

# PR19 Water Services business plan Table commentaries

September 2018

## Contents

WS1 – Wholesale water operating and capital expenditure by business unit.....	1
WS1a – Wholesale water operating and capital expenditure by business unit including operating leases reclassified under IFRS16.....	10
WS2 – Wholesale water capital and operating enhancement expenditure by purpose .....	11
WS2a – Wholesale water cumulative capital enhancement expenditure by purpose.....	20
WS3 – Wholesale water properties and population .....	31
WS4 – Wholesale water other (explanatory variables).....	35
WS5 – Other wholesale water expenditure .....	38
WS7 – Wholesale water local authority rates .....	40
WS8 – Third party costs by business unit for the wholesale water service .....	43
WS10 – Transitional spending in the wholesale water service .....	45
WS12 – RCV allocation in the wholesale water service .....	46
WS12a – Change in RCV allocation in the wholesale water service.....	55
WS13 - PR14 wholesale revenue forecast incentive mechanism for the water service .....	59
WS15 - PR14 wholesale total expenditure outperformance sharing for the water service .....	62
WS17 - PR14 water trading incentive reconciliation.....	64
WS18 – Explaining the 2019 Final Determination for the water service .....	65
Wn1 - Wholesale network plus raw water transport and water treatment (explanatory variables) .....	70
Wn2 - Wholesale water network plus water distribution (explanatory variables).....	77
Wn3 - Wholesale revenue projections for the water network plus price control .....	87
Wn4 - Cost recovery for water network plus .....	98
Wn5 - Weighted average cost of capital for the water network plus control .....	101
Wn6 - Wholesale water network plus special cost factors .....	103
Wr1 - Wholesale water resources (explanatory variables) .....	105
Wr2 – Wholesale water resource opex .....	110
Wr3 - Wholesale revenue projections for the water resources price control .....	112
Wr4 - Cost recovery for water resources .....	124
Wr5 – Weighted average cost of capital for the water resources control.....	128
Wr6 - Water resources capacity forecasts .....	130
Wr7 - New water resources capacity forecast cost of options beginning in 2020-25 .....	135
Wr8 - Wholesale water resources special cost factors .....	138

## WS1 – Wholesale water operating and capital expenditure by business unit

### Table Validation

No validation errors appear in this table

#### Table overview

Blind years (2018-19 and 2019-20) & forecast years (post 2020) (A1-E36)

Water Totex reduces by £40m over the reporting period from 2017-18 to 2024-25. This reflects a £71m increase in the annual other capital expenditure over the same period offset by a reduction in the maintenance capital programme and £54m of operating cost efficiencies. A more detailed analysis of the movements in the capital programme is included in the line narratives for B12 – B20 below.

Annual Operating Costs are planned to decrease by £54m by 2024-25. This is driven by the following:

- £29m annual reduction in IRE, which is driven in part by efficiencies in the maintenance capital programme – particularly cost efficiencies resulting from the renegotiation and rationalisation of our low risk mains repair/replacement contract (the 'Network Alliance'). It is also driven by a change in mix of the work envisaged, which results in a lower proportional operating cost charge. Also, the re-classification of some lines of maintenance spend as enhancement in AMP7, for example in Leakage, has also contributed to a proportionate decrease in the IRE charge.
- A £25m reduction in other operating expenditure, which reflects the net impact of our operating cost efficiency programme in Water. Some of the key elements of this include:
  - £7m reduction in labour as a result of our labour efficiency programme. See commentary for WS5 for more details.
  - £6m reduction in support services costs, as a result of the support services efficiency programme.
  - £4m increases in recharges for principal use of assets into other business units.
  - £5m related to reduced outsourced costs, resulting from renegotiated contracts with third party suppliers
- Overall capital investment is increasing from 2020 by £236m. Maintenance capital reduces by £158m (including £70m of efficiency savings) and other capital expenditure increases by £394m in order to meet our stretching performance targets.
- A summary of the key movements in maintenance capital expenditure is detailed below. The maintenance analysis is before adjusting Renewals expensed in the year - Infrastructure.

AMP 6 to AMP 7 - Key Movements in Maintenance Spend	£m
1) Capital Efficiencies	(70)
2) Increase Maintenance Expenditure	
Increase Maintenance on Trunk Mains	13
Increased Maintenance Water Pumping Stations	22
Automation-Telemetry	10
Health and Safety Improvements	<u>14</u>
Sub-total	59
3) Decreased Maintenance Expenditure	
Efficiency impact on Network Ancillaries	(16)
Efficiency impact on Distribution Mains Clusters	(19)
Reduced Energy Schemes	<u>(7)</u>
Sub-total	(42)
4) Net other movements	(25)

5) Changes in Classification (Leakage)	(80)
Total Movement	(158)

For blind years Leakage has been included as Renewals expensed in the year – non infra to align with our PR14 plan, but in AMP7 we are including this as enhancement spend due to the significant programme where we are proposing to make a 15% reduction in leakage.

Other Capital investments increase by £394m from blind years to forecast years, which results in a £71m increase when comparing 2017-18 actuals with 2024-25. The significant movements are detailed in the line narratives on B12 to B20, below:

AMP 6 to AMP 7 - Key Movements in Other Capital Expenditure	£m
1) Capital Efficiencies	(59)
2) New enhancement Investment Cases	
Water Resilience	43
3) Increased Enhancement Investments	
Merthyr Superworks	73
Impounding reservoirs	79
Brecon Mega Catchment-NEP-Interruptions-Pembroke (WR)	66
Sub-total	218
4) Change in classification	80
Leakage	
5) Net other movements	112
Total Movement	394

#### Efficiency Programmes

Our operating cost efficiency programme in the Water business delivers annual savings of £9m by 2024-25. The programme is based upon a number of work streams, designed to identify end to end process efficiencies in our Water Treatment cycle. The table below summarises the work streams that comprise that end to end process efficiency review.

<b>Water Operational Efficiencies by Work Stream</b>							
	<b>18/19</b>	<b>19/20</b>	<b>20/21</b>	<b>21/22</b>	<b>22/23</b>	<b>23/24</b>	<b>24/25</b>
	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>	<b>£'000</b>
Energy Schemes	150	370	570	770	1,170	1,370	1,570
Water Treatment	52	581	1,234	1,881	2,356	2,571	2,838
Water Distribution	24	437	4,430	4,490	4,545	4,545	4,545
Total	<b>226</b>	<b>1,388</b>	<b>6,233</b>	<b>7,141</b>	<b>8,070</b>	<b>8,485</b>	<b>8,953</b>

Our Capital efficiency programme in Water delivers savings totalling £129m in forecast years when compared to blind years as a whole.

The level of efficiency is measured against the blind years out turn, 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 - 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 increase by £1.5m per annum from £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 £1.2m per annum (£1.8m), increased renewable energy generation (£2m per year) and the impact of lost energy derivative income which decreases by £1.7m by the end of AMP7 (we have no derivatives currently in place beyond 2022).

**Line A2 – Income treated as negative expenditure**

*Income received from sales which are external to the appointed business and which directly relate to the water processes. It should be input as a negative number. This will include:*

- Electricity sales from sources such as Hydro, PV, and wind to external parties.
- Electricity sales from back-up generators under the National Grid 'STOR'.
- Renewables Obligation Certificates (ROCs) and payments made under the non-domestic RHI and Feed-in Tariff schemes.

Income treated as negative operating costs comprise power income and recharges from the waste business for potable water (£2m per year).

Power income increases from £4.7m to £6.6m per annum from 2017-18 to 2024-25, which is driven by the RPE on power costs (described above) and increases in our hydrogenating capacity during AMP7

**Line A3 - Service charges - Discharge Consents**

*Total cost of service charges (abstraction licences and permits to discharge) by the Environment Agency or Canal and River Trust.*

*Assuming no atypicals, please ensure total equals WS5 sum of lines 6 to 9.*

We are forecasting that abstraction charges will move in line with inflation and have therefore modelled them at a flat cost. This includes NRW charges and discharge consent costs from Waste services.

**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 are not anticipating any cost increases from 2018-19 relating to Bulk Supply from other Water companies and therefore have left this static.

**Line A5- Renewals expensed in year (infrastructure)**

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

Infrastructure renewals expenditure in blind years is based upon actual spend incurred. Leakage has been included as Renewals expensed in the year – non infra to align with our PR14 plan, but in AMP7 we are including this as enhancement spend due to the significant programme where we are proposing to make a 15% reduction in leakage.

For forecast years the costs (excluding leakage) are budgeted on a historic average proportional basis, which equates to 25% of total spend on the relevant investment case lines. This results in a significantly different profile of spend in forecast years compared to blind years, but we believe that this is the likely outcome of our change in the mix of the work being forecast.

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 statutory accounts.

Line A7 – Other operating expenditure excluding renewals

*Any other operating costs.*

The PR19 costs on line A7 differ from those submitted at line 4J.7 in the 2017-18 APR, due to the principal use adjustment. The effect on each price control is summarised in the table below;

			For the 12 months ended 31 March 2018				
Line description			Water resources	Raw water distribution	Water treatment	Treated water distribution	Total
4J.7	~ Other operating expenditure excluding renewals	APR	7.390	1.266	31.367	49.520	89.543
7	~ Other operating expenditure excluding renewals	PUA	0.223	0.003	0.105	-2.746	-2.415
7	~ Other operating expenditure excluding renewals	WS1	7.613	1.269	31.472	46.774	87.128

The increases in Water Resources and Treated Water distribution as a proportion of Other Operating expenditure excluding renewals is a reflection of the changed work mix since earlier in AMP6 with the injection of significant additional funding in these areas from the Dam Safety programme. These proportions remain fairly consistent over the blind years and into AMP7.

A breakdown of the costs in each year and the year on year movements is summarised in the table below.

Total Other Operating Expenditure Excluding Renewals									
			Outturn	Outturn	Outturn	CPIH	CPIH	CPIH	CPIH
			18-19	19-20	20-21	21-22	22-23	23-24	24-25
			£'m	£'m	£'m	£'m	£'m	£'m	£'m
<b>Manpower</b>			40.2	41.1	34.7	33.8	33.0	32.7	32.7
<b>Chemicals</b>			5.5	5.0	3.9	4.0	3.7	3.3	4.6
<b>Materials</b>			2.1	2.1	1.5	1.5	1.5	1.5	1.5
<b>Transport Charges</b>			2.8	2.8	2.8	2.8	2.8	2.8	3.3
<b>Bought in Services</b>			5.1	5.1	3.5	3.7	3.7	3.1	3.6
<b>Total Establishment Costs</b>			0.9	0.9	0.9	0.9	0.9	0.9	0.9
<b>Other IT &amp; Telecommunications</b>			0.4	0.4	0.4	0.4	0.4	0.4	0.4
<b>Outsourced Contract Costs</b>			10.1	9.3	7.8	7.3	7.3	6.9	6.7
<b>Capitalisation &amp; Transfers</b>			(11.3)	(11.3)	(11.3)	(11.3)	(11.3)	(11.3)	(11.3)
<b>Water Total</b>			<b>55.8</b>	<b>55.4</b>	<b>44.2</b>	<b>43.1</b>	<b>42.0</b>	<b>40.3</b>	<b>42.4</b>
<b>G&amp;S and Other Water Direct</b>			34.6	30.2	32.2	30.9	30.6	29.7	28.6
<b>Net Operating Costs (Before PUA)</b>			<b>90.4</b>	<b>85.6</b>	<b>76.4</b>	<b>74.0</b>	<b>72.6</b>	<b>70.0</b>	<b>71.0</b>
<b>Principal Use Adjustment (PUA)</b>			(4.1)	(6.0)	(7.1)	(8.3)	(9.1)	(9.1)	(8.8)
<b>Total Net Operating Costs</b>			<b>86.3</b>	<b>79.6</b>	<b>69.3</b>	<b>65.7</b>	<b>63.5</b>	<b>60.9</b>	<b>62.2</b>

The table below shows the year on year movements by key category.

Key Movements Total Other Operating Expenditure Excluding Renewals									
			18-19	19-20	20-21	21-22	22-23	23-24	24-25
			£'m	£'m	£'m	£'m	£'m	£'m	£'m
<b>Manpower</b>			-	0.9	(6.4)	(0.9)	(0.8)	(0.3)	-
<b>Chemicals</b>			-	(0.5)	(1.1)	0.1	(0.3)	(0.4)	(1.3)
<b>Materials</b>			-	-	(0.6)	-	-	-	-
<b>Transport Charges</b>			-	-	-	-	-	-	0.5
<b>Bought in Services</b>			-	-	(1.6)	0.2	-	(0.6)	0.5
<b>Total Establishment Costs</b>			-	-	-	-	-	-	-
<b>Other IT &amp; Telecommunications</b>			-	-	-	-	-	-	-
<b>Outsourced Contract Costs</b>			-	(0.8)	(1.5)	(0.5)	-	(0.4)	(0.2)
<b>Capitalisation &amp; Transfers</b>			-	-	-	-	-	-	-
<b>Water Total</b>			-	<b>(0.4)</b>	<b>(11.2)</b>	<b>(1.1)</b>	<b>(1.1)</b>	<b>(1.7)</b>	<b>2.1</b>
<b>G&amp;S and Other Water Direct</b>			-	(4.4)	2.0	(1.3)	(0.3)	(0.9)	(1.1)
<b>Net Operating Costs (Before PUA)</b>			-	<b>(4.8)</b>	<b>(9.2)</b>	<b>(2.4)</b>	<b>(1.4)</b>	<b>(2.6)</b>	<b>1.0</b>
<b>Principal Use Adjustment (PUA)</b>			-	(1.9)	(1.1)	(1.2)	(0.8)	-	0.3
<b>Total Net Operating Costs</b>			-	<b>(6.7)</b>	<b>(10.3)</b>	<b>(3.6)</b>	<b>(2.2)</b>	<b>(2.6)</b>	<b>1.3</b>

1. **Direct Manpower** costs decrease by £7m by 2024-25 as a result of headcount reductions and the negotiation of a wider working window on standard rates of pay. See the commentary attached to WS5 for more details.
2. **Chemicals** - £1m of savings will be delivered through the Water Treatment Plant optimisation programme we are delivering with our partners Veolia.
3. **Transport**- Increase in costs of £0.5m in 2024-25 as a result of a fleet refurbishment programme that is designed to extend the life of the fleet, saving £1m on fleet replacement costs.
4. **Bought in Services** - £2m savings delivered through the AMP resulting from a number of minor savings initiative (deploying 4x4's instead of tankers, replacing long term hire of pumps, contract renewal of SRV cleaning contracts and our water sludge strategy). The increase in 2024-25 relates to ground and building maintenance cost which is being deferred to the end of the AMP.
5. **Outsourced contract work (including Minor Works)** - £3m of savings relating to our initiative to consolidate low risk reactive repair work with low risk planned capital maintenance, which combined with a rationalisation of the supplier base will deliver total savings of £10m per annum (£3m opex and £7m capex). The significant savings for the Network Alliance are generated in 2020-21, but there are further savings anticipated relating to this initiative in the remainder of the AMP.
6. **G&S** - £7m per annum relating to our efficiency programme targeted at support services. This comprises approximately 50% manpower reductions and 50% reductions in activity levels. This is front loaded to maximise the benefits throughout the forecast years 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 WS5 for more detail.

7. **Principal Use** - £4m 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 and financing cost of that asset or group of assets proportional to the estimated use of that asset by the relevant business area. The assets attracting principal use adjustments are IT and Facility charges

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 impacted by a number of issues. In 2017-18 we adjusted rates to take out the recharge of £1.2m (relating to s20 agreements) to NRW. This is shown in the third party cost line in 2017-18, and a similar adjustment has been made in subsequent years. From 2018-19 to 2020, costs move in line with inflation and the drop in 2021 reflects the change in price base (from out turn to 17-18 (CPIH deflated prices). The revaluation in 2021-22 is negligible, resulting from very minor net changes in the RCV. We have not forecast any further rates increases in forecast years.

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

*Total operating costs excluding third party services. Calculated as the sum of WS1 lines 1 to 8.*

Calculated as the sum of WS1 lines 1 to 8.

Line A10 – Third party services

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

Third party services include charges for non-potable water, bulk supplies, NRW recharges for s20 agreements, rechargeable Fire services and various third party costs including standpipes and ships' water. We do not foresee changes in the nature of these costs over and above CPI inflation.

