		48.927	47.319	47.573	47.667	47.729

The individual lines for APP17 and the method of apportionment between the sub-controls (and reported in tables Wr3, Wn3, WWn5, Bio4) are shown in the tables below:

		Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
				17-18 FYA (CPIH deflated)				
B	Wholesale - other price control income							
13	Third party revenue							
	<u>Consists of non-potable water (not bulk supplies):</u>							
	Band A Raw <50 MI							
	Band A Partial < 50MI							
	Band B Raw >50 MI							
	Band B Partial >50 MI							
	Special agreements – (WSHNONPOT9, 10a and 10b)							
Wr3	Third party revenue		2.824	2.824	2.824	2.824	2.824	Split as per cost attribution model informing Scheme of Charges
Wn3	Third party revenue		3.653	3.653	3.653	3.653	3.653	Split as per cost attribution model informing Scheme of Charges
WWn5	Third party revenue		-	-	-	-	-	
Bio4	Third party revenue		-	-	-	-	-	
App17	Third party revenue		6.477	6.477	6.477	6.477	6.477	
C	Non-price control income (third party)							
14	Bulk supplies							
	<u>Consists of:</u>							
	Bulk supplies water							
	Bulk supplies wastewater							
Wr3	Bulk supplies		8.174	8.174	8.174	8.174	8.174	Split as per cost attribution model informing Scheme of Charges
Wn3	Bulk supplies		0.396	0.396	0.396	0.396	0.396	Split as per cost attribution model informing Scheme of Charges
WWn5	Bulk supplies		0.015	0.015	0.015	0.015	0.015	Split 50:50 (not material)
Bio4	Bulk supplies		0.015	0.015	0.015	0.015	0.015	Split 50:50 (not material)
App17	Bulk supplies		8.601	8.601	8.601	8.601	8.601	
16	Rechargeable works							
	<u>Consists of:</u>							
	Fire hydrants							
	Repair of damage to Co apparatus							
	Build over sewers							
	Installing meter on unmeasured (Non-household)							
	Trade effluent consent revision							
	Non-primary charges from wholesale service centre							
	Provision of plan information of underground assets							
	Flow and pressure testing of customer supply							

Welsh Water Wastewater Network Business Plan Table Commentaries

	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
		17-18 FYA (CPIH deflated)					
	Meter testing						
	Relocating household meter						
	Private sewer cleaning						
	Disconnection - reconnection of supply						
Wr3	Rechargeable works	-	-	-	-	-	
Wn3	Rechargeable works	0.473	0.473	0.473	0.473	0.473	All allocated to network plus
WWn5	Rechargeable works	0.464	0.464	0.464	0.464	0.464	All allocated to network plus
Bio4	Rechargeable works	-	-	-	-	-	
App17	Rechargeable works	0.937	0.937	0.937	0.937	0.937	
17	Other non-price control (third party services)						
	<u>Consists of "Excluded" charges (Li.Con B)</u>						
	s20 Reservoir operating agreements (NRW)						
	s20 Reservoir operating agreements (additional capex) (NRW)						
	Stand pipes						
	Water tanks & water tankers						
	Reception and disposal of waste (costs& income in non-appointed)						
Wr3	Other non-price control (third party services)	7.607	7.627	7.647	7.667	7.687	s20 allocated 100% to Water Resources
Wn3	Other non-price control (third party services)	0.026	0.026	0.026	0.026	0.026	Tankers allocate 100% to network plus
WWn5	Other non-price control (third party services)	-	-	-	-	-	
Bio4	Other non-price control (third party services)	-	-	-	-	-	
App17	Other non-price control (third party services)	7.633	7.653	7.672	7.692	7.712	
18	Total non-price control income (third party services)						
Wr3	Total non-price control income (third party services)	15.782	15.801	15.821	15.841	15.861	
Wn3	Total non-price control income (third party services)	0.894	0.894	0.894	0.894	0.894	
WWn5	Total non-price control income (third party services)	0.480	0.480	0.480	0.480	0.480	
Bio4	Total non-price control income (third party services)	0.015	0.015	0.015	0.015	0.015	
App17	Total non-price control income (third party services)	17.171	17.191	17.210	17.230	17.250	
D	Non-price control income (principal services)						
19	Other non-price control (principal services)						
	<u>Consists of:</u>						
	Rental income (mobile phone masts, wind turbines, solar panels))						
Wr3	Other non-price control (principal services)	0.494	0.494	0.494	0.494	0.494	Allocated in proportion to weighted average site income from 15-16 to 17-18
Wn3	Other non-price control (principal services)	0.070	0.070	0.070	0.070	0.070	Allocated in proportion to weighted average site income from 15-16 to 17-18
WWn5	Other non-price control (principal services)	0.152	0.152	0.152	0.152	0.152	Allocated in proportion to weighted average site income from 15-16 to 17-18

Welsh Water Wastewater Network Business Plan Table Commentaries

		Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
				17-18 FYA (CPIH deflated)				
Bio4	Other non-price control (principal services)		0.161	0.161	0.161	0.161	0.161	Allocated in proportion to weighted average site income from 15-16 to 17-18
App17	Other non-price control (principal services)		0.878	0.878	0.878	0.878	0.878	
F	Grants & Contributions							
25	Wholesale grants and contributions (price control)							
	<u>Consists of capital income:</u>							
	<i>Infrastructure charges</i>							
	<i>Requisitions and self-lay</i>							
	<i>Connection charges (s45 - Water)</i>							
	<i>Diversions</i>							
Wr3	Wholesale grants and contributions (price control)		-	-	-	-	-	
Wn3	Wholesale grants and contributions (price control)		12.789	12.939	13.084	13.127	13.155	All allocated to network plus
WWn5	Wholesale grants and contributions (price control)		8.571	8.650	8.725	8.753	8.765	All allocated to network plus
Bio4	Wholesale grants and contributions (price control)		-	-	-	-	-	
App17	Wholesale grants and contributions (price control)		21.360	21.589	21.809	21.880	21.920	
26	Wholesale grants and contributions (non-price control)							
	<u>Consists of capital income:</u>							
	<i>Sewer vetting, adoption agreements (PR19)</i>							
	<i>Feasibilities</i>							
	<i>Grants</i>							
Wr3	Wholesale grants and contributions (non-price control)		1.868	-	-	-	-	Non-grant income allocated to network plus, Grant income allocated by scheme
Wn3	Wholesale grants and contributions (non-price control)		0.053	0.053	0.053	0.053	0.053	As above
WWn5	Wholesale grants and contributions (non-price control)		1.119	1.132	1.145	1.148	1.151	As above
Bio4	Wholesale grants and contributions (non-price control)		-	-	-	-	-	As above
App17	Wholesale grants and contributions (non-price control)		3.040	1.185	1.198	1.201	1.204	

Annex 2 Analysis for lines 20 to 23 - Current period proportions from the analysis of wholesale revenues

Proportion of annual revenue by Wholesale control

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Water					
Household	19.61%	20.69%	21.84%	21.95%	21.02%
Non-Household	26.67%	26.80%	26.46%	27.08%	26.75%
	46%	47%	48%	49%	48%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wastewater					
Household	25.20%	25.28%	26.75%	26.85%	26.02%
Non-Household	18.47%	19.07%	19.32%	18.95%	18.95%
	44%	44%	46%	46%	45%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wholesale					
Household	22.85%	23.34%	24.69%	24.78%	23.92%
Non-Household	21.92%	22.33%	22.31%	22.40%	22.24%
	45%	46%	47%	47%	46%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Water					
Household	52.92%	51.73%	50.95%	50.22%	51.46%
Non-Household	0.80%	0.78%	0.74%	0.75%	0.77%
	54%	53%	52%	51%	52%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wastewater					
Household	55.59%	54.90%	53.23%	53.49%	54.30%
Non-Household	0.74%	0.75%	0.70%	0.70%	0.72%
	56%	56%	54%	54%	55%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wholesale					
Household	54.46%	53.57%	52.28%	52.11%	53.10%
Non-Household	0.77%	0.76%	0.72%	0.72%	0.74%
	55%	54%	53%	53%	54%

Welsh Water Wastewater Network Business Plan Table Commentaries

Annual Change on proportion

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Water					
Household		1.08%	1.16%	0.11%	0.78%
Non-Household		0.12%	-0.33%	0.61%	0.13%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wastewater					
Household		0.07%	1.47%	0.11%	0.55%
Non-Household		0.60%	0.25%	-0.37%	0.16%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wholesale					
Household		0.49%	1.35%	0.08%	0.64%
Non-Household		0.41%	-0.01%	0.08%	0.16%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Water					
Household		-1.18%	-0.78%	-0.73%	-0.90%
Non-Household		-0.02%	-0.04%	0.00%	-0.02%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wastewater					
Household		-0.68%	-1.67%	0.26%	-0.70%
Non-Household		0.00%	-0.05%	0.01%	-0.01%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wholesale					
Household		-0.90%	-1.29%	-0.17%	-0.79%
Non-Household		-0.01%	-0.05%	0.01%	-0.02%

WWn6 - Cost recovery for wastewater network plus

Table Validation

There are no validation errors in this table

Lines 1 – 14

We have treated the capital value created from post 2020 investment arising from non-PAYG totex the same as the 2020 RCV. We have treated the RPI linked RCV the same and the CPIH linked RCV. We have set the RCV run off rate to match the average expected useful lives of the underlying assets. We have applied the same “natural” RCV run off rate to each of the RPI linked 2020 RCV, CPI linked 2020 RCV and the post 2020 investment. The natural rate of RCV run off remains appropriate for 2025-30 period. As a result we are not accelerating or decelerating the rate of recovery of expenditure added to the RCV between generations of customers.

For each price control the average expected useful lives have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

Block A Lines 1 -5 RCV run off rate ~ RPI linked RCV

Line 1 “Natural” RCV run off rate

Proposed “natural” RCV run off rates (indexed by RPI) for wholesale wastewater network plus. (The percentage of the RPI linked RCV that is depreciated annually). The “natural RCV rate” is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments.