Line A11 – Total operating expenditure

*Total operating expenditure for the wholesale business only within each business category. Calculated as the sum of WS1 lines 9 and 10.*

Calculated as the sum of WS1 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.*

Infrastructure maintenance capital reduces by £12m from 2017-18 to 2024-25. The largest change is in 2020-21, which reflects a change in mix of the work performed, but also the impact of the change in classification of leakage work as in the forecast years we are including this as enhancement spend due to the significant programme where we are proposing to make a 15% reduction in leakage.

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.*

The PR19 costs on line B13 differ from those submitted at line 4J.13 in the 2017-18 APR, due to the principal use adjustment. The effect on each price control is summarised in the table below;



## Welsh Water – Wholesale Water Service Table Commentaries

			For the 12 months ended 31 March 2018				
Line description			Water resources	Raw water distribution	Water treatment	Treated water distribution	Total
4J.13	Maintaining the long term capability of the assets - non-infra	APR	10.830	0.384	41.919	26.101	79.234
13	Maintaining the long term capability of the assets ~ non-infra	PJA	-1.178	-0.060	-0.161	11.546	10.147
13	Maintaining the long term capability of the assets ~ non-infra	WS1	9.652	0.324	41.758	37.647	89.381

The AMP7 maintenance spend is forecast to be comparable to the level of spend for the AMP6 blind years, c£33m per year. The forecast AMP7 schemes have been developed using a combination of deterioration modelling, bottom up assessment using our risk-based optimisation model to develop programmes of work for water pumping stations and water treatment works investments for example. Air valves, service reservoir programmes have been developed using a top down approach to budgeting supported by a review of the current age and where available condition of the current asset stock. The non-infrastructure maintenance schemes of work forecast to be undertaken are non- specific but significant investment programmes of work are planned at six water treatment works including Court Farm and Sluvad. We are also planning to undertake a programme of maintenance at our largest water pumping stations including SOR 1-2-3 and Bewdley Bank.

### Line B14 - Other capital expenditure ~ infra

*Any capital expenditure on infrastructure assets other than defined in WS1 line 12 excluding third party capex.*

An increase in the AMP7 Impounding Reservoir work mix, due to the Dam safety investment accounts for the increased proportion of Infra work in Water Resources. Also the treatment of Leakage in AMP7 explains the Treated Water distribution increase between AMPs.

Please see the commentary on WS2 for details of other capital expenditure for the forecast years.

### Line B15 - Other capital expenditure non infra

*Any capital expenditure on non-infrastructure assets other than defined in WS1 line 13 excluding third party capex.*

Please see the commentary on WS2 for details of other capital expenditure for the forecast years.

### 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 undertakers infrastructure charges.*

This reflects a steady state of spend based on the actual costs disclosed in the APR for Developer Services network reinforcement work which increases in AMP7 due to forecast increased activity. This increase in forecast years' activity is explained in the commentary for WS2.

### Line B17 - Total gross capital expenditure excluding third party services

*Total gross capital expenditure excluding third party services. Calculated as the sum of WS1 lines 12 to 16. This is a calculated cell.*

### Line B18 - Third party services

*Capital expenditure for providing third party services.*

These charges relate to costs associated with supply of non-potable water, and also 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 run at the same levels the end of this AMP with no capex spend forecasted in AMP7. In forecast years the capex spend relates to s20 capital recharges to NRW as a result of the Dam Safety projects on s20 schemes.

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 13 for years 2015-2025.*

Grants and Contributions are broadly flat (ignoring inflation in the blind years). This cost is mostly related to Developer Services activity, which we forecast to be maintained at current level of activity.

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 cash items.

Line C24 - Totex including cash items

*Totex including cash items. Calculated as the sum of WS1 lines 21 to 23.*

Calculated as the sum of WS1 lines 21 to 23.

Line D25 - Item 1

*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*

*These costs arise from the severe weather experienced in February and March 2018 which caused significant disruption across our operating area. Extreme snowfall, high winds and a rapid thaw resulted in enormous challenges and, in ensuring that service to affected customers were restored as quickly as possible, significant costs were incurred. In addition, there was a record number of bursts as a result of the subsequent thaw with a resultant high level of repair costs being incurred.*

These costs amounting to £7.3m arose from the severe weather experienced in February and March 2018 which caused significant disruption across our operating area. Extreme snowfall, high winds and a rapid thaw resulted in enormous challenges and, in ensuring that service to affected customers were restored as quickly as possible, significant costs were incurred. In addition, there was a record number of bursts as a result of the subsequent thaw with a resultant high level of repair costs being incurred. The costs have been 100% allocated to the Treated Water Distribution price control, in line with the allocation adopted in

the APR submission. It is now recognised that additional Water treatment costs may have been incurred as a result of the additional water put into supply as a result of the March weather event, however, these costs have not been identified here.

It is further recognised that there will be costs in 2018-19 associated with the summer extreme weather, but as this is on-going these costs are not yet available at this time.

Line D35- Total atypical expenditure)

*Total atypical expenditure. Calculated as the sum of WS1 lines 25 to 3.*

Calculated as the sum of WS1 lines 25 to 3.

Line E36 –Total expenditure

*Total expenditure. Calculated as the sum of WS1 lines 24 and 35.*

Calculated as the sum of WS1 lines 24 and 35.

## WS1a – Wholesale water operating and capital expenditure by business unit including operating leases reclassified under IFRS16

### Table Validation

No validation errors appear in this table

### Table overview

*This table is a restatement of table WS1, and should be completed on the basis that IFRS16 had not been implemented.*

*This table identifies totex by business unit and atypical expenditure and reflects table 1 of the 2017 Cost Assessment submission. It is also closely associated with pro forma 4D and 4J in the APR (as per RAG4) forecasts of capital expenditure for 2020-25 in this table should include the company's proposed transition expenditure in 2019-20 to ensure consistency with the 2020-25 totex forecasts in other tables in the business plan. Forecasts of capital expenditure in 2019-20 in this table should exclude the company's proposed transition expenditure as this is reported separately in WS10.*

### General comments

As there are no operating leases that will be reclassified under IFRS 16, the costs in this table will be as reported in WS1; refer to WS1 for line narrative.

## WS2 – Wholesale water capital and operating enhancement expenditure by purpose

### Table Validation

No validation errors appear in this table

#### General comments

Blind years (2018-19 and 2019-20): Categorisations, as 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.

There is an increase in overall levels of spend over the blind years period. With the exception of the Impounding reservoir investment case (see supporting document 5.8B PR19 IC: Reservoir Safety), there is an underlying fall in overall enhancement schemes as some larger schemes at Bryn Cowlyd and Tynywaun are completed in 2018-19. The fact that overall levels of capital investment increases over the blind years of AMP6 is due to the introduction of £24m of additional Water Resources enhancement spend on reservoirs (explained at line 25 – below)

There is no transition programme identified for the water service.

Line A1-B40: WINEP - NEP ~ making ecological improvements at abstractions (Habitats Directive, SSSI, NERC, BAPs)

*Capital - operating expenditure to deliver projects required to deal with the environmental impact of water abstraction during the report year.*

Blind years (2018-19 and 2019-20): We have a number of schemes to address NEP - Making ecological improvements at abstractions (Habitats Directive, SSSI, NERC, BAPs). These investments primarily impact Water Resources, and include two major schemes at Mayhill Fish Screens and Prioress Mill Habitat Intake Screen which are due to be completed by the end of AMP6.

Forecast years (post 2020): WINEP and NEP have not stated any requirement to improve Habitats Directive, or BAPS sites during the forecast years, as a result there are no costs forecasted.

A SSSI driver requirement identified in the WINEP at Leintwardine is included within this line.

Line A2-B41: WINEP - NEP ~ Eels Regulations (measures at intakes)

*Capital - operating expenditure on quality enhancement schemes listed in the NEP (or WINEP) either to improve intakes 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 FORECAST YEARS these are the outputs required by the Environment Agency (or Natural Resources Wales) under driver codes EE\_IMP and EE\_INV.*

Blind years: We have forecasted the same level of spend as incurred in 2017-18 of £0.030 in the blind years

Forecast years: WINEP3 has stated a requirement for an investigation relating to Eels regulations. We have shown one project in this line where the costs will be incurred in 2020-21 as part of the WINEP3 programme.

Line A3-B42: WINEP - NEP ~ Non-native invasive species

*Capital - operating expenditure required to deal with invasive non-native species.*

Blind years: There are no costs reported in this line for the blind years

Forecast years: The NEP has stated the requirement for investigation and options to manage or mitigate the impact from invasive non-native species (INNS). The INNS project will look at all sites across our operating area and sites where the highest risks are expected such as where water is transferred between water bodies.

This line identifies the schemes that relate to NEP for INNS identified from NRW, there are no WINEP INNS identified schemes. The company NEP 3 has stated under “options appraisal and investigations” two separate lines. These lines require the company to look at INNS in relation to transfer of water and biosecurity. INNS has been included here as an ongoing programme of work that will satisfy the delivery required by the NEP and continue after the deadline to continuously improve the investigation in readiness for any specified delivery required during AMP8.

Line A4-B43: Addressing low pressure

*Capital - operating expenditure to reduce the number of properties with low pressure.*

Blind years: The aim of this investment is to find solutions and reduce the number of customers who have long running low pressure issues with their water supply. Network hydraulic modelling and operational review has been used to assess which projects are more viable, and that all solutions will have a direct impact on the identified issue. We have assumed that the programme of work is a relatively even distribution of costs for the remainder of the AMP.

Forecast years: The aim of this programme of work is to find solutions and reduce the number of customers who have long running low pressure issues with their water supply. We have assumed that the programme of work is an even distribution across the forecast years. Network hydraulic modelling and operational review has been used to assess which projects are more viable, and that all solutions will have a direct impact on the identified issue. The rationale supporting this programme of work is detailed in the Customer Minutes Lost investment case. No material opex impact is expected from this investment.

Line A5-B44: Improving taste - odour - colour

*Capital - operating expenditure to deliver improvements to consumer acceptability of the drinking water (relating to colour, taste and odour).*

Blind years: We have a number of on-going schemes to address Improving taste - odour - colour which are due to complete later in the AMP. We have however, completed eight schemes this year see comments to the cumulative table (WS2a).

Forecast years: This programme has been detailed in the 5.8l Improving Acceptability of Water (AoW) improvement investment case. The investments will target the worst performing water quality zones for discolouration and water treatment works where manganese levels are below our internal target of 2 µg/l. This will result in improved levels of service to customers and lower levels of acceptability related complaints. The majority of the cases are prioritised to target those investments which will provide the largest benefits. The worst served customers AoW programme will target a small number of customers who have long term AoW issues. The spend profile has been targeted to achieve improvements at the WTW in particular during the first three years of AMP7. Linked with this programme of work is line B44 which includes an opex impact for these projects of £0.008m.

We have assumed that the programme of work is an even distribution of cost across the AMP cycle. Network hydraulic modelling and operational review has been used to assess which projects are more viable, and that all solutions will have a direct impact on the identified issue. All investment will have a direct beneficial impact on improving taste-odour-colour for customers, ultimately improving the metric for “Customer Acceptability”.

This line is made up of the following projects:

Project Name	Budget Post-Efficiency unless stated	WS2 Table Lines
<b>Acceptability of Water Worst Served Customers</b>	£3.056m	A5
<b>Zonal Studies projects to improve Acceptability of Water</b>	£92.965m	A5
<b>Acceptability Strategy Improvement Projects</b>	£5.033m	A5
<b>Water Treatment Works Manganese Improvements</b>	£16.837m	A5
<b>Total AoW Programme post efficiency challenge</b>	<b>£117.891m</b>	

Table 1 – Summary of the Line A5 Investment Programme

Line A6-B45: Meeting lead standards

*Capital - operating expenditure to meet lead standards. This includes expenditure to deal with the conditioning of water before entering distribution to reduce plumbosolvency, expenditure on replacing lead communication pipes owned by the company and any other lead related work including investigations.*

Blind years: There are no costs reported in this line for the blind years

Forecast years: The basis of this programme is to improve the Quality of water delivered to customers and focuses on improvements to the levels of lead by replacing service pipes as well as dis-infection by-products. This will include a Research and Development programme which will develop solutions to improve water treatment for new or existing substances which provides a challenge to our existing Water Treatment processes. The programme of work is detailed in the 5.8F Water Quality investment case and the investments within lines 6 and 13 summarised in Table 2 below.

The spend allocated here will improve water quality and where the service pipe results in regular interruptions to a single properties supply or reduces pressure there will be a secondary benefit by improving service in these areas.

The investments included in this line will improve the water quality but is judged not to be part of the AoW programme of work.

Project Name	Budget Post-Efficiency unless stated	WS2 Table Lines
Disinfection by-products R & D	£0.686m	A13
Disinfection by-products Alaw WTW improvements	£0.713m	A13
Replacement of supply pipes for an additional 3,500 customers	£10.013m	A6
Replacement of lead supply pipes for disadvantaged customers	£5.034m	A6
<b>Total Quality Programme post efficiency challenge</b>	<b>£16.446m</b>	

Table 2 – Summary of the Lines A6 & A13 Investment Programme

Line A7-B46: Supply side enhancements to the supply-demand balance (dry year critical - peak conditions)

*Capital - operating expenditure to enhance the supply - demand balance. Includes expenditure associated with schemes to deliver supply side (resource and production options) enhancements to supply - demand capacity in dry year critical - peak conditions.*

Blind years: There are a couple of schemes associated with lines 7 and 8. One of these schemes concerns the transfer of raw water from Llys y Fran Reservoir to Preseli WTW, and here the costs have been split equally across these two lines, as it is deemed to address each output in equal measure.

The other spend here, relates to the development and production of the Water Resources Management Plan (WRMP) the costs of which have been split equally across all four lines of 7 – 10. Given the “planning” nature of these costs, which are incurred to determine if there is a need to pursue further capital investment, the project will not in itself provide an output in the supply demand table.

Forecast years: The schemes identified within the WRMP are required for Annual Average conditions and provide sufficient benefit to meet critical period deficits without any additional cost therefore the value of these schemes are only shown on WS2 Line 8. There are no demand side schemes identified in our plan. The total opex impact associated with the production of the WRMP in AMP7 and Tywyn Aberdyfi investments are shown in line B47 at £0.996m pre-efficiency split between resource and raw water distribution. The programme of work is detailed in the 5.8A Water Resources investment case and the capex investments are summarised in Table 3 below.

Project Name	Budget Post Efficiency unless stated	WS2 Table Lines
<b>Pembrokeshire Water Resource Zone Investments - 8206</b>	£11.514m	A8
<b>Production of the Drought Plan inc Environmental Studies</b>	£0.699m	A8
<b>Production of WRMP during FORECAST YEARS</b>	£2.263m	A8
<b>Tywyn Aberdyfi Water Resource Zone Investments - 8021 capex</b>	£6.378m	A8
<b>Total Water Resources Supply Side Enhancements Programme post efficiency challenge</b>	<b>£20.854m</b>	

Table 3 – Summary of the Line A8 Investment Programme

Line A8-B47: Supply side enhancements to the supply-demand balance (dry year annual average conditions)  
*Capital - operating expenditure to enhance the supply-demand balance. Includes expenditure associated with schemes to deliver supply side (resource and production options) enhancements to supply demand capacity in dry year annual average conditions.*

Blind years: See Line A7.

Forecast years: The cost of producing WRMP and DP's have been included within this line plus the cost of any schemes to fulfil any deficits identified within these plans. It has been concluded that schemes to achieve the stated 1 in 200 year drought will be submitted as part of resilience and has been excluded here. There are two schemes with opex associated with them, line B47 two projects which are contributing to the Supply side enhancements to the supply-demand balance (dry year annual average conditions), the production of WRMP and enhancements in the Tywyn Aberdyfi resource zone.

Line A9-B48: Demand side enhancements to the supply-demand balance (dry year critical - peak conditions)  
*Capital - operating expenditure to enhance the supply-demand balance. Includes expenditure associated with schemes to deliver demand side (distribution and customer options) enhancements to supply - demand capacity in dry year critical - peak conditions.*

Blind years: Lines 9 – 10 - In addition to the WRMP schemes above the two schemes below have been equally proportioned in these lines, namely the work on WRMP Demand forecast factors and also Smart metering project at Tywyn and Aberdyfi. Both of these schemes are deemed to address each of lines 9 and 10 equally. Forecast years: The cost of producing WRMP and DP's have been included within line 8 as annual average scenario will be fulfilled prior to any critical period scenarios. It has been concluded that schemes to achieve the stated 1 in 200 year drought will be submitted as part of resilience and has been excluded here.

Line A10-B49: Demand side enhancements to the supply-demand balance (dry year annual average conditions)

*Capital - operating expenditure to enhance the supply - demand balance. Includes expenditure associated with schemes to deliver demand side (distribution and customer options) enhancements to supply - demand capacity in dry year annual average conditions*

Blind years: See Line A9.

Forecast years: The cost of producing WRMP and DP's have been included within line 8 as Annual average scenario will be fulfilled prior to any critical period scenarios. It has been concluded that schemes to achieve the stated 1 in 200 year drought will be submitted as part of resilience and has been excluded here.

Line A11-B50: New developments

*Capital - operating expenditure associated with the provision of local distribution infrastructure and non-infrastructure assets for water service to provide for new customers with no net deterioration of existing levels of service. The capital cost of connecting a new property (including the cost of a meter, communication pipe and boundary stop tap valve etc) should be recovered through the connection charge and should not be included in this line.*



**Blind years:** Included in this line are schemes to address new developments and in addition we have included a Water Network Scheme - Hereford City 18, which is a growth scheme due to an increase in existing customers but does not satisfy the guidance for its inclusion on lines 7 – 10.

**Forecast years:** The programme of work associated with these lines has been developed using the forecast level of growth and development supported by targeted studies and using the blind years costs to develop the programme of work. The spend profile has been developed based on forecasts of locations and timescales of growth. We have included Infrastructure Network Reinforcement expenditure in this line with the associated opex for the Water Network Growth Programme reported in line B50.

We have assumed that this line is the water equivalent of line 25 in Wastewater's Table WWS2 'New Development and Growth'.

Further information can be found in our 5.8K Water Network plus Growth investment case and for the A11 capex projects within Table 4 below. Line B50 is a total pre efficiency opex of £0.040m associated with the cost of operating new network assets associated with growth.

<b>Project Name</b>	<b>Budget Post-Efficiency unless stated</b>	<b>WS2 Table Lines</b>
<b>Water Network Growth Programme – CAPEX</b>	£8.847m	A11
<b>Water Requisitions (On-site - Site-specific)- CAPEX</b>	£29.715m	A11
<b>Infrastructure Network Reinforcement - CAPEX</b>	£4.440m	A11
<b>Total Water Network Growth Programme post efficiency challenge</b>	<b>£43.002m</b>	

Table 4 – Summary of the Lines A11 Investment Programme

**Line A12-B51: New connections element of new development (CPs, meters)**

*The capital - operating cost of connecting a new property (including the cost of a meter, communication pipe and boundary stop tap valve etc.).*

**Blind years:** This is a new line for this year and we have identified several schemes which provide the new connections element of new development (CPs, meters).

**Forecast years:** The new connections element of growth has been defined as a separate investment line. This covers the opex and capex costs associated with new connections and detailed within the 5.8K Water Network plus Growth investment case. Line A12 is based on the forecast large diameter connections costs which are capitalised. We have shown the new connections costs for small diameter connections as enhancement opex in line B51.

**Line A13-B52: Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)**

*Capital - operating expenditure to address raw water deterioration.*

**Blind years:** There are several schemes in our programme of works to address raw water deterioration (THM, nitrates, Crypto, pesticides, others), However, also assigned to this line, are two major water treatment works schemes at Bryn Cowlyd and Tynywaun which complete in early 2018-19. The £9m spend planned for 2019-20 relates to the investment to address water quality issues in the Merthyr Tydfil area (£6.720m) and numerous disinfection by-product schemes (totalling £2.320m)

**Forecast years:** See commentary on line A6.

**Line A14-B53: Resilience**

*Capital - operating expenditure to improve resilience. This relates to expenditure to manage the risk of giving 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 ESL04).*

**Blind years:** We have forecasted the same level of spend up to the end of this AMP as reported in 2017-18.

Forecast years: This line identifies the schemes that the company are delivering as part of resilience, new pipelines and additional clean water storage.

We have included the:

- Vowchurch Drought resilience scheme as there is added benefit to providing this scheme: this will link 2 WRZ together providing additional resilience to Vowchurch WRZ as part of a new requirement to ensure supplies during a 1 in 200 year drought event.
- Brecon Beacons Mega Catchment as a whole as this new approach which will provide more funding at our catchments and ultimately by reducing the need for treatment at our works.
- Emergency planning has moved to a more risk based approach and has identified schemes that are responding to the National Flood Resilience Review.
- WTW – sludge strategy and Contact tank bypass improvements.
- SRV enhancements to post tensioned steel tanks and Herefordshire volume contained with SRV's.

This line includes investment drawn from multiple investment areas to tackle resilience issues that we have identified. Line B53 includes the opex for the Vowchurch 1 in 200 Drought resilience project. A summary of the projects included within the £124.347m programme is shown below:

Investment Case where further detail can be found	Projects Overview	Budget Post-Efficiency unless stated
5.8A Water Resources	Phase 1 delivery of improvements for the development of the Brecon Beacons Mega catchment	£9.000m
5.8A Water Resources	Improvements to the Vowchurch water resource zone to achieve a 1 in 20 Drought resilience score	£5.831m
5.8A Water Resources	NRW NEP-SGZ	£16.299m
5.8F Water Quality	Installation of assets to facilitate Contact tank cleaning at Water Treatment Sites and improving Felindre WTW resilience	£12.883m
5.8H Customer Minutes Lost service improvement	Network Resilience Schemes	£5.308m
5.8H Customer Minutes Lost service improvement	Post tensioned Steel Tanks replacement	£13.581m
5.8H Customer Minutes Lost service improvement	Range of projects to install additional storage, strategic pipelines and plan future raw and treated water improvements and mitigation plans	£42.467m
5.8H Customer Minutes Lost service improvement	A range of projects to improve our emergency planning capability	£0.541m
5.8H Customer Minutes Lost service improvement	Range of IS projects to improve systems and provide greater resilience	£9.340m
	<b>Principal use adjustment</b>	£9.097m
<b>Total Resilience Programme post efficiency challenge</b>		<b>£124.347m</b>

Table 5 – Line A14 Resilience Programme of Work

Line A15-B54: SEMD

*Capital - operating expenditure on schemes 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: We have a number of SEMD schemes included for 2017-18 and the costs in this line is in line with our business plan programme of works for SEMD.

Forecast years: This line includes work that is required to meet our obligation under SEMD 1988. The investment includes sites that are of category 2H, 2L, 1H and 1L. The detail is included within the 5.8F Water Quality investment case which outlines the planned programme of work.

A risk assessment of the assets was carried out in previous years resulting in a programme of work which commenced during AMP5 to ensure compliance. This will continue until full compliance is achieved. In addition, the critical Assets scorecard has also been reviewed to inform the programme of sites to be included during AMP 7. The split between the price controls is our best estimate of the programme that will be delivered in AMP7, which is dealing with different types of assets from AMP6.

Line A16-B55: Non-SEMD related security enhancement

*Capital - operating 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.*

Forecast years: This line includes work that is required to meet our obligation under SEMD 1988. The investment includes sites that are of category 2H, 2L, 1H and 1L. The detail is included within the 5.8F Water Quality investment case which outlines the planned programme of work.

Line A17-B56: WINEP - NEP ~ Drinking Water Protected Areas (schemes)

*Capital - operating expenditure on schemes to either avoid additional treatment or reduce current treatment (surface and ground-waters) in FORECAST YEARS and which is associated with Drinking Water Protected Areas under Article 7 of the Water Framework Directive.*

Forecast years: This line includes the catchments improvement work that is required to be delivered to avoid the need for additional treatment and is required under the WINEP for the EA. The total enhancement value of the project costs for line A17 is £0.741m post efficiency.

Line A18-B57: WINEP - NEP ~ Water Framework Directive measures

*Capital - operating expenditure on WFD-driven measures to improve, protect or ensure no deterioration in the status or potential of surface water or groundwater where the measures arise from PR14 investigations or sustainable abstraction work.*

Forecast years: This line includes work that is required under the NEP3 for NRW and WINEP for EA relating to sites that are artificial and heavily modified water bodies (A/HMWB) and causing barriers to fish migration. This is a study in the first instance which will define where fish barriers can be removed. Numbers of barriers removed will depend on the study and removal cost per site and will be prioritised using cost benefit and risk. The investment in this line does not include any schemes for sustainable abstractions.

More details regarding the projects that make up this programme of work can be found within the 5.8A Water Resources investment case. The total enhancement value of the project costs for line A18 £2.545m post efficiency.

Line A19-B58: WINEP - NEP ~ Investigations

*Capital - operating expenditure on environmental investigations and options appraisals listed in the NEP (or WINEP) for AMP5, blind years or FORECAST YEARS except where line definitions require costs to be reported elsewhere in this table eg line 2.*

Blind years: We have included in this line the schemes that we had identified as “NEP Drinking Water Protected Areas” in the Annual Performance Review and include such schemes as Catchment Reservoir Modelling.

Forecast years: There are no investigations currently agreed within the NEP or WINEP for input in this line.

Line A20-B59 Improvements to river flows

*Capital - operating expenditure relating to reducing abstraction licences (unless captured elsewhere in this table, principally in WS2 line 1 or 14).*

Forecast years: This line identifies the schemes that the company are delivering that will provide a benefit to flows within the catchment system and includes schemes at Intakes and Boreholes. One of the elements of abstraction reform will take effect by improving the standards required to monitor compliance due to changes in the EA-NRW best practice meter guide. As a result there will be some abstractions where it will be more cost beneficial to revoke the licence and return the water to its original water course than to invest in upgrading the abstraction site. The post efficiency capex for this line is £2.216m.

Line A21-B60: Metering (excluding cost of providing metering to new service connections) for meters requested by optants

*Metering (excluding cost of providing metering to new service connections) for optants.*

Blind years: The metering programme provides a continual programme of works and as a result we have provided the costs in each year to refer to completed in the year. The remaining years are based on forecast spends for new connections - metered properties on an annual basis.

Forecast years: Line 21 contains the investment for the domestic meter options programme of work. The programme is based on the current levels of work and is in response to customers requesting the installation of a meter. We do not plan to proactively or compulsorily install meters during AMP7. The proposed programme of work has been outlined in the 5.8K Water Network plus Growth investment case. The total enhancement budget for customer meters is planned to be £12.926m post-efficiency challenge.

Line A22-B61: Metering (excluding cost of providing metering to new service connections) for meters introduced by companies

*Metering (excluding cost of providing metering to new service connections) for meters introduced by companies (irrespective of whether these meters are used for charging).*

Blind years: See Line A21.

Forecast years: Line 22 contains the investment for the selective metering. The programme has a flat profile because it is based on the current levels of work. The proposed programme of work is outlined in the 5.8K Water Network plus Growth investment case. The total enhancement budget for customer meters is planned to be £0.738m post-efficiency challenge.

Line A23-B62: Metering (excluding cost of providing metering to new service connections) for businesses

*Metering (excluding cost of providing metering to new service connections) for businesses and other non-household customers.*

Blind years: See Line A21.

Forecast years: Line 23 contains the investment for the business meters. The programme has a flat profile because it is based on the current levels of work and is in response to customers requesting the installation of a meter. We do not plan to proactively or compulsorily install meters during AMP7. The proposed programme of work is outlined in the 5.8K Water Network plus Growth investment case. The total enhancement budget for business optant meters is planned to be £0.020m post-efficiency challenge.

Line A24-B63: Capital expenditure purpose ~ Cwm Taf Water Supply 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: The spend profile has been estimated based on the feasibility and procurement work as well as purchase of the new site and obtaining planning permission. We have shown all the costs for this scheme as enhancement. Further details of this project can be found within the 5.8E Cwm Taf Water Supply Strategy investment case.

Line A25-B64: Capital expenditure purpose ~ Impounding Reservoirs

*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: Water Resources has a combined £24m of spend in 2018-19 and 2019-20, includes a programme of increasing spillway and pipework capacity, and enhancing asset resilience. This additional investment, partly necessitated by the introduction of the new guidelines arising out of the Reservoirs Act, continues into AMP7.

Forecast years: Some of the cost of the impounding reservoir programme is reported as enhancement. The impounding reservoirs programme is set out within the 5.8B Reservoir Safety investment case.

**Line A26-B65: Capital expenditure purpose ~ Leakage**

*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: Leakage spend in the blind years is treated as either Renewals expensed in the year (infrastructure) or maintaining the long term capability of the asset infra in line with our PR14 business plan.

Forecast years: The spend profile has been estimated based on the forecast level of spend to achieve our leakage target. This investment is not required to meet our supply - demand balance but instead is aimed at our long-term sustainability targets and has therefore been separated from lines 7-10. Further details are set out in our 5.8J Leakage improvement investment case. As we are intending that our leakage will be below the Economic level of leakage in AMP7, we are treating the leakage costs as enhancement.

**Line A27-B66: Capital expenditure purpose ~ Interruptions to Supply**

*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 investment is targeted at improving our performance on the key customer metric of water supply interruptions, which is a significant programme for us in AMP7, and does not fit with any of the other lines provided. The programme of work along with the benefits from other investment programmes will deliver the targeted CML target value of 8 mins/customer during AMP7.

The spend profile has been developed from several specific programmes of work, each of which is described in more detail through the 5.8H Customer Minutes Lost service improvement investment case. The three projects included within the Interruptions to Supply line are summarised in Table 7 below.

<b>Investment Case</b>	<b>Project Overview</b>	<b>Cost</b>
<b>5.8H Customer Minutes Lost service improvement</b>	Addressing Interruptions to supply for worst served customers	£7.131m
<b>5.8H Customer Minutes Lost service improvement</b>	Trunk mains flow metering, enhancements	£7.299m
<b>5.8H Customer Minutes Lost service improvement</b>	SMART (Water) improvements to network monitoring and control	£7.702m
<b>Total Interruptions to supply Programme post efficiency challenge</b>		<b>£22.132m</b>

Table 7 - Line A27 Interruptions to Supply Programme of work

## WS2a – Wholesale water cumulative capital enhancement expenditure by purpose

### Table Validation

No validation errors appear in this table

#### General comments

Blind years (2018-19 and 2019-20) There is a large increase in project completion over the last two years of the AMP, with the completion and commissioning of some fairly major Water treatment work projects, such as Bryn Cowlyd and Tynywaun, and also the completion of many of the Distribution Zonal Investment packages of work by the end of the AMP. The schemes allocated in the cumulative expenditure table are based on financial scheme completions and may not be in the same year that the outputs are claimed

Forecast years (post 2020) our analysis for this table is based on the assessment of the clean water enhancement programme and the identification of those enhancement schemes which have already been identified and a completion date forecast, see Table 1 and the bullets below.

The rest of our enhancement investment programme it is built up through a series of budgets designed to meet the targets set out in our business plan, which have been set out within the commentary for Table 2. This approach 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 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 2A line numbers of schemes which have a scope of work and forecast completion date. Further information about the investment programmes can be found in the commentary for Table WS2.

Investment Cases	Project Name	Ofwat Table 2A Line No.
<b>5.8F Water Quality</b>	Disinfection by products Alaw improvements	A13
<b>5.8A Water Resources</b>	Vowchurch 1 in 20 Drought resilience capex	A14
<b>5.8A Water Resources</b>	Tywyn Aberdyfi - 8021 capex	A8
<b>5.8A Water Resources</b>	Pembrokeshire - 8206	A8
<b>5.8E Cwm Taf Water Supply Strategy</b>	WTW - Merthyr WTW Non Infra Element, Network Infra and Non infra elements	A24
<b>5.8H Customer Minutes Lost service improvement</b>	WTW Sludge Strategy - Felindre Wastewater Centrifuge Scheme	A14
<b>5.8I Acceptability of Water service improvement</b>	Cefn Llan Manganese Removal Scheme	A5
<b>5.8I Acceptability of Water service improvement</b>	WTW Manganese - Alaw	A5
<b>5.8I Acceptability of Water service improvement</b>	WTW Manganese - Alwen	A5
<b>5.8I Acceptability of Water service improvement</b>	WTW Manganese - Penycefn	A5
<b>5.8I Acceptability of Water service improvement</b>	WTW Manganese - Cefn Dryskoed	A5
<b>5.8I Acceptability of Water service improvement</b>	WTW Manganese - Pendine	A5

<b>5.8H Customer Minutes Lost service improvement</b>	Capel Curig Abandonment	A14
<b>5.8H Customer Minutes Lost service improvement</b>	Additional storage at Quarrieside tanks to manage Taff Trunk risk	A27
<b>5.8H Customer Minutes Lost service improvement</b>	Hereford SRV Resilience	A14

Table 1 – Summary of the Named Water Schemes

Line A1: WINEP - NEP ~ Making ecological improvements at abstractions (Habitats Directive, SSSI, NERC, BAPs)

*Cumulative capital expenditure on projects delivered in the report year required to deal with the environmental impact of water abstraction during the report year.*

Blind years: The increase in 2018-19 due to the scheduled completion of a number of schemes including Llanerch Boreholes (£1.4m), and a number of fish screen projects at Crowhill (£1.6m), Mayhill (£1.6m), Canaston Bridge (£1.2m) and Llechryd (£1.2m).