The average expected useful lives of Wastewater Network Plus assets have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

The resulting asset life for wastewater network plus is 32.4 years, corresponding to a “natural” RCV run off rate of 3.09% (reciprocal of asset life) for each year across AMP7 and AMP8.

Line 2 Adjustments to RCV run off rate to address transition from RPI to CPI

Proposed adjustments to the RCV run off rates (indexed by RPI) for wholesale wastewater network plus, that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the RCV run off rate to address the transition from RPI to CPIH.

Line 3 Other adjustments to RCV run off rate

Proposed other adjustments to the RCV run off rates (indexed by RPI) for wholesale wastewater network plus, that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the RCV run off rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 4 Total RCV run off rate to be applied

Proposed total RCV run off rates (indexed by RPI) for wholesale wastewater network plus. Equals the sum of WWn6 lines 1 to 3.

Calculated.

Line 5 Method used to apply run-off rate (straight line or reducing balance)

The method used to apply the RCV run off rates (indexed by RPI) either in a straight line or a reducing balance. (Description of the accounting method used to depreciate the RPI linked RCV). We expect the same method to be used in 2025-30 as for 2020-25.

We have used a reducing balance approach to apply the RCV run off rates.

Block B Lines 6 -10 RCV run off rate ~ CPI-CPI(H) linked RCV

Line 6 “Natural” RCV run off rate

Proposed “natural” RCV run off rates (indexed by CPIH) for wholesale wastewater network plus. (The percentage of the CPI(H) linked RCV that is depreciated annually). The “natural RCV rate” is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments.

The average expected useful lives of Wastewater Network Plus assets have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

The resulting asset life for wastewater network plus is 32.4 years, corresponding to a “natural” RCV run off rate of 3.09% (reciprocal of asset life) for each year across AMP7 and AMP8.

Line 7 Adjustments to RCV run off rate to address transition from RPI to CPI

Proposed adjustments to the RCV run off rates (indexed by CPIH) for wholesale wastewater network plus, that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the RCV run off rate to address the transition from RPI to CPIH.

Line 8 Other adjustments to RCV run off rate

Proposed other adjustments to the RCV run off rates (indexed by CPIH) for wholesale wastewater network plus, that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the RCV run off rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 9 Total RCV run off rate to be applied

Proposed total RCV run off rates (indexed by CPIH) for wholesale wastewater network plus. Equals the sum of WWn6 lines 6 to 8.

Calculated.

Line 10 Method used to apply run off rate (straight line or reducing balance)

The method used to apply the RCV run off rates (indexed by CPIH) either in a straight line or a reducing balance. (Description of the accounting method used to depreciate the CPI(H) linked RCV). We expect the same method to be used in 2025-30 as for 2020-25.

We have used a reducing balance approach to apply the RCV run off rates.

Block C Lines 11 -14 PAYG Rate – Wastewater Network Plus

Line 11 “Natural” PAYG rate – wastewater network plus

Proposed “natural” PAYG rates for wholesale wastewater network plus relevant to the wholesale wastewater network plus revenue - totex projected in WWn5. These should be expressed as a percentage of totex forecast in each year. The “natural PAYG rate” is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments.

We have calculated the “natural” PAYG rate as the rate which recovers operating expenditure (inclusive of infrastructure renewal expenditure) in the year that it is incurred and capex net of grants and contributions is added to the RCV and recovered from both current and future customers over time.

The natural PAYG rate is Opex divided by Totex net of grants and contributions calculated on a year by year basis, as follows:

	2020-21	2021-22	2022-23	2023-24	2024-25
Opex (£m) <i>WWS1 line 11</i>	125.2	132.0	132.4	131.2	130.8
Totex (net G&Cs) (£m) <i>WWS1 line 21</i>	331.5	265.4	274.7	264.2	261.7
PAYG rate (%)	37.76%	49.73%	48.21%	49.67%	49.98%

	2025-26	2026-27	2027-28	2028-29	2029-30
Opex (£m)	148.5	146.9	145.4	143.9	142.4
Totex (net G&Cs) (£m)	297.2	294.2	291.0	287.9	284.8
PAYG rate (%)	49.96%	49.95%	49.97%	49.99%	50.00%

Line 12 Adjustments to PAYG rate to address transition from RPI to CPI ~ wastewater network plus
Proposed adjustments to the PAYG rates for wholesale wastewater network plus, that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the PAYG rate to address the transition from RPI to CPIH.

Line 13 Other adjustments to PAYG rate ~ wastewater network plus

Proposed other adjustments to the PAYG rates for wholesale wastewater network plus, that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the PAYG rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 14 Total PAYG rate ~ wastewater network plus

Proposed total PAYG rates to be applied to wholesale wastewater network plus totex. Equals the sum of WWS6 lines 11 to 13.

Calculated.

WWn7 – Weighted average cost of capital for the wastewater network plus control

Table Validation

There are no validation errors in this table

Overview

In line with Ofwat's final methodology we agree that financeability should be assessed on a whole company level. We do not believe that a different cost of capital for the water resources, water network plus, wastewater network plus, and bioresources businesses can be justified. All calculations and line narratives are therefore on a whole company basis.

We have used Ofwat's early view of the cost of capital when compiling the business plan and assessing that the plan is financeable.

Ofwat's early view of the cost of capital represents a material reduction since PR14. This reduction has been passed on to customers via a reduction in the average household bill. In order to address consequential financeability issues, the notional dividend policy has also been updated to be consistent with the lower cost of equity. We deem that the business plan is financeable and delivers as a minimum an investment grade credit rating for both the notional and actual companies. Albeit with the resulting credit metrics being on the cusp of financeability under severe stress scenarios with significantly reduced headroom when compared against previous business plans.

We are not proposing different assumptions to those used to derive the early view of WACC for PR19, with the exception of the asset beta figure for line 6 which has been chosen to result in a wholesale WACC consistent with Ofwat's early view (in line with the table guidance).

We are not assuming any changes to assumptions between the 2020-25 (AMP7) and 2025-2030 (AMP8) periods.

We are not proposing any changes to Ofwat's early view of WACC between the notional and actual companies.

All assumptions are as per Appendix 12, Table 1, Section 4: Aligning risk and return of Delivering water 2020: Our methodology for the 2019 price review, with the exception of the Asset Beta for line 6 which has been chosen to result in a wholesale WACC consistent with Ofwat's early view (in line with table guidance).

Lines 1 Gearing

Net debt to RCV

Net debt to RCV the percentage share of debt in the capital structure of the notional company.

Line 2 - Total Market) Return (TMR

Total Market Return (TMR)

The total yield required by investor to invest in a well-diversified benchmark index.

Line 3 - Risk free rate (RFR)

The Risk Free Rate (RFR)

The estimated return for investment in an asset with zero risk.

Line 4 - Equity Risk Premium (ERP)

The premium over the risk free rate required to invest in equities

The premium over the risk free rate required to invest in equities. Calculated as the difference between the total market return and the risk free rate. Calculated cells.

Line 5 - Debt beta

Debt beta

A measure of undiversifiable risk faced by debt investors in water.

Line 6 – Asset beta

Asset beta corresponding to the business risks of this control.

A measure of undiversifiable risk corresponding to the business risks of this control.

This measure has been chosen to be 0.354, to result in a wholesale WACC (line 10) consistent with Ofwat's early view. Although this line requires data entered to two decimal places, we have entered the asset beta to three decimal places being for both years. If we had entered 0.35 neither the cost of equity (line 8) or WACC (line 10) would be consistent with the Ofwat early view.

Line 7 - Re-levered equity beta

Re-levered beta, consistent with gearing from row 1 and debt beta assumption in row 5

A measure of undiversifiable risk faced by geared investors in this price control, assuming gearing at the notional 60%. Calculated cells.

Line 8 - Cost of equity - wastewater network plus.

The calculated cost of equity using the capital asset pricing model: risk free rate + (equity risk premium x equity beta)

An estimate of the return required by equity investors in this price control company. Calculated cells.

Line 9 - Cost of debt- wastewater network plus.

Total cost of debt, including new and embedded debt, weighted: (cost of embedded debt x weighting of embedded debt) + (cost of new debt x weighting of new debt)

Cost of debt for the water resources price control consistent with Ofwat's early view.

Line 10 - WACC ~ vanilla (pre-tax cost of debt and post-tax cost of equity)

The weighted average cost of capital, expressed using a pre-tax cost of debt and post-tax cost of equity

Cost of capital which will apply to the water resources price control. Calculated cells.

Lines 11 – 20 Wholesale WACC based on company's actual structure (nominal)

Duplicates data input for lines 1-10, based on actual, not notional, company structure.

We are not proposing and changes to Ofwat's early view of WACC between the notional and actual companies.

Line 11 = Line 1

Line 12 = Line 2

Line 13 = Line 3

Line 14 = Line 4

Line 15 = Line 5

Line 16 = Line 6

Line 17 = Line 7

Line 18 = Line 8

Line 19 = Line 9

Line 20 = Line 10

WWn8 – Wholesale wastewater network plus special cost factors

Table Validation

There are no validation errors in this table

Overview of the table

We are not submitting special factors for Wholesale wastewater network plus price control econometric modelling at this time due to the on-going cost assessment working group.

Bio1 - Wholesale wastewater sludge (explanatory variables)

Table Validation

There are no validation errors in this table.

Line 1 Total sewage sludge produced, treated by incumbents

This is a measure of all the untreated sewage sludge (primary, secondary, tertiary) produced by in-area wastewater treatment processes in the report year which is either treated by the incumbent or remains untreated prior to disposal. Grit and screenings removed through preliminary treatment processes should be excluded. Cross-border imports should be excluded. Sludge treated by managed contractors should be included; sludge treated by separate 3rd party service providers should be reported in Bio1 line 2.