A further increase to £10.5m in 2019-20 is due to the scheduled completion of the Prioress Mill Intake screens.

Forecast years (post 2020): WINEP and NEP have not stated any requirement to improve Habitats Directive, or BAPS sites during the forecast years, as a result there are no costs forecasted.

A SSSI driver requirement identified in the WINEP at Leintwardine is included within this line.

Line A2: WINEP - NEP ~ Eels Regulations (measures at intakes)

*Cumulative capital expenditure on quality enhancement schemes listed in the NEP (or WINEP) to improve intakes to prevent the entrainment of fish to meet the requirements of the Eels Regulations delivered in the report year.*

Blind years: Following our completion of the investigations with Eel Regulation drivers scheduled in the AMP6 NEP we are progressing with measures identified in the investigations for completion by the end of AMP6.

Forecast years: WINEP3 has stated a requirement for an investigation relating to Eels regulations. We have shown one project in this line where the costs will be incurred in 2020-21 as part of the WINEP3 programme.

Line A3: WINEP - NEP ~ Non-native invasive species

*Cumulative capital expenditure on schemes delivered in the report year required to deal with invasive non-native species.*

Forecast years: The NEP has stated the requirement for investigation and options to manage or mitigate the impact from invasive non-native species (INNS). The INNS project will look at all sites across our operating area and sites where the highest risks are expected such as where water is transferred between water bodies. This line identifies the schemes that relate to NEP for INNS identified from NRW, there are no WINEP INNS identified schemes. The company NEP 3 has stated under “options appraisal and investigations” two separate lines. These lines require the company to look at INNS in relation to transfer of water and biosecurity. INNS has been included here as an ongoing programme of work that will satisfy the delivery required by the NEP and continue after the deadline to continuously improve the investigation in readiness for any specified delivery required during AMP8.

Line A4: Addressing low pressure

*Cumulative capital expenditure on schemes delivered in the report year to reduce the number of properties with low pressure.*

Blind years: The aim of this investment is to find solutions and reduce the number of customers who have long running low pressure issues with their water supply. Network hydraulic modelling and operational review has been used to assess which projects are more viable, and that all solutions will have a direct

impact on the identified issue. We have assumed that the programme of work is a relatively even distribution of costs for the remainder of the AMP.

Forecast years: The aim of this programme of work is to find solutions and reduce the number of customers who have long running low pressure issues with their water supply. We have assumed that the programme of work is an even distribution across the forecast years. Network hydraulic modelling and operational review has been used to assess which projects are more viable, and that all solutions will have a direct impact on the identified issue. The rationale supporting this programme of work is detailed in the 5.8H Customer Minutes Lost service improvement investment case. No material opex impact is expected from this investment

Line A5: Improving taste - odour - colour

*Cumulative capital expenditure to deliver improvements to consumer acceptability of the drinking water (relating to colour, taste and odour) and delivered in the report year.*

Blind years: A large increase in completed zonal distribution network schemes to increase the safety and acceptability of drinking water in 2019-20 including schemes at Rhymney High Level (£6.6m), Porth Trunk Mains (£4.4m) and Highfield Maerdy (£11.8m).

The higher value schemes completing over the remainder of AMP6 are summarised in the table below.

		2018/19	2019/20
<b>Previously Untreated Supplies</b>	<i>Ty Neuadd PUTS Access Road Refurbishment</i>	0.022	
	<i>SAOW Former PUTS - Manganese Hotspot</i>	0.436	
	<i>Cefn Golau PUTS</i>	0.326	
<b>Acceptability of Water Schemes</b>	<i>Crai PODDS &amp; DWI Completion Works</i>		0.278
	<i>Kinmell Bay 12" Main</i>		1.376
<b>Network Distribution Zonal Investments</b>	<i>Rhymney High Level</i>		6.600
	<i>Porth Trunk Mains Abandonment</i>		0.018
	<i>Rhiwgarn at Trebanog Mai</i>		0.433
	<i>Porth Trunk Mains</i>		4.432
	<i>Sub Supply System Boundary</i>	0.412	
	<i>Station Road Ynyshir</i>		0.931
	<i>Duke of York Tylorstown</i>		0.417
	<i>Highfields Maerdy Mains</i>	0.311	
	<i>North Road Ferndale Main</i>		0.482
	<i>Area Fed By Sub Supply</i>		0.101
	<i>Paynters at Trebanog</i>		1.056
	<i>Pwllgwaun Mains</i>		0.552
	<i>Highfield Maerdy - Main</i>		11.789
	<i>Ynyshir 10" Main</i>		1.219
	<i>Area Fed By Sub Supply</i>		0.123
	<i>Other smaller schemes &amp; Support costs</i>	1.043	1.044
<b>Total</b>		<b>2.551</b>	<b>30.851</b>

Forecast years: This programme has been detailed in the 5.8I Acceptability of Water service improvement investment case. The investments will target the worst performing water quality zones for discolouration and water treatment works where manganese levels are below our internal target of 2 µg/l. This will result in improved levels of service to customers and lower levels of acceptability related complaints. The majority of the cases are prioritised to target those investments which will provide the largest benefits. The worst served customers AoW programme will target a small number of customers who have long term AoW issues. The spend profile has been targeted to achieve improvements at the WTW in particular during the



first three years of AMP7. Linked with this programme of work is line B44 which includes an opex impact for these projects of £0.008m.

We have assumed that the programme of work is an even distribution of cost across the AMP cycle. Network hydraulic modelling and operational review has been used to assess which projects are more viable, and that all solutions will have a direct impact on the identified issue. All investment will have a direct beneficial impact on improving taste-odour-colour for customers, ultimately improving the metric for “Customer Acceptability”.

This line is made up of the following projects:

Project Name	Budget Post-Efficiency unless stated	WS2 Table Lines
<b>Acceptability of Water Worst Served Customers</b>	£3.056m	A5
<b>Zonal Studies projects to improve Acceptability of Water</b>	£92.965m	A5
<b>Acceptability Strategy Improvement Projects</b>	£5.033m	A5
<b>Water Treatment Works Manganese Improvements</b>	£16.837m	A5
<b>Total AoW Programme post efficiency challenge</b>	<b>£117.891m</b>	

Table 1 – Summary of the Line A5 Investment Programme

Line A6: Meeting lead standards

*Cumulative capital expenditure on schemes delivered in the report year to meet lead standards. This includes expenditure to deal with the conditioning of water before entering distribution to reduce plumbosolvency, expenditure on replacing lead communication pipes owned by the company and any other lead related work including investigations.*

Forecast years: The basis of this programme is to improve the Quality of water delivered to customers and focuses on improvements to the levels of lead by replacing service pipes as well as dis-infection by-products. This will include a Research and Development programme which will develop solutions to improve water treatment for new or existing substances which provides a challenge to our existing Water Treatment processes. The programme of work is detailed in the 5.8F Water Quality investment case and the investments within lines 6 and 13 summarised in Table 2 below.

The spend allocated here will improve water quality and where the service pipe results in regular interruptions to a single properties supply or reduces pressure there will be a secondary benefit by improving service in these areas.

The investments included in this line will improve the water quality but is judged not to be part of the AoW programme of work.

Project Name	Budget Post-Efficiency unless stated	WS2 Table Lines
<b>Disinfection by-products R &amp; D</b>	£0.686m	A13
<b>Disinfection by-products Alaw WTW improvements</b>	£0.713m	A13
<b>Replacement of supply pipes for an additional 3,500 customers</b>	£10.013m	A6
<b>Replacement of lead supply pipes for disadvantaged customers</b>	£5.034m	A6
<b>Total Quality Programme post efficiency challenge</b>	<b>£16.446m</b>	

Table 2 – Summary of the Lines A6 & A13 Investment Programme

Line A7: Supply side enhancements to the supply-demand balance (dry year critical - peak conditions)

*Cumulative capital expenditure on schemes delivered in the report year to enhance the supply-demand balance. Includes expenditure associated with schemes to deliver supply side (resource and production options) enhancements to supply demand capacity in dry year critical - peak conditions.*

The cost of producing WRMP and DP's have been included within this line plus the cost of any schemes to fulfil any deficits identified within these plans. The costs have been split equally across all four lines of 7 – 10 as it is deemed that they address each output in equal measure.

**Blind years:** There are a couple of schemes associated with lines 7 and 8. One of these schemes concerns the transfer of raw water from Llys y Fran Reservoir to Preseli WTW, and here the costs have been split equally across these two lines, as it is deemed to address each output in equal measure.

The other spend here, relates to the development and production of the Water Resources Management Plan (WRMP) the costs of which have been split equally across all four lines of 7 – 10. Given the “planning” nature of these costs, which are incurred to determine if there is a need to pursue further capital investment, the project will not in itself provide an output in the supply demand table.

**Forecast years:** The schemes identified within the WRMP are required for Annual Average conditions and provide sufficient benefit to meet critical period deficits without any additional cost therefore the value of these schemes are only shown on WS2 Line 8. There are no demand side schemes identified in our plan.

The total opex impact associated with the production of the WRMP in AMP7 and Tywyn Aberdyfi investments are shown in line B47 split between resource and raw water distribution. The programme of work is detailed in the 5.8A Water Resources investment case and the capex investments are summarised in Table 3 below.

Project Name	Cost	WS2 Table Lines
<b>Pembrokeshire Water Resource Zone Investments - 8206</b>	£11.514m	A8
<b>Production of the Drought Plan inc Environmental Studies</b>	£0.699m	A8
<b>Production of WRMP during FORECAST YEARS</b>	£2.263m	A8
<b>Tywyn Aberdyfi Water Resource Zone Investments - 8021 capex</b>	£6.378m	A8
Total Water Resources Supply Side Enhancements Programme post efficiency challenge	<b>£20.854m</b>	

Table 3 – Summary of the Line A8 Investment Programme

**Line A8: Supply side enhancements to the supply-demand balance (dry year annual average conditions)**

*Cumulative capital expenditure on schemes delivered in the report year to enhance the supply-demand balance. Includes expenditure associated with schemes to deliver supply side (resource and production options) enhancements to supply demand capacity in dry year annual average conditions.*

See line A7 comment above.

**Line A9: Demand side enhancements to the supply-demand balance (dry year critical - peak conditions)**

*Cumulative capital expenditure on schemes delivered in the report year to enhance the supply-demand balance. Includes expenditure associated with schemes to deliver demand side (distribution and customer options) enhancements to supply demand capacity in dry year critical - peak conditions.*

See line A7 comment above.

**Line A10: Demand side enhancements to the supply-demand balance (dry year annual average conditions)**

*Cumulative capital expenditure on schemes delivered in the report year to enhance the supply-demand balance. Includes expenditure associated with schemes to deliver demand side (distribution and customer options) enhancements to supply demand capacity in dry year annual average conditions.*

See line A7 comment above.

**Line A11: New developments**

*Cumulative capital expenditure associated with the provision of local distribution infrastructure and non-infrastructure assets for water service to provide for new customers with no net deterioration of existing levels of service, and delivered in the report year. The capital costs of connecting a new property (including*

*the cost of a meter, communication pipe and boundary stop tap valve etc) should be recovered through the connection charge and should not be included in this line.*

Blind years: Large increase in 2019-20 due largely to the forecast completion of the Hereford City 18 and 15" Trunk Mains in the last year of AMP6 with a total forecast outturn cost of £10.5m

Forecast years: The programme of work associated with these lines has been developed using the forecast level of growth and development supported by targeted studies and using the blind years' costs to develop the programme of work. The spend profile has been developed based on forecasts of locations and timescales of growth. We have included Infrastructure Network Reinforcement expenditure in this line with the associated opex for the Water Network Growth Programme reported in Line B50.

We have assumed that this line is the water equivalent of Line 25 in Wastewater's Table WWS2 'New Development and Growth'.

Further information can be found in our 5.8K Water Network plus growth investment case and for the A11 capex projects within Table 4 below. Line B50 is a total opex associated with the cost of operating new network assets associated with growth.

Project Name	Cost	WS2 Table Lines
<b>Water Network Growth Programme – CAPEX</b>	£8.847m	A11
<b>Water Requisitions (On-site - Site-specific)- CAPEX</b>	£29.715m	A11
<b>Infrastructure Network Reinforcement - CAPEX</b>	£4.440m	A11
Total Water Network Growth Programme post efficiency challenge	<b>£43.002m</b>	

Table 4 – Summary of the Lines A11 Investment Programme

Line A12: New connections element of new development (CPs, meters)

*Cumulative capital expenditure of connecting a new property (including the cost of a meter, communication pipe and boundary stop tap valve etc), connected in the report year.*

Blind years: This is a new line for this year and we have identified several schemes which provide the new connections element of new development (CPs, meters).

Forecast years: The new connections element of growth has been defined as a separate investment line. This covers the opex and capex costs associated with new connections and detailed within the 5.8K Water Network plus Growth investment case. Line A12 is based on the forecast large diameter connections costs which are capitalised. We have shown the new connections costs for small diameter connections as enhancement opex in line B51.

Line A13: Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)

*Cumulative capital expenditure on schemes delivered in the report year to address raw water deterioration.*

Blind years: A large "spike" occurs in 2018-19 with the scheduled completion of the £32m Bryn Cowlyd Coagulation scheme and the £9m Tynywaun WTW scheme.

Forecast years: See commentary on line A6.

Line A14: Resilience

*Cumulative capital expenditure on schemes delivered in the report year to improve resilience. This relates to expenditure to manage the risk of giving 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 ESL04).*

Blind years: We have forecasted the same level of spend up to the end of this AMP as reported in 2017-18.

Forecast years: This line identifies the schemes that the company are delivering as part of resilience, new pipelines and additional clean water storage.

We have included the:

- Vowchurch Drought resilience scheme as there is added benefit to providing this scheme: this will link 2 WRZ together providing additional resilience to Vowchurch WRZ as part of a new requirement to ensure supplies during a 1 in 200 year drought event.
- Brecon Beacons Mega Catchment as a whole as this new approach which will provide more funding at our catchments and ultimately by reducing the need for treatment at our works.
- Emergency planning has moved to a more risk based approach and has identified schemes that are responding to the National Flood Resilience Review.
- Water treatment works - sludge strategy and contact tank bypass improvements.
- SRV enhancements to post tensioned steel tanks and Herefordshire volume contained with SRV's

This line includes investment drawn from multiple investment areas to tackle resilience issues that we have identified. Line B53 includes the opex for the Vowchurch 1 in 20 Drought resilience project. A summary of the projects included within the £124.347m programme is shown below:

Investment Case where further detail can be found	Projects Overview	Budget Post-Efficiency unless stated
<b>5.8A Water Resources</b>	Phase 1 delivery of improvements for the development of the Brecon Beacons Mega catchment	£9.000m
<b>5.8A Water Resources</b>	Improvements to the Vowchurch water resource zone to achieve a 1 in 20 Drought resilience score	£5.831m
<b>5.8A Water Resources</b>	NRW NEP-SGZ	£16.299m
<b>5.8F Water Quality</b>	Installation of assets to facilitate Contact tank cleaning at Water Treatment Sites and improving Felindre WTW resilience	£12.883m
<b>5.8H Customer Minutes Lost service improvement</b>	Network Resilience Schemes	£5.308m
<b>5.8H Customer Minutes Lost service improvement</b>	Post tensioned Steel Tanks replacement	£13.581m
<b>5.8H Customer Minutes Lost service improvement</b>	Range of projects to install additional storage, strategic pipelines and plan future raw and treated water improvements and mitigation plans	£42.467m
<b>5.8H Customer Minutes Lost service improvement</b>	A range of projects to improve our emergency planning capability	£0.541m
<b>5.8H Customer Minutes Lost service improvement</b>	Range of IS projects to improve systems and provide greater resilience	£9.340m
	<b>Principal use adjustment</b>	£9.097m
Total Resilience Programme post efficiency challenge		<b>£124.347m</b>

Table 5 – Line A14 Resilience Programme of Work

**Line A15: 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:** We have a number of SEMD schemes included for 2017-18 and the costs in this line is in line with our business plan programme of works for SEMD.