There was an increase in sludge produced of 10 ttds between 2012 and 2017 due to quality schemes; we are forecasting this trend to continue to the end of AMP6. We are forecasting the amount of sewage sludge produced to continue to grow at half the current rate from AMP7 for growth and quality schemes. There are quality schemes proposed under the current NEP but this is not yet finalised.

Line 2 Total sewage sludge produced, treated by 3rd party sludge service provider

This is a measure of all the untreated sewage sludge (primary, secondary, tertiary) produced by in-area wastewater treatment processes in the report year which is treated by a 3rd party sludge service provider. Grit and screenings removed through preliminary treatment processes should be excluded. Cross-border imports should be excluded. Sludge treated by managed contractors (as opposed to separate 3rd party service providers) should be excluded; instead it should be reported in Bio1 line 1.

We are currently in early discussions to use a third party (Severn Trent) during 2018-19 whilst we undertake our annual AAD shutdowns. This decision would be concluded under the assumption that our treatment works in Cardiff will not be able to take any imports from Nash during this time. We would estimate to export around 1 ttds.

We are also in discussion to use a third party for a possible plan to divert sludge produced at Nash WwTW to enable sludge produced at Cog Moors WwTW to go into Cardiff WwTW during commissioning of the our new AAD plant. There is potential for an estimated 9 ttds in total.

This is assuming a “worst case” scenario that we cannot take any of the Nash sludge ourselves which is unlikely as there may be times when we will have capacity due to seasonal - weather effects.

However, as we have not finalised our discussions we have not included these figures in this line or table. If these discussions progress we would, in due course, include these in the APR. We have no long term trades in the pipeline. However as the market develops we will look for opportunities to import sludge from other providers.

Line 3 Total sewage sludge produced

Calculated as the sum of Bio1 lines 1 and 2.

Sum of Bio 1 lines 1 and 2.

Line 4 Total sewage sludge produced from non-appointed liquid waste treatment

This is an estimate of all the untreated sewage sludge (primary, secondary, tertiary) produced by in-area wastewater treatment processes in the report year, and which is produced as a result of treating non-appointed liquid wastes through appointed wastewater treatment assets. Because this sludge is generated at in-area wastewater treatment sites we expect this quantity to be included in

the total given in line 3 above. We expect companies to explain the basis of this estimate in their commentary.

The value quoted is the ttds of domestic tankered waste we receive from private companies, this volume is included in line 3. We do not treat any other none regulated liquid wastes through appointed wastewater treatment assets. This forecast is based on extrapolating ttds data of domestic tankered waste received from private companies from 2012-13 to 2017-18 to reach a realistic forecast of non-appointed liquid waste in 2025.

Line 5 Percentage of sludge produced and treated at a site of STW and STC co-location

The percentage of the sludge quantity reported in line 3 that is produced at co-located sites. For the purposes of this definition: i) "co-located" includes sites where the STC is physically separate but the sludge is transferred from a wastewater treatment site by pipeline, and ii) STC means any site where thickening to >10%DS, and-or dewatering and or microbial reduction (e.g. digestion, lime stabilisation etc.) is undertaken.

There is a slight increase forecast for this year but, as there are no changes planned to the number of STCs we forecast the proportion to stay static at 78.8%.

Line 6 Total sewage sludge disposed by incumbents

The percentage of the sludge quantity reported in line 3 that is produced at co-located sites. For the purposes of this definition: i) "co-located" includes sites where the STC is physically separate but the sludge is transferred from a wastewater treatment site by pipeline, and ii) STC means any site where thickening to >10%DS, and-or dewatering and or microbial reduction (e.g. digestion, lime stabilisation etc.) is undertaken..

Sludge disposed will drop significantly in 2019 when Five Fords (AAD) is commissioned and a further drop in 2021 after Cog Moors (AAD) is commissioned.

Line 7 Total sewage sludge disposed by 3rd party sludge service provider

The total amount of sewage sludge treated and disposed of during the report year by a 3rd party sludge service provider expressed in thousands of tonnes of dry solids of sludge produced by the whole service. This should include recycling to farmland (irrespective of whether spreading is undertaken by the 3rd party service provider or the farmer) and disposal to landfill, incineration, land restoration- reclamation, composting and other routes. This may be different from sewage sludge produced due to:

- quantities of lime used in lime treated sludge,
- losses of volatile solids in the treatment process, and
- changes in the amount of sludge stockpiled at sludge treatment centres.

Sludge disposed of by managed contractors (as opposed to separate 3rd party service providers) should be excluded; instead it should be reported in line 5.

A third party service was used in the 2017-18 financial year, which was brought in house at Afan, Cardiff, Eign and Cog from the 1st February 2017.

Whilst we are forecasting no disposal of sludge by 3rd party providers we are currently in discussions with third party to provide a short term service this year. This is discussed in more detail in the commentary for line 2 above.

Line 8 Total sewage sludge disposed

Calculated as the sum of Bio1 lines 6 and 7.

Calculated as the sum of Bio1 lines 6 and 7.

Line 9 Total measure of intersiting 'work' done by pipeline

Total work done in intersiting sludge operations by pipeline during the report year measured as the product of sludge mass (in ttds) multiplied by distance conveyed (in km). Based on actual length of

pipeline from sludge holding tanks to STC, not straight line distance. This measure should not include sludge transported between STWs via a gravity sewer, the operating costs of which are allocated to Network+. For the purposes of this line, 'intersiting' means the conveyance of sludge between physically separate sites that are connected by a sludge rising main.

*$(km1 * tds1) + (km2 * tds2) + (KmN * tdsN)$.*

There are no proposed changes to the current infrastructure where only 6 sites transfer sludge via a pipeline. Four of these are via gravity so are excluded under the definition. The other two are pumped but the pipeline is less than 1km and therefore, when reporting ttds*km / year as an integer, are reported as zero.

Line 10 Total measure of intersiting 'work' done by tanker

Total work done in intersiting sludge operations carried out by road tanker during the report year measured as the product of sludge mass (in ttds) multiplied by distance travelled (in km) in transporting the sludge. Based on actual distance travelled from sludge holding tanks to STC, not straight line distance. If actual road distances aren't available please estimate this road distance and state in comments if this is the case. Work done by other forms of transport of liquid sludge (e.g. tractors) should be included in this line. This measure should exclude the distance travelled by vehicles to the sewage treatment works to collect the sludge. No account should be taken of distance travelled by empty tankers.

*$(km1 * tds1) + (km2 * tds2) + (kmN * tdsN)$*

There has been a 24.9 ttds*kms/yr. increase over the last AMP which is forecast to continue into next AMP as quality schemes increase solids recovery. This in turn increases sludge available for tankering. In addition we are looking to move from a 48hr per week operation to a "7 to 7" 7-day a week operation which should result in less missed loads and a potential increase in tankering over next AMP.

Line 11 Total measure of intersiting 'work' done by truck

Total work done in intersiting sludge operations carried out by truck during the report year measured as the product of sludge mass (in ttds) multiplied by distance travelled (in km) in transporting the sludge. Based on actual distance travelled from sludge holding tanks to STC, not straight line distance. If actual road distances aren't available please estimate this road distance and state in comments if this is the case. This measure should exclude the distance travelled by vehicles to the sewage treatment works to collect the sludge. No account should be taken of distance travelled by empty trucks.

*$(km1 * tds1) + (km2 * tds2) + (kmN * tdsN)$.*

The interworks sludge haulage for south area is forecast to increase with a linear trend profile in AMP6 with the growth continuing at half this rate in AMP7, following the growth profile of sludge produced in line 1. Additional sludge haulage that will be due to Five Fords WwTW, Eign WwTW to Cog WwTW AAD is separately calculated.

Line 12 Total measure of intersiting 'work' done (all forms of transportation)

Calculated as the sum of Bio1 lines 9, 10 and 11.

Calculated line.

Line 13 Total measure of intersiting 'work' done by tanker (by volume transported)

Total work done in intersiting sludge operations carried out by road tanker during the report year measured as the product of sludge volume (in m3) multiplied by distance travelled (in km) in transporting the sludge. Based on actual distance travelled from sludge holding tanks to STC, not straight line distance. If actual road distances aren't available please estimate this road distance and state in commentary if this is the case. Work done by other forms of transport of liquid sludge (e.g. tractors) should be included in this line. This measure should exclude the distance travelled by

vehicles to the sewage treatment works to collect the sludge. No account should be taken of distance travelled by empty tankers.

$(km1*m31)+(km2*m32)+.....(kmN*m3N)$

The 2017-18 reported figure has been extrapolated in line with line 10 above.

Line 14 Total measure of 'work' done in sludge disposal operations by pipeline

Total work done in sludge disposal operations carried out by pipeline (e.g. transport to an incinerator) during the report year measured as the product of sludge mass (in tds) multiplied by distance travelled (in km). Based on actual distance travelled from the STC to the landbank, landfill site, land reclamation site or incinerator as appropriate, not straight line distance.

$(km1*tds1)+(km2*tds2)+.....(kmN*tdsN)$.

We have no sludge disposed by pipeline.

Line 15 Total measure of 'work' done in sludge disposal operations by tanker

Total work done in sludge disposal operations carried out by truck during the report year measured as the product of sludge mass (in tds) multiplied by distance travelled (in km) in transporting the sludge. Based on actual distance travelled from the STC to the landbank, landfill site or land reclamation site as appropriate, not straight line distance. If actual road distances aren't available please estimate this road distance and state in comments if this is the case. No account should be taken of distance travelled by empty trucks.

$(km1*tds1)+(km2*tds2)+.....(kmN*tdsN)$..

We have only one works (Porthmadog) that disposes of sludge by tanker which is scheduled to close this year. So there will be no sludge disposed as liquid after this date.

Line 16 Total measure of 'work' done in sludge disposal operations by truck

Total work done in sludge disposal operations carried out by truck during the report year measured as the product of sludge mass (in tds) multiplied by distance travelled (in km) in transporting the sludge. Based on actual distance travelled from the STC to the landbank, landfill site or land reclamation site as appropriate, not straight line distance. If actual road distances aren't available please estimate this road distance and state in comments if this is the case. No account should be taken of distance travelled by empty trucks.