**Forecast years:** This line includes work that is required to meet our obligation under SEMD 1988. The investment includes sites that are of category 2H, 2L, 1H and 1L. The detail is included within the 5.8F Water Quality investment case which outlines the planned programme of work.

A risk assessment of the assets was carried out in previous years resulting in a programme of work which commenced during AMP5 to ensure compliance. This will continue until full compliance is achieved. In addition, the critical Assets scorecard has also been reviewed to inform the programme of sites to be included during AMP7. The split between the price controls is our best estimate of the programme that will be delivered in AMP7, which is dealing with different types of assets from AMP6.

**Line A16: 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 work that is required to meet our obligation under SEMD 1988. The investment includes sites that are of category 2H, 2L, 1H and 1L. The detail is included within the 5.8F Water Quality investment case which outlines the planned programme of work.

**Line A17: WINEP - NEP ~ Drinking Water Protected Areas (schemes)**

*Cumulative capital expenditure on schemes delivered in the report year to either avoid additional treatment or reduce current treatment (surface and groundwaters) in FORECAST YEARS and which is associated with Drinking Water Protected Areas under Article 7 of the Water Framework Directive.*

**Forecast years:** This line includes the catchments improvement work that is required to be delivered to avoid the need for additional treatment and is required under the WINEP for the EA. The total enhancement value of the project costs for line A17 is £0.741m post efficiency.

**Line A18: WINEP - NEP ~ Water Framework Directive measures**

*Cumulative capital expenditure on WFD-driven measures delivered in the report year to improve, protect or ensure no deterioration in the status or potential of surface water or groundwater where the measures arise from PR14 investigations or sustainable abstraction work.*

**Forecast years:** This line includes work that is required under the NEP3 for NRW and WINEP for EA relating to sites that are artificial or heavily modified water bodies (A/HMWB) and causing barriers to fish migration. This is a study in the first instance which will define where fish barriers can be removed. Numbers of barriers removed will depend on the study and removal cost per site and will be prioritised using cost benefit and risk. The investment in this line does not include any schemes for sustainable abstractions. More details regarding the projects that make up this programme of work can be found within the 5.8A Water Resources investment case. The total enhancement value of the project costs for line A18 £2.545m post efficiency.

**Line A19: WINEP - NEP ~ Investigations**

*Cumulative capital expenditure on environmental investigations and options appraisals listed in the NEP (or WINEP) for AMP5, BLIND YEARS or FORECAST YEARS and delivered in the report year.*

Blind years: We have included in this line the schemes that we had identified as “NEP Drinking Water Protected Areas” in the Annual Performance Review and include such schemes as Catchment Reservoir Modelling.

Forecast years: There are no investigations currently agreed within the NEP or WINEP for input in this line.

Line A20: Improvements to river flows

*Cumulative capital expenditure on schemes delivered in the report year, relating to reducing abstraction licences (unless captured elsewhere in this table, principally in line 1 or 18).*

Forecast years: This line identifies the schemes that the company are delivering that will provide a benefit to flows within the catchment system and includes schemes at Intakes and Boreholes. One of the elements of abstraction reform will take effect by improving the standards required to monitor compliance due to changes in the EA-NRW best practice meter guide. As a result there will be some abstractions where it will be more cost beneficial to revoke the licence and return the water to its original water course than to invest in upgrading the abstraction site. The post efficiency capex for this line is £2.216m.

Line A21: Metering (excluding cost of providing metering to new service connections) for meters requested by optants

*Metering delivered in the report year (excluding cost of providing metering to new service connections) for optants.*

Blind years: The metering programme provides a continual programme of works and as a result we have provided the costs in each year to refer to completed in the year. The remaining years are based on forecast spends for new connections - metered properties on an annual basis.

Forecast years: Line 21 contains the investment for the domestic meter options programme of work. The programme is based on the current levels of work and is in response to customers requesting the installation of a meter. We do not plan to proactively or compulsorily install meters during AMP7. The proposed programme of work has been outlined in the 5.8K Water Network plus growth investment case. The total enhancement budget for customer meters is planned to be £12.926m post-efficiency challenge.

Line A22: Metering (excluding cost of providing metering to new service connections) for meters introduced by companies

*Metering delivered in the report year (excluding cost of providing metering to new service connections) for meters introduced by companies (irrespective of whether these meters are used for charging)).*

Blind years: See Line A21.

Forecast years: Line 22 contains the investment for the selective metering. The programme has a flat profile because it is based on the current levels of work. The proposed programme of work is outlined in the 5.8K Water Network plus growth investment case. The total enhancement budget for customer meters is planned to be £0.738m post-efficiency challenge.

Line A23: Metering (excluding cost of providing metering to new service connections) for businesses

*Metering delivered in the report year (excluding cost of providing metering to new service connections) for businesses and other non-household customers.*

Blind years: See Line A21.

Forecast years: Line 23 contains the investment for the business meters. The programme has a flat profile because it is based on the current levels of work and is in response to customers requesting the installation of a meter. We do not plan to proactively or compulsorily install meters during AMP7. The proposed programme of work is outlined in the 5.8K Water Network plus growth investment case. The total enhancement budget for business optant meters is planned to be £0.020m post-efficiency challenge.

Line A24: Capital expenditure purpose ~ Cwm Taf Water Supply Strategy

*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: The spend profile has been estimated based on the feasibility and procurement work as well as purchase of the new site and obtaining planning permission. We have shown all the costs for this scheme as enhancement. Further details of this project can be found within the 5.8E Cwm Taf Water Supply Strategy investment case.

**Line A25: Capital expenditure purpose ~ Impounding Reservoirs**

*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: Water Resources has a combined £24m of spend in 2018-19 (£11m) and 2019-20 (£13.5m), delivering a programme of increasing spillway and pipework capacity, and enhancing asset resilience.

Forecast years: Some of the cost of the impounding reservoir programme is reported as enhancement. The impounding reservoirs programme is set out within the 5.8B Reservoir Safety investment case.

**Line A26: Capital expenditure purpose ~ Leakage**

*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: The spend profile has been estimated based on the forecast level of spend to achieve our leakage target. This investment is not required to meet our supply - demand balance but instead is aimed at our long-term sustainability targets and has therefore been separated from lines 7-10. Further details are set out in our 5.8J Leakage improvement investment case. As we are intending that our leakage will be below the economic level of leakage in AMP7, we are treating the leakage costs as enhancement.

**Line A27: Capital expenditure purpose ~ Interruptions to Supply**

*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 investment is targeted at improving our performance on the key customer metric of water supply interruptions, which is a significant programme for us in AMP7, and does not fit with any of the other lines provided. The programme of work along with the benefits from other investment programmes will deliver the targeted CML target value of 8 mins-customer during AMP7.

The spend profile has been developed from several specific programmes of work, each of which is described in more detail through the 5.8H Customer Minutes Lost service improvement investment case. The three projects included within the Interruptions to Supply line are summarised in Table 7 below.

Investment Case	Project Overview	Budget Post-Efficiency unless stated
5.8H Customer Minutes Lost service improvement	Addressing Interruptions to supply for worst served customers	£7.131m
5.8H Customer Minutes Lost service improvement	Trunk mains flow metering, enhancements	£7.299m

Welsh Water – Wholesale Water Service Table Commentaries

5.8H Customer Minutes Lost service improvement	SMART (Water) improvements to network monitoring and control	£7.702m
Total Interruptions to supply Programme post efficiency challenge		<b>£22.132m</b>

Table 7 - Line A27 Interruptions to Supply Programme of work



## WS3 – Wholesale water properties and population

### Table Validation

No validation errors appear in this table

#### General methodology

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 developed from the property and population forecasts developed for the draft Water Resources Management Plan (WRMP) published in February 2018. They also take into account the voids reduction strategy put in place to achieve the Performance Commitment “B14 Unbilled properties.” The property and population forecasts are developed on a water resource zone basis which are summed to produce the regional forecasts used in WS3. The forecasts are developed to a high degree of granularity as far as categories of property, population and demand forecasting components are concerned. Through this process they align to the water balance process APR tables and other tables in this Business Plan submission. The process produces both the residential and business data for this table. The process to produce the draft WRMP received external assurance from Jacobs as part of the publication process.

#### Line 1 Residential properties billed for measured water (external meter)

*Average number of billed metered residential properties with external meters. An external meter is one located underground on the customer's underground supply pipe. Closeness to the property boundary is not important. Exclude void properties.*

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. The preferred location is to provide an external meter but internal meters are provided in some circumstances. Void properties are excluded.

#### Line 2 Residential properties billed for measured water (not external meter)

*Average number of billed metered residential properties (not externally metered). An internal meter is one located inside the customer's property or attached to the property at above ground level in a box or cabinet. All other meters should be classed as external. Exclude void properties.*

See line 1.

#### Line 3 Business properties billed measured water

*Average number of business properties billed for measured water within the supply area. Exclude miscellaneous users*

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

#### Line 4 Residential properties billed for unmeasured water

*Average number of residential properties billed for unmeasured water within the supply area. Exclude void properties.*

The average number of residential properties billed for unmeasured water within the supply area are decreasing in line with the movement of unmeasured customers who opt to move to a measured supply (forecast of optants is input into line 11) 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 B14 will primarily be achieved through targeting unmeasured customers so this has a dampening effect on the decline in unmeasured residential customer numbers.

**Line 5 Business properties billed unmeasured water**

*Average number of business properties billed for unmeasured water within the supply area. Exclude miscellaneous users.*

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

**Line 6 Total business connected properties at year end**

*The total number of business properties connected to the water distribution system at the end of the report year. This must include properties which are connected but not necessarily billed (for example, temporarily unoccupied) but should exclude properties which have been permanently disconnected. A group of properties supplied by a single connection should be counted as several properties. They should only be treated as a single property if a single bill covers the whole property.*

The year-end forecasts are calculated from the corresponding year average figures input in the preceding lines by an uplift factor taken from historical average year figure to year end figure movements.

**Line 7 Total residential connected properties at year end**

*The total number of residential properties connected to the water distribution system at the end of the report year. This must include properties which are connected but not necessarily billed (for example, temporarily unoccupied) but should exclude properties which have been permanently disconnected. A group of properties supplied by a single connection should be counted as several properties. They should only be treated as a single property if a single bill covers the whole property.*

See line 6.

**Line 8 Total connected properties at year end**

*The total number of properties (domestic and non-domestic) connected to the distribution system at the end of the report year. This must include properties which are connected but not billed (for example, temporarily unoccupied) but should exclude properties which have been permanently disconnected. A group of properties supplied by a single connection should be counted as several properties. They should only be treated as a single property if a single bill covers the whole property. Equals the sum of WS3 lines 6 and 7.*

Calculated line (Sum of lines 6 and 7).

**Line 9 Number of residential meters renewed**

*The total number of meters renewed at residential properties during the report year.*

The 2017-18 figure is populated from the latest APR figures for household meter replacements. The forecasts until 2019-20 are forecast to be stable and based on the average annual number of replacements per year recorded recently.

The number of household meters that are forecast to be renewed from 2020 have used the historic level of reactive maintenance, uplifted to reflect the growing number of metered residential properties. It also includes a pro-active metering programme. The profile over the period reflects our assessment of the workload.

**Line 10 Number of business meters renewed**

*The total number of meters renewed at business properties during the report year.*

The forecasts for AMP 7 are based on the average number of replacement meters for non-households over the last seven years from the APR tables, this comes out at 2,980 meters changed per year. The number of replacements has been forecast to be stable over the period.

**Line 11 Number of meters installed at the request of optants**

*The total number of meters installed at the request of optants at existing residential properties during the year (Including where a company has installed a meter for social tariff purposes). Include meters installed at residential properties fitted in any location (e.g. internal, external in garden, external at boundary etc).*

*Exclude all meters installed at the company's behest. For clarity and to avoid possible double counting, this*

*should exclude meters installed at properties where the resident subsequently becomes an optant by virtue of switching to measured charges. These meters should have already been reported in line 12.*

The number of optants is forecast using a rate of opting on the remaining unmeasured customer base. The number is therefore reducing in line with the reduction of the number of unmeasured residential customers.

**Line 12 Number of selective meters installed**

*The number of meters installed during the year at existing billed residential properties at the behest of the company. Include meters installed at residential properties fitted in any location (e.g. internal, external in garden, external at boundary etc). Exclude all meters installed at the request of optants or following property conversions.*

There is a zero entry in this line reflecting the company metering policy of not undertaking selective metering for residential properties.

**Line 13 Total number of new business connections**

*Total number of new business connections to a company's area of supply during the report year. This will cover the number of new business properties added for each year that were previously not connected for water supply. Exclude separation of common services, or other reconnections.*

The 2017-18 figure is as reported in the APR18. The 2018-19 figure is the forecast used in the preparation of the Scheme of charges for 2018-19 and reflected recent historical levels. The forecasts from 2019-20 are from the draft WRMP.

**Line 14 Total number of new residential connections**

*Total number of new residential connections to a company's area of supply during the report year. This will cover the number of new residential properties added for each year that were previously not connected for water supply. Exclude separation of common services, or other reconnections.*

The 2017-18 figure is as reported in the APR18. The 2018-19 figure is the forecast used in the preparation of the Scheme of charges for 2018-19 and reflected recent historical levels. The forecasts from 2019-20 are from the draft WRMP.

**Line 15 Total population served**

*Total resident population served. This should include billed residential properties supplied with unmeasured and measured water and billed business properties supplied with unmeasured and measured water. Please provide commentary on how you have calculated population and residential property growth including how you have taken account of the 2011 Census.*

Population forecasts are in line with the draft WRMP and reflects increases in population projections produced by the ONS and Welsh Government.

**Line 16 Number of business meters (billed properties)**

*The total number of business meters at billed properties within the company's area supply (excluding void properties).*

The number of business meters has been forecast in line with the projected growth in the draft WRMP. The number in this line is calculated excluding voids. It is noted that this definition is different to the APR definition which does not exclude voids.

**Line 17 Number of residential meters (billed properties)**

*The total number of residential meters at billed properties within the company's area supply (excluding void properties).*

The number of residential meters has been forecast in line with the projected growth in residential meters in the draft WRMP. The growth reflects the company metering policy to meter all new connections.

Line 18 Company area

*The operating area within which the company as the water undertaker is licensed to provide water services*

The Reported figure for line 18 remains static at the 20,078 km<sup>2</sup>. There is a variation application that is currently being processed which would increase this area slightly.

## WS4 – Wholesale water other (explanatory variables)

### Table Validation

No validation errors appear in this table

#### Line 1 Number of lead communication pipes replaced for water quality

*The total number of lead communication pipes replaced for quality reasons (as a result of the lead quality programme to deal with the revised Drinking Water Regulations). All replacement activity under quality must have been confirmed by DWI in the schedule of works attached to a legally binding instrument of works. Include all lead communication pipes which are replaced at customers' request under Regulation 30(1) of the Water Supply (Water Quality) Regulations 2016.*

We do not envisage any further DWI driven improvements as our pro-active replacement programme will capture any potential customer requests in risk areas.

#### Line 2 Total supply side enhancements to the supply demand balance (dry year critical - peak conditions)

*Incremental supply side improvements delivered during the reporting year to the dry year critical - peak period supply demand balance as at the start of the reporting year. The reported value should account for all water resource zones. Where dry year critical - peak conditions have not been presented in the current WRMP for a specific zone, the dry year annual average conditions should be substituted. Supply side enhancements should include all resource and production options. Interpretation of resource and production options, dycp and dyaa should align with water resources management plan guidance.*

We will not see any additional supply benefits, although some costs have been allocated to schemes that should enhance the supply-demand balance in future years. The initial costs are linked to the preparatory design work.