$(km1*tds1)+(km2*tds2)+.....(kmN*tdsN)$

The mileage is based on sludge disposed currently for each works. When Five Fords WwTW comes on line the mileage is assumed to be comparable to Cardiff WwTW (but with a reducing adjustment of 5 miles to reflect that the disposal from Cardiff has to get to M4 and out of Cardiff. The mileage for Cog Moors is assumed to be same as Cardiff as the two sites will use the same land bank. Note that the spike in 2018-19 is due to the sludge at Five Fords will receive no digestion but will be all limed so there will be no destruction through digestion.

Line 17 Total measure of 'work' done in sludge disposal operations (all forms of transportation)

Calculated as the sum of Bio1 lines 14 to 16.

Calculated as the sum of Bio1 lines 14 to 16.

Line 18 Total measure of 'work' done in sludge disposal operations (all forms of transportation)

Total measure of 'work' done by tanker in sludge disposal operations (by volume transported)

Following the introduction of the market information request where we detail sludge produced from each individual works, the methodology for this line has been updated to complete the market information request first and then simply work out the percentage of sludge generated from the phosphorous sites compared to the total sludge produced. We have reviewed sites with P limits and removed 3 previously reported as consents have been renegotiated to remove P limit and added 4 that were missing. The trend now shows a sharp increase in 2015 when the majority of P schemes

were commissioned at the end of AMP5. Note only sites where chemical dosing present are included. Llanuwchllyn and Llangefni are excluded as they use Biological processes. In line with all guidance on 4R we have taken sludge produced at Chemical P sites to be measured at the boundary between Network plus and Bioresources Business and worked out as a total proportion of 4R.23. These changes have resulted in a reduction of 6% in reported value, last year we reported 32.7% which would have been 26.12% under the revised methodology and taking into the above corrections to data.

Line 19 Chemical P sludge as percentage of sludge produced at STWs

The total quantity of sludge produced at wastewater treatment works which use chemical dosing for phosphorous removal expressed as a percentage of total sludge produced at all in area wastewater treatment works (i.e. Bio1 line 3).

The historical data shows a clear increase at the end of AMP 5 when several new P consents came into effect, and we anticipate similar increases when future P schemes are delivered. The calculated 2017-18 figure, i.e. 31.9%, will remain the same in 2018-19 and 2019-20. This is because all our remaining new P schemes in AMP6 have a 31st March 2020 deadline, so their sludge impact will not be seen until 2020-21, the first year of AMP7. These nine AMP6 schemes are at Eglwysbach, Denbigh Eglwyswen, Dyserth, Ruthin, Rhiwlas, Brynmawr Blackrock, Cowbridge, Raglan and Lletty Brongu. The impact of these schemes on the P-works sludge proportion is an increase to 34.2% for 2020-21.

During AMP 7 we have P schemes to deliver to NEP deadlines in 2020-21, 2022-23 and 2024-25. In 2020-21, we have a single P scheme at Clyro (385 population equivalent). The impact of this scheme is too small to show up at one decimal place so the proportion remains at 34.2% for 2021-22 and 2022-23. In 2022-23 we will be completing our major scheme Gwili Gwendraeth. This scheme will replace seven existing WwTW's (two of which have P limits) with a single new WwTW (which will have a 0.5mg/l P limit). The net impact of this scheme will be an increase to 34.6% in 2023-24. There are no new P schemes planned for 2023-24 so the proportion will remain at 34.6% in the following year, 2024-25. In 2024-25 we have sixteen P schemes but the impact on this line will not be experienced until the first year of AMP8.

Bio2 - Wholesale wastewater sludge treatment process and disposal routes

Table Validation

There are no validation errors in this table.

Line 1 % Sludge - untreated

Percentage of sludge produced which is untreated prior to disposal.

Reported as zero.

Line 2 % Sludge treatment process - raw sludge liming

Percentage of sludge produced which is untreated other than by liming.

Currently, all sludge in north Wales is subject to liming. Once delivered, on completion of Five Fords AAD in April 2019, all sludge in north Wales will be subject to advanced digestion. To complete the table we have attributed 1.01% per year (4 days for each AAD site) for shutdowns where sludge would have to be diverted and limed for periods of planned and reactive maintenance.

Line 3 % Sludge treatment process - conventional AD

Percentage of sludge produced which is treated by conventional AD (with or without liming)

Currently, all sludge in north Wales is subject to liming and digesters have been decommissioned hence the sharp drop between 2017-18 and 2018-19. Cog Moors' digester will be shut down at the end of 2018-19 resulting in a further drop in 19-20 and will remain offline for 2 years before being recommissioned as AAD at which point Eign WwTW will be diverted to Cog Moors only leaving 1 AD site for the remaining of AMP7.

Line 4 % Sludge treatment process- advanced AD

Percentage of sludge produced which is treated by advanced AD (with or without liming). (THP, EH, two-stage + PAS and APD).

Advanced digestion sees two increases over the period on the commissioning of Five Fords AAD in 2019 and Cog Moors AAD in 2020 leading to 97.3% of all sludge treated by AAD from 2021 onwards.

Line 5 % Sludge treatment process - incineration of raw sludge

Percentage of sludge produced which is untreated other than by incineration.

Reported as zero.

Line 6 % Sludge treatment process - phyto-conditioning-composting

Percentage of sludge produced which is phyto-conditioned or composted.

Reported as zero.

Line 7 % Sludge treatment process - other (specify)

Percentage of sludge produced by other treatment type(s) (to be specified)

Reported as zero.

Line 8 % Sludge treatment process – Total

Calculated as the sum of Bio2 lines 1 to 7. The totals for the incumbent and 3rd party service provider columns should sum to 100%.

Calculated as the sum of Bio2 lines 1 to 7.

Line 9 % Sludge disposal route - landfill, raw

Percentage of (un-incinerated) sludge by disposal route - landfill, raw.

Reported as zero.

Line 10% Sludge disposal route - landfill, partly treated

Percentage of (un-incinerated) sludge by disposal route - landfill, partly treated

Reported as zero.

Line 11 % Sludge disposal route - land restoration - reclamation

Percentage of (un-incinerated) sludge by disposal route - land restoration - reclamation.

Reported as zero.

Line 12 % Sludge disposal route - sludge recycled to farmland

Percentage of (un-incinerated) sludge by disposal route - recycled to farmland

All sludge is recycled to farmland so this line is 100%. Year 17-18 has been reported in line with APR 65.3% incumbent 34.7% 3rd party as a third party service was used in the 2017-18 financial year, which was brought in house at Afan, Cardiff, Eign and Cog from the 1st February 2017.

Whilst we are forecasting no disposal of sludge by 3rd party providers we are currently in discussions with third party to provide a short term service this year. This is discussed in more detail in the commentary for line 2 above.

Line 13 % Sludge disposal route - other (specify)

Percentage of (un-incinerated) sludge by disposal route - other (specify)

Reported as zero.

Line 14 % Sludge disposal route – Total

Calculated as the sum of Bio2 lines 9 to 13. The totals for the incumbent and 3rd party service provider columns should sum to 100%.

Calculated as the sum of Bio2 lines 9 to 13.

Bio3 – Wholesale wastewater sludge opex

Table Validation error

Line A2 A validation error remains relating to the positive value, of £0.002 under raw sludge liming in 2017-18. This positive value has arisen due the reversal of a previous period's over-accrual, and is therefore non-repeating.

General comments

- Sludge Treatment costs increase slightly by £484k from 2018-19 to 2024-25.
- This is net of a 'Principal Use' adjustment increase of £0.9m by 2024-25.
- Indirect costs are reducing by £0.9m mainly as a result of support services efficiencies.
- Sludge Disposal reduces by £0.9m from 2018-19 to 2024-25.

Change to previously reported data

This table reports sludge costs by treatment types and we had previously prepared this table based on the process at the sludge site level, irrespective of whether the sludge was to be transported to another sludge centre for further treatment. This resulted in a significant proportion of our costs reported within the untreated sludge process. However, during preparation of these PR19 data tables and discussing the definitions and guidance documents again with the bio-solids manager, we now understand that it is the intention of the table to show the total costs in relation to the final sludge treatment process prior to disposal so that it aligns with Table 4T. So, for instance, if sludge from a sludge centre was transported to an Advanced Digestion site then the costs relating to sludge being treated as Advanced Digestion would include the cost at the initial sludge centre together with the costs of the Advanced Digestion process at the secondary stage in the process.

The APR table was not completed in this way and so the APR table has therefore been re-stated and re-submitted to align with this revised treatment.

Line A1: Power

All energy costs, including the climate change levy and the carbon reduction commitment. Any cost savings from power generated internally should be netted off these costs.

Assuming no atypicals, please ensure total is consistent with WWS1 line 1.

Power costs were apportioned to the Sludge Treatment types using a cost per tonne calculated on 2017-18 actuals and a tonnage value taken from Bio1 and Bio2. This cost per tonne was adjusted proportionately to the total cost movement from 2017-18 actuals. Each yearly total matches the value within the A1 sludge treatment column of WWS1.

Power costs are increasing slightly due to the forecast rise in delivered price, this is offset partly by energy efficiency initiatives plus increases in renewable energy generation.

Line A2: Income treated as negative expenditure

Income received from sales which are external to the appointed business and which directly relate to the wastewater processes. It should be input as a negative number.

This will include:

- Electricity sales from sources such as CHP to external parties.
- Electricity sales from back-up generators under the National Grid 'STOR'.
- Bio-methane gas sales to the National Grid.
- Renewables Obligation Certificates (ROCs) and payments made under the non-domestic RHI and Feed-in Tariff schemes.
- Sludge and sludge products such as cake, granules etc. to external parties.

Assuming no atypicals, please ensure total is consistent with WWS1 line 2.