We are forecasting an increase to 5.1 MI-d by 2024-25, on the assumption that our preferred schemes are approved during the WRMP19 public consultation, and that these schemes are then delivered in AMP7.

#### Line 3 Total supply side enhancements to the supply demand balance (dry year annual average conditions)

*Incremental supply side improvements delivered during the reporting year to the dry year annual average supply demand balance as at the start of the reporting year. The reported value should account for all water resource zones. Supply side enhancements should include all resource and production options. Interpretation of resource and production options, dycp and dyaa should align with water resources management plan guidance.*

We will not see any additional supply benefits, although some costs have been allocated to schemes that should enhance the supply-demand balance in future years. The initial costs are linked to the preparatory design work.

We are forecasting an increase to 4.21 MI-d by 2024-25, on the assumption that our preferred schemes are approved during the WRMP19 public consultation, and that these schemes are then delivered in AMP7.

#### Line 4 Total demand side enhancements to the supply demand balance (dry year critical - peak conditions)

*Incremental demand side improvements delivered during the reporting year to the dry year critical - peak period supply demand balance as at the start of the reporting year. The reported value should account for all water resource zones. Where dry year critical - peak conditions have not been presented in the current WRMP for a specific zone, the dry year annual average conditions should be substituted. Demand side enhancements should include all distribution and customer side options. Interpretation of distribution and customer side options, dycp and dyaa should align with water resources management plan guidance. Demand side enhancements should be reported as a positive number.*

Reported as zero in line with the final WMRP14 and draft WRMP19. We do not operate demand side enhancements during dry year critical - peak conditions or in dry years as a policy. Demand side enhancements are undertaken as a baseline activity within given water resource zones.

Line 5 Total demand side enhancements to the supply demand balance (dry year annual average conditions)

*Incremental demand side improvements delivered during the reporting year to the dry year annual average period supply demand balance as at the start of the reporting year. The reported value should account for all water resource zones. Demand side enhancements should include all distribution and customer side options. Interpretation of distribution and customer options, dycp and dyaa should align with water resources management plan guidance. Demand side enhancements should be reported as a positive number.*

Reported as zero in line with the final WMRP14 and draft WRMP19. We do not operate demand side enhancements during dry year critical - peak conditions or in dry years as a policy. Demand side enhancements are undertaken as a baseline activity within given water resource zones.

Line 6 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 as 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 resources, 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 resources. Now allocated as a proportion of head count. The historical usage allocation based on the new methodology is shown in the table below:

Line 7 Energy consumption ~ water resources

*Measure of energy usage (electricity, gas, liquid fuels) by the network+ wholesale business unit (irrespective of the power source). Energy usage should be measured as 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 resources, 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 resources. Now allocated as a proportion of head count;. 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
6	Water Services - Network+	174,190,408	161,653,899	169,733,823	168,641,392	178,048,685	176,925,097	183,050,242
7	Water Services - Water Resources	53,953,832	48,796,215	50,269,044	54,273,325	51,527,840	53,156,354	54,161,967
8	Energy consumption ~ wholesale	228,144,241	210,450,114	220,002,867	222,914,717	229,576,525	230,081,451	237,212,209

Line 8 Energy consumption ~ wholesale

*Energy consumption – wholesale water business. Calculated as the sum of Lines 6 and 7 - 4Q.24 and 4Q.25*

This line is the sum total of lines 6 and 7.

Line 9 Mean zonal compliance

*DWI measure of mean zonal compliance. To be reported from 2017-18 to 2019-20 only.*

Our performance in 2017-18 was 99.96%. There were 32 failures out of 45,844 tests taken compared to 20 failures in 2016.

We are forecasting an improvement in these years although we will still not quite meet the FD target of 100%. Achieving 100% compliance is challenging as a failure in zones serving very small populations will distort the overall picture.

Line 10 Compliance Risk Index

*DWI measure of Compliance Risk. To be reported from 2018-19 onwards.*

The forecast performance is at the target level.

Line 11 Event Risk Index

*DWI measure of Event Risk. To be reported from 2018-19 onwards.*

Our performance commitment on this measure is to achieve upper quartile. There is only one year's data available from the DWI to predict this so we have forecasted our future performance at the level as the upper quartile score based on the 2017-18 data share. There is no other data available from the DWI to inform a more accurate forecasting at this time.

Line 12 Volume of leakage above or below the sustainable economic level

*The variance between actual leakage and sustainable economic level of leakage. Leakage below the sustainable economic level will have a negative value.*

The 2017-18 MOS-F2 (Leakage) performance is below our PR14 SELL target. This is an annualised number derived from our PR14 SELL target less MOS-F2 performance multiplied by the year days. Negative volumes are indicative of below target performance. For the remainder of the blind years we are forecasting zero, as we are confident that we will achieve our leakage target.

We have reported these lines as zero as we are confident that we will achieve our leakage target in each of these years.

## WS5 – Other wholesale water expenditure

### Table Validation

No validation errors appear in this table

### General comments

Blind years (2018-19 and 2019-20) and forecast years (post 2020)

- Our Business simplification efficiency programme reduces £71m of labour costs per annum to £57m per annum from 2018-19 to 2024-25 (20% reduction).
- FTE reduce from 1,322 in 2018-19 to 1,254 in 2024-25 (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).
- The Water business does not incur costs relating to the Traffic Management Act, Canal and Rivers Trust service charges-Discharge Consents or Statutory Water Softening.
- Ignoring inflation, EA service charges are static and based on the 2017-18 actuals.

### 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 by 9 between 2018-19 and 2019-20, which represents our ‘peak FTE’ year following the re-allocation after 2017-18. This reflect some 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 until 2022-23 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. This should be completed on a Total Expenditure basis.*

Indirect FTE reduce by 44 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. We anticipate the FTE will rise by 6 in 2020-21 which reflect some 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 A3: Number FTEs consistent with line 1

*Number of full time equivalents consistent with the employment costs reported in 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 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.*

These comprise costs associated with permits required to undertake repair work requiring highway access in English Local Authorities. We have not incurred any costs relating to this in 2017-18 and do not foresee these costs materialising in the period to 2025.

Line B6: Canal & River Trust service charges and discharge consents

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

As above, we have not incurred any costs relating to this in 2017-18 and do not foresee these costs materialising in the period to 2025.

Line B7: Environment Agency service charges- discharge consents

*Costs associated with Environment Agency service charges - discharge consents.*

These costs relate to abstraction charges from NRW and the EA. We have forecast these on a basis consistent with the 2017-18 actuals as we have no reason to believe that these costs will change other than in line with inflation.

Line B8: Other service charges - permits

*Costs associated with other service charges - discharge consents.*

As above, we have not incurred any costs relating to this in 2017-18 and do not foresee these costs materialising in the period to 2025.

Line B9: Statutory water softening

*Costs associated with statutory requirements for the softening of water as directed by the relevant legislation.*

We have not incurred any costs relating to this in 2017-18 and do not foresee these costs materialising in the period to 2025.

## WS7 – Wholesale water local authority rates

### Table Validation

No validation errors appear in this table

Line 1 Wholesale Water business rates charge for current year before transitional relief

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

Line 1 shows the wholesale water 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 12.

Wholesale water rates at line 1 exclude business rates of £1.2m per annum which are recharged to Natural Resources Wales under our reservoir operating agreement with them. The rates and other costs incurred under this agreement, together with the income are shown as third party services in the PR19 tables.

For 2017-18 the rates costs in line 1 excluded an allocation of offices rates (£370k) 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 and the effect of this change is set-out in line 13.

Line 2 Wholesale Water business rates transitional relief

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

Transitional relief only applies to the English element of our water rates assessment as 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 only 5% of the water assessment relates to England the adjustment is modest.

We do not expect a significant change in RV at the 2021 or 2024 revaluations and therefore no transitional relief has been assumed for 2021-22 and subsequent years.

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

*Local authority rates charged to the wholesale water business in respect of the (then) current year, after the application of any transitional relief. Calculated as the sum of WS7 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 water business in respect of previous years*

There are no adjustments to wholesale water business rates charges for prior years as we do not intend to appeal the RV included in the 2017 list and expect this to apply until 31 March 2021.

We do not anticipate appealing the 2021 or 2024 revaluations assuming that the methodology used by the VOA is consistent with that used for the 2017 revaluation.

Line 5 - 7 [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 blank.

**Line 8 Wholesale Water business rates forecast for Business Plan**

*Local authority rates charged to the wholesale water business, as reported in the APR, Schedule 4D, line 8. Equals the sum of WS7 lines 3 to 7.*

These are calculated cells (a summation of lines 3 to 7).

**Line 9 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 10 Change in wholesale water business rates costs due to the impact of any revaluation**

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

This line shows the impact of revaluations at 1 April 2021 and 1 April 2024. As our calculations forecast these are expected to have a minimal impact on the RV of the water business the adjustments are negligible.

**Line 11 Change in wholesale water business rates costs due to change in asset stock**

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

This line identifies adjustments made to the reallocation of rates costs for offices used by the water business which are assessed independently of the water business (as they are also used by wastewater and retail parts of the business). The adjustments are minimal and only affect 2018-19 and 2019-20.

**Line 12 Change in wholesale business rates costs due to inflation in UBR**

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

Line 12 shows the impact of changes to rates costs arising from increases in the UBR which is applied to the RV of the water business 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 13 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 water business, before the impact of transitional relief (please specify)*

For 2017-18 the rates costs in line 1 excluded an allocation of offices rates (£370k) 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 this line.

**Line 14 Adjustment to eliminate check difference otherwise arising (as table doesn't hold 16-17 data)**

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

We have included an adjustment of £14.764m to eliminate the check difference which otherwise arises in line 16 for 2017-18. This is because the table calculates a difference of £14.764m at line 9 due to the absence of prior year rates information (it is comparing the rates cost for 2017-18 of £14.764m with zero).

**Line 15 Change in wholesale water business rates charge before transitional relief**

*The sum of changes in local authority rates charged to the wholesale water business before transitional relief - calculated as the sum of WS7 lines 10 to 14.*

These are calculated cells summing lines 10 –14.

Line 16 Check difference

*Check difference - WS7 line 15 should equal line 9, with a check difference of zero*

This is a check difference to compare lines 9 with 15 and is zero.

## WS8 – Third party costs by business unit for the wholesale water service

### Table Validation

No validation errors appear in this table

Line A1: Non potable water (which are not bulk supplies)

*Please refer to RAG 4, Appendix 1.*

The third party costs for non-potable supplies in 2017-18 amounted to £1.741m. We have assumed the same level of spend in AMP6 and AMP7.

Line A4: Total third party water service costs ~ price control (operating expenditure)

*Total third party water service costs included in the price control (operating expenditure). Equals the sum of WS8 lines 1 to 3.*

Calculated sum.

Line B5: Bulk supplies

*Please refer to RAG 4, Appendix 1.*

Third party operating expenditure has been derived by taking the volume of bulk supply and allocating abstraction and other operating costs accordingly. As a result, abstraction costs of £1.1m and other operating costs of £0.1m are reported within third party costs. Infrastructure renewals expenditure of £2.4m on the Elan Valley dam is also reported here. We have assumed the same level of spend in AMP6 and AMP7.

Line B6: Reservoir operating agreements

*Please refer to RAG 4, Appendix 1.*

This relates to the section 20 agreement with the NRW where an element of Cumulo rates and operating costs are recharged to the NRW. We have assumed the same level of spend in AMP6 and AMP7.

Line B7: Rechargeable Fire services

*Other third party water service costs not covered by WS8 lines 5 and 6.*

This relates to recharging cost for the use of fire hydrants. We have assumed the same level of spend in AMP6 and AMP7.

Line B8: 3rd party water

*Other third party water service costs not covered by WS8 lines 5 and 6.*

This relates to cost of rechargeable work in treated water distribution. We have assumed the same level of spend in AMP6 and AMP7.

Line B9: 3rd party waste

*Other third party water service costs not covered by WS8 lines 5 and 6.*

There are no rechargeable work for waste within the water services area.

Line B10: Standpipes

*Other third party water service costs not covered by WS8 lines 5 and 6.*

We report very little as third party standpipes due to a change in the contract. We have assumed the same level of spend in AMP6 and AMP7.

Line B11: Ships water

*Other third party water service costs not covered by WS8 lines 5 and 6.*

£2k was reported as the cost of ships water in 2017-18 and we have used this to project the cost forward.

Line B14: Total third party water service costs ~ non price control (operating expenditure)

*Total third party water service costs outside of the price control (operating expenditure). Equals the sum of WS8 lines 5 to 13.*

This is a calculated sum.

Line C15: Non potable water (which are not bulk supplies)

*Please refer to RAG 4, Appendix 1.*

The Raw Water distribution element of this is comprised of raw water storage project costs at Canaston Bridge and Canaston Pumping Station. The Water Treatment element relates primarily to the Investment to replace coagulant storage tanks at Ashgrove Water Treatment works. We have assumed the same level of spend up to 2019-20. There are no capex costs included in the forecast for AMP7.

Line C16: Developer services - search fees

*Please refer to RAG 4, Appendix 1.*

Relates to costs involved in responding to requests from the public, from developers or local authorities for plans and surveys of our underground assets. These are based upon 2017-18 actuals which are forecast to the end of the AMP. There is nothing in the forecast years for these.

Line C18: Total third party water service costs ~ price control (capital expenditure)

*Total third party water service costs included in the price control (capital expenditure). Equals the sum of WS8 lines 15 to 17.*

This is a calculated sum.

Line D19: Bulk supplies

*Please refer to RAG 4, Appendix 1.*

Line D20: Reservoir operating agreements

*Please refer to RAG 4, Appendix 1.*

Reservoir Operating costs recharged to Natural Resources Wales for capital maintenance costs under section 20 of the Environment Agency agreement, are forecast to be a constant £1.946m per annum throughout the forecast years.

Line D28: Total third party water service costs ~ non price control (capital expenditure)

*Total third party water service costs outside of the price control (capital expenditure). Equals the sum of WS8 lines 19 to 27.*

This is a calculated sum.

WS10 – Transitional spending in the wholesale water service

**Table Validation**

No validation errors appear in this table

We have not identified any projects for transitional spend in the wholesale water service, therefore all lines are zero.

## WS12 – RCV allocation in the wholesale water service

### Table Validation

No validation errors appear in this table

### Overview

The wholesale water RCV is allocated to the water resources and water network plus revenue controls in proportion to the Gross MEAV that is attributable to the assets in each service as defined by the 2017-18 RAGs. This calculation was undertaken in January 2018 to support the initial submission. The initial submission contained actuals figures up to 2016-17 with forecasts for 2017-18 through to 2019-20. The calculations were presented in March 2017 price base. The full methodology for calculation was laid out in the initial submission document submitted to Ofwat on 1 February 2018. It is not included with the Business Plan submission pack but is, of course, available on request. The methodology used to produce the initial submission was assured by Jacobs and the feedback from Ofwat was that they were satisfied that we have applied the method in line with their guidance.

The inputs to Table WS12 and WS12a follow the same methodology, with the forecasts for 2017-18 being replaced by the actuals reported in APR18 and the subsequent adjustment to the capital programme for 2018-19 and 2019-20 replacing the forecasts for those years. The underlying numbers have been rebased to March 2018 price base as per the business plan table guidance.

The allocation and calculation of the net MEAV for Block B Roll forward has been undertaken using the June Return table 25 “Analysis of fixed assets by asset type” methodology.

### Updating the initial submission

The table requires an analysis of the movement of the net MEAV from the last published split (published in the Regulatory Accounts for 2014-15) to 2020. The format of the presentation of the calculation in table WS12 remains unchanged. The main difference is the change in the price base of the figures. The RCV unfocussed split that is proposed in the table is based on the gross MEAV. Table A1 in the annex shows how the net MEAV.

	Units	Price base	Water resources	Water network plus	Total wholesale water
<b>High level Table</b>					
Gross MEAV as at 31 March 2015	£m	Mar-15	987.6	8,771.9	9,759.5
Gross MEAV as at 31 March 2017	£m	Mar-18	1,101.8	9,651.0	10,752.7
Gross MEAV as at 31 March 2020	£m	Mar-18	1,172.9	9,924.8	11,097.7
Proposed unfocussed RCV allocation	£m	Mar-18	10.6%	89.4%	
<b>Proposed RCV allocation (Sep 18)</b>	<b>£m</b>	<b>Mar-18</b>	<b>187.8</b>	<b>1,589.2</b>	<b>1,777.0</b>
<u>Change since Initial submission</u>					
Initial RCV allocation	£m	Mar-17	181.9	1,537.6	1,719.6
Increase due to RPI	£m	Mar-18	6.1	51.4	57.5
<b>Initial RCV allocation</b>	<b>£m</b>	<b>Mar-18</b>	<b>188.0</b>	<b>1,589.0</b>	<b>1,777.0</b>
Change	£m	Mar-18	(0.2)	0.2	(0.0)
Unfocussed allocation (Initial)	%		10.58%	89.42%	100.00%
Unfocussed allocation (Business Plan)	%		10.57%	89.43%	100.00%
Change	%		-0.01%	0.01%	

The table below shows the movement in the RCV from the initial submission produced in January 2018 and the proposed RCV prepared for the Business Plan as shown in WS12a. The table below is shown to mirror the calculations in WS12a which shows the increase from the initial submission to the Business Plan submission as a negative number:



<b>WS12a - Change in RCV allocation in the wholesale water service</b>	<b>Price base</b>	<b>Water resources £m</b>	<b>Water network plus £m</b>	<b>Total wholesale water £m</b>
<b><u>RCV split 31 March 2020 as submitted in January 2018</u></b>				
Proposed RCV allocation 31 March 2020 (pre-midnight adjustments) [Jan 18]	Mar 17	181.9	1,537.6	1,719.6
Proposed RCV allocation 31 March 2020 (pre-midnight adjustments) [BP]	Mar 18	187.8	1,589.2	1,777.0
Difference		(5.9)	(51.6)	(57.5)
<b><u>Explanation of changes</u></b>				
Inflation from March 2017 to March 2018 prices		(6.1)	(51.4)	(57.5)
Changes in forecast expenditure		0.2	(0.2)	0.0
Changes in forecast capital maintenance charges		0.0	0.0	0.0
Changes to the allocation of assets between business units		0.0	0.0	0.0
Difference		(5.9)	(51.6)	(57.5)

The table below shows the changes in forecast 2020 MEAV arising from the analysis of the actual 2017-18 expenditure and the re-profiled capex programme for 2018-19 and 2019-20 that informs the revised RCV split.

<b>Allocation of MEAV</b>	<b>Price base</b>	<b>Water resources £m</b>	<b>Water network plus £m</b>	<b>Total wholesale water £m</b>	<b>WR share</b>
Gross MEAV as at 31 March 2020 [Jan 18]	Mar-17	1,144.5	9,672.7	10,817.2	10.58%
Gross MEAV as at 31 March 2020 [BP]	Mar-18	1,168.7	9,926.8	11,095.5	10.53%
Difference	Mar-18	24.2	254.1	278.3	-0.05%
Difference made up of:					
Change due to Inflation	Mar-18	38.2	323.3	361.5	
Change due to forecast expenditure	Mar-18	(14.1)	(69.2)	(83.2)	

The table below shows the re-profiling of 2017 to 2020 expenditure:

<b>Analysis of additions (gross)</b>		<b>Price base</b>	<b>Water resources £m</b>	<b>Water network plus £m</b>	<b>Total wholesale water £m</b>
<b><u>January 18 submission</u></b>					
2017-18	Additions	Mar-17	25.1	136.2	161.2
2018-19	Additions	Mar-17	32.3	109.9	142.1
2019-20	Additions	Mar-17	21.0	87.8	108.9
2017-20	sub-total	Mar-17	78.4	333.9	412.2
<b><u>September 18 submission</u></b>					
2017-18	Additions	Mar-18	20.5	107.2	127.6
2018-19	Additions	Mar-18	25.4	92.6	118.0
2019-20	Additions	Mar-18	21.0	76.2	97.2
2017-20	sub-total	Mar-18	66.7	274.5	342.8
<b><u>Change in inflation (3.3%)</u></b>					
2017-18	Additions		0.8	4.6	5.4

## Welsh Water – Wholesale Water Service Table Commentaries

2018-19	Additions	1.1	3.7	4.8
2019-20	Additions	0.7	2.9	3.6
2017-20	sub-total	2.6	11.2	13.8

(Note that this change in inflation relates only to the impact of the change in price base on the additions. The effect of inflation reported in the previous table covers all of the MEAV)

Analysis of additions (gross)		Water resources	Water network plus	Total wholesale water
Change in forecast additions		£m	£m	£m
2017-18	Additions	(5.4)	(33.6)	(39.0)
2018-19	Additions	(8.0)	(21.0)	(28.9)
2019-20	Additions	(0.7)	(14.6)	(15.3)
2017-20	sub-total	(14.1)	(69.2)	(83.2)

An analysis of the change in forecast additions is given in the commentary for WS12a.

### Ofwat feedback on the initial submissions

Ofwat feedback their analysis of the initial submissions in April 2018. There were two explicit mentions of Welsh Water:

- The use of the proportion of gross MEAV to allocate out the RCV – Ofwat confirmed they were “satisfied that Dŵr Cymru have applied this method in line with our guidance”. Therefore the proposed RCV for the Business Plan has been calculated using the same methodology; and
- The impact of the split of the RCV on the bills of non-potable customers and some bulk supplies - “customers with minimal use of network plus assets.” See item 1 in the table below for our response to this.

Table A2 in the annex summarises the feedback from Ofwat that is pertinent to the Business Plan submission and an assessment of our response to each point.

### Line commentary

WS12 A1 – A8 are as initial submission updated to March 18 price base where applicable

#### Block A Water resources net MEAV

Line 1 Net MEAV per regulatory accounts as at 31 March 2015

*Net MEAV for water resources and other water assets, as published in company 2014-15 regulatory accounts for 31 March 2015.*

*water resources = BM4048WR + BM4050WR*

*Wholesale Water = BM4048WTOT + BM4050WTOT*

This is the net MEAV for water resources and other assets as published in the regulated accounts for 31 March 2015 and is stated at March 2015 price base.

#### Line 2 Disposals

*Impact on net MEAV of disposal of assets between 1 April 2015 and 31 March 2017*

This relates to the impact on net MEAV of disposal of assets between 1 April 2015 and 31 March 2017 and has been calculated as follows:

Description	Price base	Water resources	Water network plus	Total wholesale water
		£m	£m	£m

<b>Disposals 2015-16</b>	2016-17	-6.159	0	-6.159
<b>Disposals 2016-17</b>	2016-17	0	0	0
<b>Disposals 2015-17</b>		-6.159	0	-6.159

This relates to intake assets that have been sold since the MEAV valuation.

#### Line 3 Reclassification

*Impact on net MEAV of reclassification of assets between 1 April 2015 and 31 March 2018. This line should include any changes resulting from reclassification to or from water resources, with this explained in the narrative.*

Impact on net MEAV of reclassification of assets between 1 April 2015 and 31 March 2017. This includes changes resulting from reclassification to or from water resources and is summarised as follows:

<b>Description</b>	<b>price base</b>	<b>Water resources</b>	<b>Water network plus</b>
Reclassification 2015-17		£m	£m
<b>Intake pumping stations included as Water Network plus in previous MEAV</b>	2016-17	10.26	-10.26
<b>Borehole restatement in line with new guidelines</b>	2016-17	-0.15	0.15
<b>Reservoir restatement in line with new guidelines</b>	2016-17	3.02	-3.02
		13.134	-13.134

#### Line 4 Inflation

*Impact on net MEAV of Inflation. This line will be the difference between 1 April 2015 and 31 March 2018 prices for line 1.*

This is the Impact on net MEAV of Inflation. This line is the difference between 1 April 2015 and 31 March 2017 prices for line 1.

#### Line 5 Additions

*Impact on net MEAV of additions between 1 April 2015 and 31 March 2017*

This is the Impact on net MEAV of additions between 1 April 2015 and 31 March 2017 and the split used is based on that used in the regulatory accounts for 2016 and 2017.

#### Line 6 Depreciation

*Impact on net MEAV of depreciation between 1 April 2015 and 31 March 2017*

This relates to the Impact on net MEAV of depreciation between 1 April 2015 and 31 March 2017. The CCD charge for the year has been calculated by combining the CCD calculated for the MEAV modelling, with CCD on enhancement additions for period 2014 to 2017.

#### Line 7 Other adjustments

*Other impacts on net MEAV between 1 April 2015 and 31 March 2017*

There are no other impacts.

#### Line 8 Net MEAV for water resources and other water assets at 31 March 2017.

*Total of WS12 lines 1 to 7*

Calculated line.

#### Block B Roll forward

#### Line 9 Additions 2017-18

*Impact of forecast additions in 2017-18 on net MEAV at 31 March 2018*

The forecast additions in 2017-18 on net MEAV at 31 March 2018 has been taken from the forecast for AMP6 reported to the capital programme board (BP Master 2018-2023 CBPv4.0). This has been split between enhancement and maintenance based on investment cases, and further between infra and non-infra based on regulatory split in 2016-17.

Line 10 Depreciation 2017-18

*Impact of forecast current cost depreciation, capital charges and disposals in 2017-18 on net MEAV at 31 March 2018*

This relates to the impact of forecast current cost depreciation, capital charges and disposals in 2017-18 on net MEAV at 31 March 2018. This has been calculated using same methodology as line 6.

Line 11 Additions 2018-19

*Impact of forecast additions in 2018-19 on net MEAV at 31 March 2019*

The forecast additions in 2018-19 on net MEAV at 31 March 2019 has been calculated using the same methodology as line 9.

Line 12 Depreciation 2018-19

*Impact of forecast current cost depreciation, capital charges and disposals in 2018-19 on net MEAV at 31 March 2019*

This relates to the impact of forecast current cost depreciation, capital charges and disposals in 2018-19 on net MEAV at 31 March 2019. This has been calculated using same methodology as line 6.

Line 13 Additions 2019-20

*Impact of forecast additions in 2019-20 on net MEAV at 31 March 2020*

The forecast additions in 2019-20 on net MEAV at 31 March 2020 has been calculated using the same methodology as line 9.

Line 14 Depreciation 2019-20

*Impact of forecast current cost depreciation, capital charges and disposals in 2019-20 on net MEAV at 31 March 2020*

This relates to the impact of forecast current cost depreciation, capital charges and disposals in 2019-20 on net MEAV at 31 March 2020. This has been calculated using same methodology as line 6.

Line 15 Other forecast adjustments 2017-2020

*Other forecast adjustments between net MEAV in March 2017 and net MEAV in March 2020*

There is no forecast adjustments between net MEAV in March 2017 and net MEAV in March 2020.

Line 16 Net MEAV as at 31 March 2020

*Net MEAV for water resources and other water assets at 31 March 2020. Sum of WS12 lines 8 to 15*  
Calculated line.

Line 17 Net MEAV as at 31 March 2020 (% of total water wholesale)

*Net MEAV for water resources and other water assets at 31 March 2020 as a percentage of the overall net MEAV for wholesale water. Calculation.*

Calculated line.

Block C RCV as at 31 March 2020

Line 18 Proposed RCV allocation 31 March 2020 (pre-midnight adjustments)

## Welsh Water – Wholesale Water Service Table Commentaries

*Company proposal of RCV allocation at 31 March 2020. Companies should explain in their narrative the basis for this line. Depending on the approach the company takes, it may relate to the net MEAV allocation shown in lines 1 to 17, but this will not necessarily be the case.*

The calculated RCV split based on the gross MEAV. The calculation and tie-back to the information provided in sections A and B is shown in the table A1 in the annex.

### Line 19 RCV 31 March 2020 (% of total wholesale water)

*Company proposal of RCV allocation for water resources and other water assets at 31 March 2020 as a percentage of the overall net MEAV for wholesale Water. Calculation.*

Calculated.

## Welsh Water – Wholesale Water Service Table Commentaries

## Annex – WS12 supporting information

**Table A1– Analysis of relationship of net MEAV in table WS12 to the gross MEAV used for allocation wholesale water RCV**

Line			Units	Price base	Water resources	Water network plus	Total wholesale water	WR MEAV - Total MEAV	Water resources	Water network plus	Total wholesale water	Water resources	Water network plus	Total wholesale water	WR MEAV - Total MEAV
	<b>Req Accounts 2014-15</b>				Gross	Gross	Gross	Gross	CCD	CCD	CCD	Net	Net	Net	Net
1	Non-Infrastructure	MEAV as at 31 March 2015	£m	Mar-15	143	2,051	2,194		(45)	(788)	(834)	97	1,263	1,360	
2	Infrastructure	MEAV as at 31 March 2015	£m	Mar-15	845	6,721	7,566		0	0	0	845	6,721	7,566	
3	Total	MEAV as at 31 March 2015	£m	Mar-15	988	8,772	9,760	10.1%	(45)	(788)	(834)	942.196	7,983.664	8,926	10.6%
	<b>APR 2016 and 2017</b>														
4		Disposals	£m	Mar-18	(15)	(40)	(54)		8	40	48	(6)	0	(6)	
5		Reclassification	£m	Mar-18	20	(20)	0		(6)	6	0	14	(14)	0	
6		Inflation of opening MEAV to Mar 17	£m	Mar-18	81	723	805		(4)	(65)	(69)	78	658	736	
7		Additions	£m	Mar-18	28	215	243		(12)	(130)	(142)	16	85	101	
8	Total	MEAV as at 31 March 2017	£m	Mar-18	1,102	9,651	10,753	10.2%	(59)	(937)	(996)	1,043	8,714	9,757	10.7%
	<b>forecasts at 2017.18 price base</b>														
9	2017-18	Additions	£m	Mar-18	20	105	125		(6)	(67)	(73)	14	39	53	
10	2018-19	Additions	£m	Mar-18	25	93	118		(6)	(61)	(67)	20	32	51	
11	2019-20	Additions	£m	Mar-18	25	76	102		(6)	(60)	(66)	19	16	35	
12	2017-20	sub-total	£m	Mar-18	71	274	345		(18)	(187)	(205)	53	87	140	
13	2017-20	Other adjustments	£m	Mar-18	0	0	0		0	0	0	0	0	0	
14	2017-20	Change to MEAV as at 2017	£m	Mar-18	71	274	345		(18)	(187)	(205)	53	87	140	
15	Total	MEAV as at 31 March 2020	£m	Mar-18	1,173	9,925	11,098	10.6%	(77)	(1,124)	(1,202)	1,096	8,800	9,896	11.1%
	<b>Unfocussed RCV allocation</b>				<b>Unfocussed split on gross MEAV</b>			<b>WR @</b>				<b>Unfocussed split on net MEAV</b>			<b>WR @</b>
16	RCV	Wholesale Water 2019-20	£m	Mar-18	187.807	1,589.212	1,777.019	10.6%				190	1,529	1,720	11.1%

**Table A2 – Ofwat’s feedback on the industry initial submissions of the allocation wholesale water RCV and commentary on how these have been addressed in the Business Plan**

Item	Ofwat Action	Our response
1	Consider potential bill impacts on (discounted water) customers and consider options for managing these;	<p>The analysis undertaken for the initial submission was scrutinised by Ofwat through a post submission data request. There were no issues arising from this. The split RCV proposed in the Final Business Plan differs mainly due to the change in price base used to present the number. The cost modelling underlying the charge setting process for 2019-20 which includes a shadow split of the water wholesale cost attributions between water resources and water network plus has not caused us to change our conclusion provided with the initial submission that we do not anticipate any material impact on the wholesale bill of discounted water customers (or customers in general) as a direct result of the proposed split of the wholesale water RCV.</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>
2	<p>Explain how we have identified if the bills of any customer are at risk of significant impact arising from:</p> <ul style="list-style-type: none"> <li>• RCV allocation</li> <li>• Balance of costs between Wr and WN+ in the business plan;</li> <li>• Impact of new information on our charging structure</li> </ul>	<p>See item 1 for the RCV allocation.</p> <p>There are no planned changes to end bill charging structures or levels arising from the new information underpinning the split of the RCV or the balance of costs between Water resources and network plus in the business plan.</p>
3	<p>If any customer groups identified as at risk of significant impact then we should set out:</p> <ul style="list-style-type: none"> <li>• How we will manage the bill impact</li> <li>• The expected resulting impact for these customers;</li> </ul>	No groups have been identified as at risk of significant impact.
4	Provide results (or considerations made) of alternative methods of calculation allocation of RCV as cross checks	The net MEAV analysis has been calculated and shown in Table A1 in the annex, there is no material difference and therefore no other alternative methods have been considered.