As per line A1. Each yearly total matches the value in A2 sludge treatment column of WWS1. Income treated as negative expenditure is rising by £3m from 2018-19 to 2024-25. Renewable generation

output is forecasted to rise, this increase is mainly driven by the commissioning of Five Fords in 2019 and Cog Moors in 2020 as advanced anaerobic digestion, increasing gas generation outputs, resulting in higher levels of renewable electricity and gas generation.

Line A3: Local authority and Cumulo rates

The cost of local authority rates. This should include both the local authority rates and cumulo rates. Assuming no atypicals, please ensure total is consistent with WWS1 line 8.

As per line A1. Each yearly total matches the value in A8 sludge treatment column of WWS1.

Line A4: Other direct costs

Other direct costs not included in previous lines 1-3

Other direct costs increase by £1.7m from 2018-19 to 2024-25 mainly as a result of Capital investment associated with the National Environmental Programme (NEP) increasing operating costs. This is offset slightly by identified efficiencies.

Line A5: Other indirect costs

Other indirect costs not included in previous lines 1-3.

Indirect costs are reducing by £0.8m mainly as a result of support services efficiencies relating to COSE.

Line A6: Total before depreciation

Total before depreciation. The sum of Bio3 lines 1 to 5.

Calculated cell.

Line A7: Historical cost depreciation

Historical depreciation charge for relevant fixed asset

This has been split on the same basis as 2017-18. Depreciation has increased as a result of the capital investment as a result of the sludge strategy.

Line A8: Total operating costs (excluding 3rd party)

Total operating expenditure for the wholesale business only within each business category. The sum of Bio3 lines 6 and 7.

Each yearly total matches the value within the A1 sludge treatment column of WWS1.

Line B9: Power

All energy costs, including the climate change levy and the carbon reduction commitment. Any cost savings from power generated internally should be netted off these costs.

No costs for power associated with Sludge Disposal.

Line B10: Income treated as negative expenditure

Income received from sales which are external to the appointed business and which directly relate to the wastewater processes. It should be input as a negative number. This will include;

-Electricity sales from back-up generators under the National Grid 'STOR'.

-Bio-methane gas sales to the National Grid.

-Renewables Obligation Certificates (ROCs) and payments made under the non-domestic RHI and Feed-in Tariff schemes.

-Sludge and sludge products such as cake, granules etc. to external parties.

There is no income forecast at the moment as availability of suitable land bank and competition for access to it means that we are unable to generate any material income.

Line B11: Local authority and Cumulo rates

The cost of local authority rates. This should include both the local authority rates and cumulo rates.

No local authority costs associated with Sludge Disposal

Line B12: Other direct costs

Other direct costs not included in previous lines 9-11.

Disposal Costs apportioned to treatment headings using sludge volumes reported in Bio1 and Bio2.

Disposal costs have increased in 2018-19 and onwards due to insourcing of the agronomy service, travelling-hauling further to find BAS appropriate land, higher laboratory charges for soil sampling, new more expensive contracts plus higher charges for temporary liming as part of the new disposal contracts.

Line B13: Other indirect costs

Other indirect costs not included in previous lines 9-11.

Disposal costs apportioned to treatment headings using sludge volumes reported in Bio1 and Bio2.

Line B14: Total before depreciation

Total before depreciation. The sum of Bio 3 lines 9 to 13.

Calculated cell.

Line B15: Historical cost depreciation

Historical depreciation charge for relevant fixed asset

No depreciation associated with Sludge Disposal as this is an outsourced contract.

Line B16: Total operating costs (excluding 3rd party)

Total operating expenditure for the wholesale business only within each business category. The sum of Bio3 lines 14 and 15.

The sum of Bio3 lines 14 and 15.

Bio4 - Wholesale revenue projections for the wastewater bioresources price control

Table Validation

There are no validation errors in this table.

This table includes all revenue expected by DCWW in provision of its wholesale wastewater bioresources activities at 2017-18 financial year average prices.

Line Commentary

Lines 1 12

These lines contain the wholesale revenue requirement aggregated by building blocks. The line in each of the sub-control tables Wr3, Wn3, WWn5 and Bio4 are calculated in the Ofwat financial model. The lines in APP17 are calculated lines from the individual income recorded in the sub-control tables Wholesale revenue projections for the price controls: Wr3, Wn3, WWn5 and Bio4.

Line 1 PAYG

*Projected total pay as you go (PAYG) for wholesale bioresources costs. Equals WWS1 line 21 * Bio5 line 19.*

Calculated.

Line 2 Pension deficit repair contributions

Projected total cost of pension deficit repair contributions for wholesale bioresources.

In line with information notice IN 13-17 the final revenue allowance for pension deficit repair will be applied in 2019-20. We have not included a contribution from customers toward the pension deficit repair costs included in the plan during 2020-25. The company will bear the costs of the pension deficit repair costs included in WS1 and WWS1.

Line 3 Run off on post 2020 investment

Projected run off (depreciation charge) on post 2020 wholesale bioresources totex investment incurred in the 2020-25 period and not recovered through PAYG.

These values are calculated in the Ofwat financial model.

Line 4 Return on post 2020 investment

Projected return on post 2020 wholesale bioresources totex investment incurred in the 2020-25 period and not recovered through PAYG.

These values are calculated in the Ofwat financial model.

Line 5 Run off on RPI inflated 2020 RCV

Projected run off (depreciation charge) on the proportion of the RCV at 1 April 2020 indexed by RPI.

These values are calculated in the Ofwat financial model.

Line 6 Return on RPI inflated 2020 RCV

Projected return on the proportion of the RCV at 1 April 2020 indexed by RPI.

These values are calculated in the Ofwat financial model.

Line 7 Run off on CPIH inflated 2020 RCV

Projected run off (depreciation charge) on the proportion of the RCV at 1 April 2020 indexed by CPIH.

These values are calculated in the Ofwat financial model.

Line 8 Return on CPIH inflated 2020 RCV

Projected return on the proportion of the RCV at 1 April 2020 indexed by CPIH.

These values are calculated in the Ofwat financial model.

Line 9 Current tax ~ wholesale wastewater bioresources

Forecast current tax payable for wholesale bioresources.

These values are calculated in the Ofwat financial model and are nil for all wholesale price controls as the business generates a taxable loss in each year of the price control driven by capital allowances (see App29 – Wholesale tax).

Line 10 Re-profiling of allowed revenue ~ wholesale wastewater bioresources

The impact of re-profiling the wholesale bioresources allowed revenue.

We have used the revenue re-profiling functionality in the Ofwat financial model to re-profile revenue on an NPV neutral basis to deliver a total combined residential bill which is broadly constant in real terms between 2020-21 and 2024-25. This is in line with a clear customer preference for a more or less constant bill profile on page 40 of the PR19 Customer Engagement: Bills and affordability research ref 1.1D. There is no re-profiling of revenue within bioresources.

Line 11 PR14 reconciliation revenue adjustments ~ wholesale water resources

The PR14 reconciliation revenue adjustments associated with wholesale bioresources.

These values are obtained from the revenue adjustment feeder model and are profiled across 2020-21 to 2014-25 on a constant annuity basis. There are no PR14 reconciliation revenue adjustments within bioresources.

Line 12 Total wholesale wastewater bioresources revenue requirement

The company's projected total wholesale bioresources revenue requirement. Equals the sum of Bio4 lines 1 to 11.

2020-21 to 2024-25 calculated cells in 2017-18 FYA (CPIH) deflated price base.

2019-20 Value input in Outturn (nominal price base).

Revenue requirement for 2019-20

The FD14 revenue requirement was set at the wholesale level and, therefore, needs to be split for input into tables Wn5 Wholesale wastewater network plus and Bio4 Bioresources. For the purposes of completing this cell we have calculated the revenue requirement for 2019-20 from WWS13 and the FD14 financial model as shown in the table below. This calculation ensures that the 2019-20 Revenue Requirement is comparable to the Revenue Requirement calculation for PR19 in the years 2020-21 to 2024-25. The wholesale wastewater revenue requirement for 2019-20 has then been split between the sub-controls in proportion to the AMP7 weighted average split of revenue requirement also shown in the table below. This gives an outturn wholesale wastewater revenue requirement of £406.728m which has been split 91.1% Wastewater network plus and 8.9% Bioresources to give outturn revenue requirement for 2019-20 of £370.366m for Wastewater network plus and £36.361m for Bioresources.

Welsh Water Bioresources Business Plan Table commentaries

Wholesale Wastewater							
WWS13	Wholesale wastewater	2019-20					
12	Allowed Revenue	413.418					
25	G&C actual		7.366				
26	G&C over recovery		0.565				
calc (25-26)	G&C allowed	(6.801)					
Fin Mod (FD14)	Other income (inc 3rd party)		0.092	<Waste Real AR> row 56: Other income (incl 3rd party income)			
			1.198	Inflate 12-13 to 19-20 outturn			
	3rd Party income	0.110					
	Revenue Requirement	406.728					
A12 (2019-20)	Split of FD14 19-20 Rev Req						
Bio4	A12 (2019-20)	36.361		8.9%			
WWn5	A12 (2019-20)	370.366		91.1%			
		406.728					
	Revenue Requirement (£m)	2020-21	2021-22	2022-23	2023-24	2024-25	2020-25
Bio4 Line 12	Bio resources	35	35	35	34	34	174
WWn5 Line 12	Wastewater network plus	346	350	354	360	365	1,774
	Revenue Requirement	381	385	389	394	399	1,948
		9.2%	9.1%	9.0%	8.8%	8.6%	8.9%
		90.8%	90.9%	91.0%	91.2%	91.4%	91.1%

Lines 13 – 19

These lines contain the “miscellaneous” income received by the appointed business. The lines in APP17 are calculated lines from the individual income recorded in the sub-control tables Wholesale revenue projections for the price controls: Wr3, Wn3, WWn5 and Bio4. The total position and the entries in each of these tables together with the method of allocation is shown in Annex 1 at the end of this commentary. For ease of reference these tables are repeated at the end of the commentaries for each of the revenue projections tables.

Line 13 Third party revenue ~ wholesale wastewater bioresources

Projected third party revenue covered by the wholesale wastewater bioresources price control. Appendix 1 of RAG4.07 provides further information on the income to be categorised as third party. This category is for non-potable water so there is no income in this line in the wastewater service.

Line 14 Bulk supplies

Income from bulk supplies (bioresources) to another wastewater undertaker.

Income from wastewater bulk supplies has been allocated 50:50 between wastewater network plus and the bioresources sub-control as the income is very small (c£30k).

Line 15 not used

Line 16 Rechargeable works ~ bioresources

Rechargeable works, as listed in Appendix 1 of RAG4.07.

No rechargeable works income relates to services provided from the bioresources sub-control.

Line 17 Other non-price control third party services ~ bioresources

All other non-price control income for third party services e.g. excluded charges, as listed in Appendix 1 of RAG4.07.

No other 3rd party income is forecast for bioresources sub-control.

Line 18 Total non-price control income (third party services) ~ bioresources

Projected total income from third party services outside of the wholesale wastewater bioresources price control. Equals the sum of Bio4 lines 14 to 17.

Calculated.

Line 19 Wholesale bioresources non-price control income (principal services)

Projected income from principal services for which costs are not covered by the wholesale wastewater bioresources price control e.g. recreational use of protected land, as listed in Appendix 1 of RAG4.07.

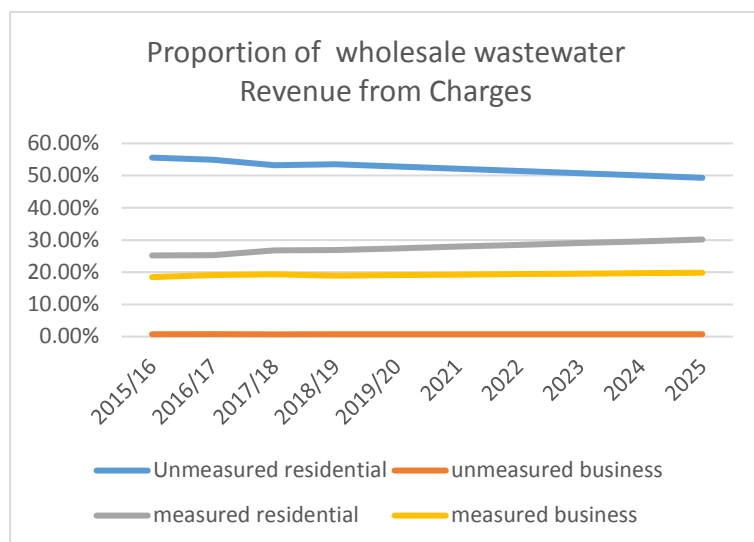
This is the rental income from mobile phone masts on appointed assets land. The income is allocated to sub-control in proportion to weighted average site income from 2015-16 to 2017-18.

Line 20 – 23 Bioresources charges (business & residential)

The proportional allocation of the projected wholesale bioresources allowed revenue to unmeasured residential customers (line 20) unmeasured business customers (line 21), measured residential customers (line 22) measured business customers (line 23), from wholesale bioresources charges.

Wholesale wastewater annual change in proportion of residential revenue due to meter optants and new connections is calculated to be 0.7% from unmeasured residential. This movement is split 0.55% to measured wastewater and 0.15% to measured business. Unmeasured business remains static. It is assumed that the revenue from network plus and bioresources charges change by the same amount annually.

The tables in Annex 2 show the analysis behind these forecasts. The level of recovery from 2015-16 to 2024-25 is shown in the graph below.



Line 24 Total wholesale wastewater bioresources allowed revenue

Projected total wholesale bioresources allowed revenue from wholesale bioresources charges. Charges income should be equal to building blocks income less price control income from other sources. Equals Bio4 line 11 minus line 12.

Calculated.

Line 25 Bioresources grants and contributions (price control)

Projected grants and contributions covered by the wholesale wastewater resources price control. This represents the wholesale wastewater bioresources element of the total grants and contributions received for the wholesale wastewater service contained in App28 lines 7 to 10.

No grants or contributions within the price control are forecast for the bioresources sub-control.

Line 26 Bioresources grants and contributions (non-price control)

Projected grants and contributions not covered by the wholesale wastewater bioresources price control. This represents the wholesale wastewater bioresources element of the total 'other' non-price control grants and contributions received for the wholesale wastewater service contained in App28 line 12.

No non-price control grants or income has been forecast for the bioresources sub-control.

Line 27 Total revenue ~ wholesale wastewater bioresources control

Projected total wholesale wastewater bioresources revenue requirement for the wholesale wastewater bioresources price control including projected grants and contributions covered by the wholesale wastewater bioresources price control. Equals Bio4 line 12 minus line 18 minus line 19 plus line 25.

Calculated.

Line 28

The budgets used to complete table WWS1 has been analysed for variables costs.

Manpower, Transport, Outsourced costs are apportioned 80% fixed and 20% variable. Power has been analysed and the fixed (Daily and DUOS) charge has been identified, the rest is considered variable. Bought in services has been analysed and split between fixed and variable elements Chemicals and potable water costs are considered 100% variable. This gives the split of costs shown in the table below:

Table 1 - Split of Totex between Fixed and Variable Costs

	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
	£m	£m	£m	£m	£m	£m
Bioresources (inc G&S)	11.2	10.6	10.4	10.5	10.3	10.5
Power (Fixed charge)	(0.6)	(0.8)	(0.8)	(0.9)	(1.0)	(1.0)
Bought in services	0.9	0.7	0.7	0.7	0.6	0.6
Principal use	1.3	2.0	2.2	2.4	2.4	2.3
Fixed Opex	12.7	12.5	12.5	12.6	12.4	12.4
Capital expenditure	30.9	10.6	10.2	10.3	9.8	8.9
Fixed Totex	43.6	23.1	22.7	22.9	22.2	21.3
<u>Variable elements</u>						
Bioresources (inc G&S)	1.9	1.6	1.7	1.7	1.6	1.6
Chemicals & water	1.2	1.0	1.0	1.0	1.0	1.0
Bought in services	4.3	3.6	3.7	3.8	3.9	4.0
NEP (Opex from capex)	-	-	0.0	0.1	0.2	0.3
Gross variable total	7.3	6.2	6.4	6.6	6.7	7.0
Power	(2.8)	(3.7)	(3.9)	(4.0)	(4.2)	(4.2)
Variable Totex	4.5	2.5	2.6	2.5	2.5	2.7
Totex	48.0	25.6	25.2	25.5	24.7	24.0
Sludge produced (ttds pa)	72.6	73.4	74.2	75.1	75.9	76.8

For the completion of line H28 it is considered reasonable to assume that the capital costs and capital expenditure elements of totex are invariant to marginal changes to sludge volumes from the forecasts used to set the revenue control therefore the fixed element to be input is the revenue requirement calculated in line G27 minus the variable totex calculated in the table above.

		2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2020-25
27	Total revenue ~ wholesale wastewater bioresources control	36.176	35.044	34.874	34.743	34.321	34.286	173.268
	less Variable Totex	-4.489	-2.508	-2.567	-2.531	-2.522	-2.716	-
28	Wholesale wastewater bioresources revenue to cover fixed costs	31.687	32.536	32.307	32.212	31.799	31.570	160.424

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Annex 1 Lines 13 – 19 and 25 - 26

The total “miscellaneous” income in the Business plan is shown in the Summary table below:

	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m
		17-18 FYA (CPIH deflated)				
Summary						
Total Grants & Contributions (price control)		21.360	21.589	21.809	21.880	21.920
Total Grants & Contributions (non-price control)		<u>3.040</u>	<u>1.185</u>	<u>1.198</u>	<u>1.201</u>	<u>1.204</u>
Total Grants & Contributions		24.400	22.774	23.007	23.081	23.124
Total Other Income (price control)		6.477	6.477	6.477	6.477	6.477
Total Other Income (non-price control)		<u>18.049</u>	<u>18.069</u>	<u>18.088</u>	<u>18.108</u>	<u>18.128</u>
Total Other income		24.526	24.546	24.565	24.585	24.605
Price control income		27.837	28.066	28.286	28.357	28.397
Non-price control		<u>21.089</u>	<u>19.254</u>	<u>19.286</u>	<u>19.310</u>	<u>19.333</u>
Total "miscellaneous" income		48.927	47.319	47.573	47.667	47.729

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The individual lines for APP17 and the method of apportionment between the sub-controls (and reported in tables Wr3, Wn3, WWn5, Bio4) are shown in the tables below:

	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
		17-18 FYA (CPIH deflated)					
B	Wholesale - other price control income						
13	Third party revenue						
	<u>Consists of non-potable water (not bulk supplies):</u>						
	Band A Raw <50 MI						
	Band A Partial < 50MI						
	Band B Raw >50 MI						
	Band B Partial >50 MI						
	Special agreements – (WSHNONPOT9, 10a and 10b)						
Wr3	Third party revenue	2.824	2.824	2.824	2.824	2.824	Split as per cost attribution model informing Scheme of Charges
Wn3	Third party revenue	3.653	3.653	3.653	3.653	3.653	Split as per cost attribution model informing Scheme of Charges
WWn5	Third party revenue	-	-	-	-	-	
Bio4	Third party revenue	-	-	-	-	-	
App17	Third party revenue	6.477	6.477	6.477	6.477	6.477	
C	Non-price control income (third party)						
14	Bulk supplies						
	<u>Consists of:</u>						
	Bulk supplies water						
	Bulk supplies wastewater						
Wr3	Bulk supplies	8.174	8.174	8.174	8.174	8.174	Split as per cost attribution model informing Scheme of Charges
Wn3	Bulk supplies	0.396	0.396	0.396	0.396	0.396	Split as per cost attribution model informing Scheme of Charges
WWn5	Bulk supplies	0.015	0.015	0.015	0.015	0.015	Split 50:50 (not material)
Bio4	Bulk supplies	0.015	0.015	0.015	0.015	0.015	Split 50:50 (not material)
App17	Bulk supplies	8.601	8.601	8.601	8.601	8.601	

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	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
		17-18 FYA (CPIH deflated)					
16	Rechargeable works <u>Consists of:</u> <i>Fire hydrants</i> <i>Repair of damage to Co apparatus</i> <i>Build over sewers</i> <i>Installing meter on unmeasured (Non-household)</i> <i>Trade effluent consent revision</i> <i>Non-primary charges from wholesale service centre</i> <i>Provision of plan information of underground assets</i> <i>Flow and pressure testing of customer supply</i> <i>Meter testing</i> <i>Relocating household meter</i> <i>Private sewer cleaning</i> <i>Disconnection - reconnection of supply</i>						
Wr3	Rechargeable works	-	-	-	-	-	
Wn3	Rechargeable works	0.473	0.473	0.473	0.473	0.473	All allocated to network plus
WWn5	Rechargeable works	0.464	0.464	0.464	0.464	0.464	All allocated to network plus
Bio4	Rechargeable works	-	-	-	-	-	
App17	Rechargeable works	0.937	0.937	0.937	0.937	0.937	
17	Other non-price control (third party services) <u>Consists of "Excluded" charges (Li.Con B)</u> <i>s20 Reservoir operating agreements (NRW)</i> <i>s20 Reservoir operating agreements (additional capex) (NRW)</i> <i>Stand pipes</i> <i>Water tanks & water tankers</i> <i>Reception and disposal of waste (costs& income in non-appointed)</i>						
Wr3	Other non-price control (third party services)	7.607	7.627	7.647	7.667	7.687	s20 allocated 100% to Water Resources

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		Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
			17-18 FYA (CPIH deflated)					
Wn3	Other non-price control (third party services)		0.026	0.026	0.026	0.026	0.026	Tankers allocate 100% to network plus
WWn5	Other non-price control (third party services)		-	-	-	-	-	
Bio4	Other non-price control (third party services)		-	-	-	-	-	
App17	Other non-price control (third party services)		7.633	7.653	7.672	7.692	7.712	
18	Total non-price control income (third party services)							
Wr3	Total non-price control income (third party services)		15.782	15.801	15.821	15.841	15.861	
Wn3	Total non-price control income (third party services)		0.894	0.894	0.894	0.894	0.894	
WWn5	Total non-price control income (third party services)		0.480	0.480	0.480	0.480	0.480	
Bio4	Total non-price control income (third party services)		0.015	0.015	0.015	0.015	0.015	
App17	Total non-price control income (third party services)		17.171	17.191	17.210	17.230	17.250	
D	Non-price control income (principal services)							
19	Other non-price control (principal services)							
	<u>Consists of:</u>							
	<i>Rental income (mobile phone masts, wind turbines, solar panels))</i>							
Wr3	Other non-price control (principal services)		0.494	0.494	0.494	0.494	0.494	Allocated in proportion to weighted average site income from 15-16 to 17-18
Wn3	Other non-price control (principal services)		0.070	0.070	0.070	0.070	0.070	Allocated in proportion to weighted average site income from 15-16 to 17-18
WWn5	Other non-price control (principal services)		0.152	0.152	0.152	0.152	0.152	Allocated in proportion to weighted average site income from 15-16 to 17-18
Bio4	Other non-price control (principal services)		0.161	0.161	0.161	0.161	0.161	Allocated in proportion to weighted average site income from 15-16 to 17-18
App17	Other non-price control (principal services)		0.878	0.878	0.878	0.878	0.878	

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	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
		17-18 FYA (CPIH deflated)					
F	Grants & Contributions						
25	Wholesale grants and contributions (price control)						
	<i>Consists of capital income:</i>						
	<i>Infrastructure charges</i>						
	<i>Requisitions and self-lay</i>						
	<i>Connection charges (s45 - Water)</i>						
	<i>Diversions</i>						
Wr3	Wholesale grants and contributions (price control)	-	-	-	-	-	
Wn3	Wholesale grants and contributions (price control)	12.789	12.939	13.084	13.127	13.155	All allocated to network plus
WWn5	Wholesale grants and contributions (price control)	8.571	8.650	8.725	8.753	8.765	All allocated to network plus
Bio4	Wholesale grants and contributions (price control)	-	-	-	-	-	
App17	Wholesale grants and contributions (price control)	21.360	21.589	21.809	21.880	21.920	
26	Wholesale grants and contributions (non-price control)						
	<i>Consists of capital income:</i>						
	<i>Sewer vetting, adoption agreements (PR19)</i>						
	<i>Feasibilities</i>						
	<i>Grants</i>						
Wr3	Wholesale grants and contributions (non-price control)	1.868	-	-	-	-	Non-grant income allocated to network plus, Grant income allocated by scheme
Wn3	Wholesale grants and contributions (non-price control)	0.053	0.053	0.053	0.053	0.053	As above
WWn5	Wholesale grants and contributions (non-price control)	1.119	1.132	1.145	1.148	1.151	As above
Bio4	Wholesale grants and contributions (non-price control)	-	-	-	-	-	As above
App17	Wholesale grants and contributions (non-price control)	3.040	1.185	1.198	1.201	1.204	

Annex 2 - Analysis for lines 20 to 23 - Current period proportions from the analysis of wholesale revenues

Proportion of annual revenue by Wholesale control

2015-16	2016-17	2017-18	2018-19	Average
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2015-16	2016-17	2017-18	2018-19	Average
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	Measured	Measured	Measured	Measured	Measured
Water					
Household	19.61%	20.69%	21.84%	21.95%	21.02%
Non-Household	26.67%	26.80%	26.46%	27.08%	26.75%
	46%	47%	48%	49%	48%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wastewater					
Household	25.20%	25.28%	26.75%	26.85%	26.02%
Non-Household	18.47%	19.07%	19.32%	18.95%	18.95%
	44%	44%	46%	46%	45%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wholesale					
Household	22.85%	23.34%	24.69%	24.78%	23.92%
Non-Household	21.92%	22.33%	22.31%	22.40%	22.24%
	45%	46%	47%	47%	46%

	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Water					
Household	52.92%	51.73%	50.95%	50.22%	51.46%
Non-Household	0.80%	0.78%	0.74%	0.75%	0.77%
	54%	53%	52%	51%	52%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wastewater					
Household	55.59%	54.90%	53.23%	53.49%	54.30%
Non-Household	0.74%	0.75%	0.70%	0.70%	0.72%
	56%	56%	54%	54%	55%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wholesale					
Household	54.46%	53.57%	52.28%	52.11%	53.10%
Non-Household	0.77%	0.76%	0.72%	0.72%	0.74%
	55%	54%	53%	53%	54%

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Annual Change on proportion

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Water					
Household		1.08%	1.16%	0.11%	0.78%
Non-Household		0.12%	-0.33%	0.61%	0.13%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wastewater					
Household		0.07%	1.47%	0.11%	0.55%
Non-Household		0.60%	0.25%	-0.37%	0.16%

	2015-16	2016-17	2017-18	2018-19	Average
	Measured	Measured	Measured	Measured	Measured
Wholesale					
Household		0.49%	1.35%	0.08%	0.64%
Non-Household		0.41%	-0.01%	0.08%	0.16%

	2015-16	2016-17	2017-18	2018-19	Average
	2015-16	2016-17	2017-18	2018-19	Unmeasured
Water					
Household		-1.18%	-0.78%	-0.73%	-0.90%
Non-Household		-0.02%	-0.04%	0.00%	-0.02%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wastewater					
Household		-0.68%	-1.67%	0.26%	-0.70%
Non-Household		0.00%	-0.05%	0.01%	-0.01%

	2015-16	2016-17	2017-18	2018-19	Average
	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
Wholesale					
Household		-0.90%	-1.29%	-0.17%	-0.79%
Non-Household		-0.01%	-0.05%	0.01%	-0.02%

Bio5 - Cost recovery for bioresources

Table Validation

There are no validation errors in this table.

Lines 1 – 15

We have treated the capital value created from post 2020 investment arising from non-PAYG totex the same as the 2020 RCV. We have treated the RPI linked RCV the same and the CPIH linked RCV. We have set the RCV run off rate to match the average expected useful lives of the underlying assets. We have applied the same “natural” RCV run off rate to each of the RPI linked 2020 RCV, CPI linked 2020 RCV and the post 2020 investment. The natural rate of RCV run off remains appropriate for 2025-30 period. As a result we are not accelerating or decelerating the rate of recovery of expenditure added to the RCV between generations of customers. For each price control the average expected useful lives have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

Block A Lines 1 -5 RCV run off rate ~ RPI linked RCV

Line 1 “Natural” RCV run off rate

Proposed “natural” RCV run off rates (indexed by RPI) for wholesale bioresources. (The percentage of the RPI linked RCV that is depreciated annually). The “natural RCV rate” is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments.

The average expected useful lives of bioresources assets have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

The resulting asset life for bioresources is 16.1 years, corresponding to a “natural” RCV run off rate of 6.22% (reciprocal of asset life) for each year across AMP7 and AMP8.

Line 2 Adjustments to RCV run off rate to address transition from RPI to CPI

Proposed adjustments to the RCV run off rates (indexed by RPI) for wholesale Bioresources that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the RCV run off rate to address the transition from RPI to CPIH.

Line 3 Other adjustments to RCV run off rate

Proposed other adjustments to the RCV run off rates (indexed by RPI) for wholesale bioresources, that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the RCV run off rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 4 Total RCV run off rate to be applied

Proposed total RCV run off rates (indexed by RPI) for wholesale bioresources. Equals the sum of Bio5 lines 1 to 3.

Calculated.

Line 5 Method used to apply run-off rate (straight line or reducing balance)

The method used to apply the RCV run off rates (indexed by RPI) either in a straight line or a reducing balance. (Description of the accounting method used to depreciate the RPI linked RCV). We expect the same method to be used in 2025-30 as for 2020-25.

We have used a reducing balance approach to apply the RCV run off rates.

Block B Lines 6 -10 RCV run off rate ~ CPI-CPI(H) linked RCV

Line 6 "Natural" RCV run off rate

Proposed "natural" RCV run off rates (indexed by CPIH) for wholesale bioresources. (The percentage of the CPI(H) linked RCV that is depreciated annually). The "natural RCV rate" is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments.

The average expected useful lives of bioresources assets have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

The resulting asset life for bioresources is 16.1 years, corresponding to a "natural" RCV run off rate of 6.22% (reciprocal of asset life) for each year across AMP7 and AMP8.

Line 7 Adjustments to RCV run off rate to address transition from RPI to CPI

Proposed adjustments to the RCV run off rates (indexed by CPIH) for wholesale bioresources that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the RCV run off rate to address the transition from RPI to CPIH.

Line 8 Other adjustments to RCV run off rate

Proposed other adjustments to the RCV run off rates (indexed by CPIH) for wholesale bioresources, that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the RCV run off rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 9 Total RCV run off rate to be applied

Proposed total RCV run off rates (indexed by CPIH) for wholesale bioresources. Equals the sum of Bio5 lines 6 to 8.

Calculated.

Line 10 Method used to apply run off rate (straight line or reducing balance)

The method used to apply the RCV run off rates (indexed by CPIH) either in a straight line or a reducing balance. (Description of the accounting method used to depreciate the CPI(H) linked RCV). We expect the same method to be used in 2025-30 as for 2020-25.

We have used a reducing balance approach to apply the RCV run off rates.

Block C Line 11 -15 Post 2020 Investment Run off Rate

Line 11 "Natural" post 2020 investment run off rate

Proposed "natural" post 2020 investment run off rates (indexed by CPIH) for wholesale bioresources. The "natural RCV rate" is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments. Totex expenditure which is not recovered in the period through PAYG is to be added to "Post 2020 Investment."

The average expected useful lives of bioresources assets have been generated using an assessment of the engineering lives of each asset class and weighted using the gross MEAV.

The resulting asset life for bioresources is 16.1 years, corresponding to a "natural" RCV run off rate of 6.22% (reciprocal of asset life) for each year across AMP7 and AMP8.

Line 12 Adjustments to post 2020 investment run off rate to address transition from RPI to CPI
Proposed adjustments to the post 2020 investment run off rates (indexed by CPIH) for wholesale bioresources that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the RCV run off rate to address the transition from RPI to CPIH.

Line 13 Other adjustments to post 2020 investment run off rate
Proposed other adjustments to the post 2020 investment run off rates (indexed by CPIH) for wholesale bioresources, that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the RCV run off rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 14 Total post 2020 investment run off rate to be applied
Proposed total post 2020 investment run off rates (indexed by CPIH) for wholesale bioresources. Equals the sum of Bio5 lines 11 to 13.
 Calculated.

Line 15 Method used to apply run off rate (straight line or reducing balance)
The method used to apply the post 2020 investment run off rates (indexed by CPIH) either in a straight line or a reducing balance. We expect the same method to be used in 2025-30 as for 2020-25.

We have used a reducing balance approach to apply the RCV run off rates.

Block D Lines 16 -19 PAYG Rate – Bioresources

Line 16 “Natural” PAYG rate – Bioresources

Proposed “natural” PAYG rates for wholesale bioresources relevant to the wholesale bioresources revenue - totex projected in Bio4. These should be expressed as a percentage of totex forecast in each year. The “natural PAYG rate” is a rate which reflects the economic reality of the expenditure which the company is incurring and the long term nature of its investments.

We have calculated the “natural” PAYG rate as the rate which recovers operating expenditure (inclusive of infrastructure renewal expenditure) in the year that it is incurred and capex net of grants and contributions is added to the RCV and recovered from both current and future customers over time.

The natural PAYG rate is Opex divided by Totex net of grants and contributions calculated on a year by year basis, as follows:

	2020-21	2021-22	2022-23	2023-24	2024-25
Opex (£m) WWS1 line 11	15.0	15.1	15.1	14.9	15.1
Totex (net G&Cs) (£m) WWS1 line 21	25.6	25.2	25.5	24.7	24.0
PAYG rate (%)	58.73%	59.73%	59.40%	60.38%	63.04%
	2025-26	2026-27	2027-28	2028-29	2029-30
Opex (£m)	15.9	16.2	16.4	16.4	16.4
Totex (net G&Cs) (£m)	9.3	9.5	9.6	9.6	9.6
PAYG rate (%)	63.04%	63.04%	63.04%	63.04%	63.04%

Line 17 Adjustments to PAYG rate to address transition from RPI to CPI ~ Bioresources

Proposed adjustments to the PAYG rates for wholesale bioresources that the company considers are required to address issues arising from the transition from RPI to CPIH as the primary inflation index.

We are not proposing an adjustment to the PAYG rate to address the transition from RPI to CPIH.

Line 18 Other adjustments to PAYG rate ~ Bioresources

Proposed other adjustments to the PAYG rates for wholesale bioresources that the company wishes to make to enable it address issues such as the smoothing of bills.

We are not proposing an adjustment to the PAYG rate to address other issues. We have smoothed bills within the 2020-25 period on an NPV neutral basis using the functionality in the Ofwat financial model.

Line 19 Total PAYG rate ~ Bioresources

Proposed total PAYG rates to be applied to wholesale bioresources totex. Equals the sum of Bio5 lines 16 to 18.

Calculated.

Bio6 – Weighted average cost of capital for the bioresources control

Table Validation

There are no validation errors in this table.

In line with Ofwat's final methodology we agree that financeability should be assessed on a whole company level. We do not believe that it would be appropriate to assume different cost of capital for the water resources, water network plus, wastewater network plus, and bioresources businesses for the purposes of this exercise.

We have used Ofwat's early view of the cost of capital when compiling the business plan and assessing that the plan is financeable.

Ofwat's early view of the cost of capital represents a material reduction since PR14. This reduction has been passed on to customers via a reduction in the average household bill. In order to address consequential financeability issues, the notional dividend policy has also been updated to be consistent with the lower cost of equity. We deem that the business plan is financeable and delivers as a minimum an investment grade credit rating for both the notional and actual companies. Albeit with the resulting credit metrics being on the cusp of financeability under severe stress scenarios with significantly reduced headroom when compared against previous business plans.

We are not proposing different assumptions to those used to derive the early view of WACC for PR19, with the exception of the asset beta figure for line 6 which has been chosen to result in a wholesale WACC consistent with Ofwat's early view (in line with the table guidance).

We are not assuming any changes to assumptions between the 2020-25 (AMP7) and 2025-2030 (AMP8) periods.

We are not proposing and changes to Ofwat's early view of WACC between the notional and actual companies.

All assumptions are as per Table 1, Section 4, Appendix 12: Aligning risk and return of Delivering water 2020: Our methodology for the 2019 price review, with the exception of the Asset Beta for line 6 which has been chosen to result in a wholesale WACC consistent with Ofwat's early view (in line with table guidance).

Lines 1 Gearing

Net debt to RCV

Net debt to RCV the percentage share of debt in the capital structure of the notional company

Line 2 Total Market) Return (TMR)

Total Market Return (TMR)

The total yield required by investor to invest in a well-diversified benchmark index.

Line 3 Risk free rate (RFR)

The Risk Free Rate (RFR)

The estimated return for investment in an asset with zero risk.

Line 4 Equity Risk Premium (ERP)

The premium over the risk free rate required to invest in equities

The premium over the risk free rate required to invest in equities. Calculated as the difference between the total market return and the risk free rate. Calculated cells.

Line 5 Debt beta

Debt beta

A measure of undiversifiable risk faced by debt investors in water.

Line 6 Asset beta

Asset beta corresponding to the business risks of this control.

A measure of undiversifiable risk corresponding to the business risks of this control

This measure has been chosen to be 0.354, to result in a wholesale WACC (line 10) consistent with Ofwat's early view. Although this line requires data entered to 2 decimal places, we have entered the asset beta to 3 decimal places being for both years. If we had entered 0.35 neither the cost of equity (line 8) or WACC (line 10) would be consistent with the Ofwat early view.

Line 7 Re-levered equity beta

Re-levered beta, consistent with gearing from row 1 and debt beta assumption in row 5

A measure of undiversifiable risk faced by geared investors in this price control, assuming gearing at the notional 60%. Calculated cells.

Line 8 Cost of equity bioresources.

The calculated cost of equity using the capital asset pricing model: risk free rate + (equity risk premium x equity beta)

An estimate of the return required by equity investors in this price control company. Calculated cells.

Line 9 Cost of debt- bioresources.

Total cost of debt, including new and embedded debt, weighted: (cost of embedded debt x weighting of embedded debt) + (cost of new debt x weighting of new debt)

Cost of debt for the water resources price control consistent with Ofwat's early view.

Line 10 WACC ~ vanilla (pre-tax cost of debt and post-tax cost of equity)

The weighted average cost of capital, expressed using a pre-tax cost of debt and post-tax cost of equity

Cost of capital which will apply to the water resources price control. Calculated cells.

Section B

Lines 11 – 20 Wholesale WACC based on company's actual structure (nominal)

Duplicates data input for lines 1-10, based on actual, not notional, company structure.

We are not proposing any changes to Ofwat's early view of WACC between the notional and actual companies.

Line 11 = Line 1

Line 12 = Line 2

Line 13 = Line 3

Line 14 = Line 4

Line 15 = Line 5

Line 16 = Line 6

Line 17 = Line 7

Line 18 = Line 8

Line 19 = Line 9

Line 20 = Line 10

Bio 7 - Wholesale wastewater Bioresources special cost factors

Table Validation

There are no validation errors in this table.

Overview of the table

This table should capture any costs that the company considers should be excluded from comparative cost modelling (special cost claims) for the wholesale wastewater bioresources price control.

Welsh Water do not have any special cost factors related to the Wholesale wastewater Bioresources price control at this time, due to the on-going cost assessment working group, therefore the table has intentionally been left blank.