Item	Ofwat Action	Our response
5	<p>Link to WRMPs:</p> <ul style="list-style-type: none"> <li>Consider the level of detail provided to support the allocation;</li> <li>Consider the consistency between the allocation and the WRMP;</li> <li>Review the calculation of the water resources yield (to be confirmed)</li> </ul>	<p>The feedback recognised that in our submission the “<i>wholesale water RCV and draft WRMP submission appear to be aligned.</i>” There have been no material changes to the RCV allocation or WRMP since the initial submission and so we are able to confirm that the RCV calculation and analysis is still consistent with WRMP and Wr6, including the calculation of the water resources yield.</p>
6	<p>Identify all data requirements to update the tables for September submission, especially for APR18 data and impact of APR18 outturn expenditure on 18-19 and 19-20 forecasts;</p>	<p>All relevant data from APR18 has been incorporated in the underlying analysis.</p>
7	<p>Reconcile the changes from January submission to September submission</p>	<p>The commentary to Table WS12a contains this reconciliation</p>
8	<p>Evidence of independent assurance where the method is based on:</p> <ul style="list-style-type: none"> <li>Data for which independent assurance has not been provided before; or</li> <li>Significant new assumptions;</li> </ul>	<p>Jacobs provided assurance of the initial submission and their assurance of the updates to the tables formed part of the external assurance programme to the Board for the Final Business Plan.</p> <p>There are no significant new assumptions.</p>



## WS12a – Change in RCV allocation in the wholesale water service

### Table Validation

No validation errors appear in this table

Line 1 Proposed RCV allocation 31 March 2020 (pre-midnight adjustments) as submitted in January 2018.  
Input as submitted in the initial submission (in March 17 prices).

Line 2 Revised proposed RCV allocation 31 March 2020 (pre-midnight adjustments).

*Copied from WS12 line 18.*

Copied from Table WS12.

Line 3 Difference

*Calculation. WS12a line 2 minus line 1.*

Calculated line (The calculation in the cell is line 1 minus line 2 the calculations in Block B have been made on the same basis).

Line 4 Unexplained difference

*Calculation. WS12a line 3 minus sum of lines 5 to 15.*

Calculated line.

### Block B Explanation of changes

Line 5 Inflation from March 2017 to March 2018 prices.

*Impact on RCV proposal (if any) of change in inflation from March 2017 to March 2018.*

The table below shows the calculation of the impact of the change of inflation on the initial RCV.

	Units	Price base	Water resources	Water network plus	Total wholesale water
<b>Change since Initial submission</b>					
Initial RCV allocation	£m	Mar-17	181.9	1,537.6	1,719.6
Increase due to RPI (278.3-269.3)	£m	Mar-18	6.1	51.4	57.5
Initial RCV allocation	£m	Mar-18	188.0	1,589.0	1,777.0
Proposed RCV allocation (Sep 18)	£m	Mar-18	187.8	1,589.2	1,777.0
Change	£m	Mar-18	(0.2)	0.2	(0.0)

Line 6 Changes in forecast expenditure

*Impact on RCV proposal (if any) of change in forecast expenditure between 1 April 2018 and 31 March 2020, compared to that assumed in January 2018.*

The table in the commentary for line 5 shows the impact on the RCV proposal of changes to forecast expenditure between 1 April 2018 and 31 March 2020. It also includes the impact of the change between the forecast expenditure for 2017-18 and actual expenditure recorded in APR18.

The change reflects a small change in the split of the gross MEAV between water resources and water network plus asset valuation.

<b>Allocation of MEAV</b>			<b>Water resources</b>	<b>Water network plus</b>	<b>Total wholesale water</b>	<b>WR MEAV - Total MEAV</b>
			Gross	Gross	Gross	Gross
Gross MEAV as at 31 March 2020	£m	Mar-17	1,144.5	9,672.7	10,817.2	10.58%
Gross MEAV as at 31 March 2020	£m	Mar-18	1,172.9	9,924.8	11,097.7	10.57%
Difference	£m	Mar-18	28.4	252.1	280.5	-0.01%

## Welsh Water – Wholesale Water Service Table Commentaries

<b>Difference made up of:</b>						
<b>Change due to:</b>						
<b>Inflation</b>	£m	Mar-18	38.2	323.3	361.5	
<b>Additions to Gross MEAV</b>	£m	Mar-18	(9.9)	(71.1)	(81.0)	

The change due to Additions to Gross MEAV are due to two factor a reduction in the level of the capital programme by £23m for the last three years of the AMP and also by the change of allocation of capital expenditure to IRE of £58m which is not treated as additions as it is now treated as Opex under IFRS. The schedule showing the annual changes is shown in the annex.

### Line 7 Changes in forecast capital maintenance charges

*Impact on RCV proposal (if any) of change in forecast capital maintenance between 1 April 2018 and 31 March 2020, compared to that assumed in January 2018.*

The CCD adjustment from net to Gross MEAV is shown in the table below. The difference due to the change in forecast capital maintenance charges is negligible against an MEAV of £11.1bn.

			<b>Water resources</b>	<b>Water network plus</b>	<b>Total wholesale water</b>
			CCD	CCD	CCD
<b>January 2018 submission</b>	Mar-17	£m	(75)	(1,090)	(1,165)
<b>January 2018 submission</b>	Mar-18	£m	(78)	(1,126)	(1,204)
<b>September 2018 submission</b>	Mar-18	£m	<u>(77)</u>	<u>(1,124)</u>	<u>(1,202)</u>
<b>Change outside of inflation</b>	Mar-18	£m	1	2	2

### Line 8 Changes to the allocation of assets between business units

*Impact on RCV proposal (if any) of change in allocation of assets between business units, compared to that assumed in January 2018.*

There have been no change of assets between business units compared to that assumed in January 2018.

### Line 9 to 15

*Company specific defined line*

Not used.

# Annex – WS12a supporting information

The table below shows the driver for the change in Gross MEAV between the January submission and the September business plan to support the commentary for line 6. The result of the changes is that the unfocussed split of the RCV changes from 10.58% to 10.57% resulting in the £210k movement of RCV from Water resources to Water network plus

Table A1– Analysis of the change in additions to the gross MEAV

Table A1 – Analysis of the change in additions to the gross MEAV																
Initial submission (Price Base - March 2017)										Initial submission (Price Base - March 2018)				Difference due to inflation		
Line	-		Units	Price base	Water resources	Water network plus	Total wholesale water	WR MEAV - Total MEAV	Price base	Water resources	Water network plus	Total wholesale water		Water resources	Water network plus	Total wholesale water
	-				Gross	Gross	Gross	Gross		Gross	Gross	Gross		Gross	Gross	Gross
8	Total	MEAV as at 31 March 2017	£m	Mar-17	1,066	9,339	10,405	10.2%	Mar-18	1,102	9,651	10,753		36	312	348
<b><u>forecasts at 2016.17 price base</u></b>																
9	2017-18	Additions	£m	Mar-17	25	136	161		Mar-18	26	141	167		1	5	5
10	2018-19	Additions	£m	Mar-17	32	110	142		Mar-18	33	114	147		1	4	5
11	2019-20	Additions	£m	Mar-17	21	88	109		Mar-18	22	91	112		1	3	4
12	2017-20	sub-total	£m	Mar-17	78	334	412		Mar-18	81	345	426		3	11	14
13	2017-20	Other adjustments	£m	Mar-17	0	0	0		Mar-18	0	0	0		-	-	-
14	2017-20	Change to MEAV as at 2017	£m	Mar-17	78	334	412		Mar-18	81	345	426		3	11	14
15	Total	MEAV as at 31 March 2020	£m	Mar-17	1,145	9,673	10,817		Mar-18	1,183	9,996	11,179		38	323	362
Initial submission (Price Base - March 2018)										Final submission (Price base - March 2018)				Difference due to changes in capital programme		
Line	-		Units	Price base	Water resources	Water network plus	Total wholesale water	WR MEAV - Total MEAV	Price base	Water resources	Water network plus	Total wholesale water	WR MEAV - Total MEAV	Water resources	Water network plus	Total wholesale water
	-				Gross	Gross	Gross	Gross		Gross	Gross	Gross	Gross	Gross	Gross	Gross
8	Total	MEAV as at 31 March 2017	£m	Mar-18	1,102	9,651	10,753	10.25%	Mar-18	1,102	9,651	10,753	10.25%			
<b><u>forecasts at 2016.17 price base</u></b>																
9	2017-18	Additions	£m	Mar-18	26	141	167		Mar-18	20	105	125		(6)	(36)	(41)
10	2018-19	Additions	£m	Mar-18	33	114	147		Mar-18	25	93	118		(8)	(21)	(29)
11	2019-20	Additions	£m	Mar-18	22	91	112		Mar-18	25	76	102		4	(15)	(11)
12	2017-20	sub-total	£m	Mar-18	81	345	426		Mar-18	71	274	345		(10)	(71)	(81)
13	2017-20	Other adjustments	£m	Mar-18	0	0	0		Mar-18	0	0	0		-	-	-
14	2017-20	Change to MEAV as at 2017	£m	Mar-18	81	345	426		Mar-18	71	274	345		(10)	(71)	(81)
15	Total	MEAV as at 31 March 2020	£m	Mar-18	1,183	9,996	11,179	10.58%	Mar-18	1,173	9,925	11,098	10.57%	(10)	(71)	(81)

**Table A2 Difference in additions between initial submission and Business Plan**

				Driver of difference due to changes in capital programme		
				Water resources Gross	Water network plus Gross	Total wholesale water Gross
2017-18 Due to	Change in additions	£m	Mar-18	(6)	(35)	(41)
	Change in capital programme	£m	Mar-18	1	(18)	(17)
	Change in allocation to IRE	£m	Mar-18	<u>(7)</u>	<u>(17)</u>	<u>(24)</u>
		£m	Mar-18	(6)	(35)	(41)
2018-19 Due to	Change in additions	£m	Mar-18	(8)	(21)	(29)
	Change in capital programme	£m	Mar-18	(3)	(10)	(13)
	Change in allocation to IRE	£m	Mar-18	<u>(5)</u>	<u>(11)</u>	<u>(16)</u>
		£m	Mar-18	(8)	(21)	(29)
2019-20 Due to	Change in additions	£m	Mar-18	4	(15)	(11)
	Change in capital programme	£m	Mar-18	15	(8)	7
	Change in allocation to IRE	£m	Mar-18	<u>(11)</u>	<u>(7)</u>	<u>(18)</u>
		£m	Mar-18	4	(15)	(11)
2017-20 Due to	Change in additions	£m	Mar-18	(10)	(71)	(81)
	Change in capital programme	£m	Mar-18	13	(36)	(23)
	Change in allocation to IRE	£m	Mar-18	<u>(23)</u>	<u>(34)</u>	<u>(58)</u>
		£m	Mar-18	(10)	(71)	(81)

## WS13 - PR14 wholesale revenue forecast incentive mechanism for the water service

### Table Validation

No validation errors appear in this table

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 - water

*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 -  $K \sim \text{water}$

*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 ~ water

*Total revenue forecasted in PR14. Calculated as 2014-15 allowed revenue (WS13 line 9) compounded by RPI (WS13 line 10) and K (WS13 line 11).*

Calculation.

Line 13 - RCM blind year 14-15 adjustment for implementing via WRFIM ~ water

*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 ~ water

*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' water charges, household and non-household over the 2015-2020 price review period. Annual wholesale water charge revenue as reported in company's regulatory reporting 2I.*

Actual Revenue is obtained from Table 2I 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 - Water: Revenue collected from household and non-household

*Calculated. Sum of WS13 lines 15 to 20.*

Calculation.

Line 22 - Water: Grants and contributions

*Actual water grants and contributions revenue recovered. As defined in the RAGs for 2017-18 2I, 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 - Water: Revenue recovered

*Calculated. Sum of WS13 lines 21 and 22*

Calculation.

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

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

Pre-populated. Data obtained from the Final Determination.

Line 25 - Water: Grants and contributions

## Welsh Water Wholesale Water Services Business Plan Table Commentaries

*Relevant water 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 21*  
Calculation.

### Line 26 - Water: Grants and contributions variance

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

### Line 27 - Main revenue adjustment as incurred ~ water

*Main revenue adjustment as incurred. These values are calculated in the PR14 reconciliation WRFIM model on 'WRFIM - Water' 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 ~ water

*Penalty adjustment as incurred. These values are calculated in the PR14 reconciliation WRFIM model on 'WRFIM - Water' 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 - Water' 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 - Water' 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.

## WS15 - PR14 wholesale total expenditure outperformance sharing for the water service

### Table Validation

No validation errors appear in this table

#### Line 1 – Company type

*Company type is either WaSC or WoC.*

Pre-populated. WaSC.

#### Line 2 – Is the 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 – Water: 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 – Water: FD pension deficit recovery costs allowance

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

Pre-Populated. PR14 Final determination.

#### Line 6 – Water: 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 – Water: 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 - Water: 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 – Water: 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



## Welsh Water Wholesale Water Services Business Plan Table Commentaries

Table	Line		2015-16	2016-17	2017-18	2018-19	2019-20
WS15	C9	Water : Actual Totex	229.6	312.0	346.7	344.2	310.1
	PUA				7.7	6.7	5.6
	Adjusted Total				354.4	350.9	315.7
WS1	E36	Total expenditure			354.4	350.9	315.7

### 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 – Water: 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 16 – PAYG

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

Pre-populated. Obtained from the PR14 final determination.

### Lines 17 – 23 - Business rates IDoK

*Business rates IDoK. Mechanism to account for the notified item on business rates. Only activated if after successful IDoK. See Annex of company FD letters and section 5.1 of this report for further details.*

N-A as there has been no IDoK during the period.

### Line 24 – Water: 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 197.

### Line 25 – Water: 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 202.

### Line 26 – Water: Totex menu revenue adjustment at 2017-18 FYA CPIH delated price base

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

Output from the revenue feeder model.

### Line 27 - Water: Totex menu RCV adjustment at 2017-18 FYA CPIH deflated price base

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

Output from the RCV feeder model.

## WS17 - PR14 water trading incentive reconciliation

### **Table Validation**

No validation errors appear in this table

We have an Ofwat approved trading and procurement code. We published our trading and procurement code on 25<sup>th</sup> November 2015 and it was approved by Ofwat in February 2016.

We do not anticipate entering into a new trades during the AMP.

## WS18 – Explaining the 2019 Final Determination for the water service

### Table Validation

No validation errors appear in this table

#### Overview

This table provides an overview of the water services part of our business plan submission. Most of the lines are determined and calculated from elsewhere in the business plan tables. This table does not, however, provide a full picture of our water services business plan.

#### Line 1 Residential customers metered

*The actual and forecast total percentage of residential customers receiving a metered water supply. This is a calculated line based on the total number of residential properties billed for measured water in lines 1 and 2 of WS3 divided by the total number of residential properties from lines 1, 2 and 4 in WS3.*

Our reported figures exclude meters on void properties as per the WS18 definition and linked to table WS3.

The 2015-16 and 2016-17 numbers are as per those reported and published in CCWater “Quarterly report”.

The definitions of Residential & Business are the same as the APR. The company defines these categories based on the ‘Chapter 7’ Guidelines (Ofwat, 2011) and the Household / Non-household classifications. For the purpose of the APR and PR19, Household = Residential and Non-household = Business.

The increase in the number of residential customers metered is reflecting forecasts in WS3 Lines 1, 2 and 4. The level (%) of metering is due to development and in line with the company metering policy for new connections and meter optants.

#### Line 2 Number of contacts about drinking water (taste, odour and discolouration)

*The actual and forecast total number of contacts from customers about the acceptability of their water includes contacts related to discoloured water, taste and odour. This information is consistent with the basis of reporting for Discover Water and so is on a calendar year basis.*

We expect to reduce the number of contacts received year on year as a result of proposed enhancements made to our water treatment works and distribution network.

The end of AMP7 forecast is in line with our performance commitment Wt3 - Acceptability of drinking water but uses the Discover Water definition which is slightly different as the Discover Water definition includes contacts due to problems on customers’ private pipes, whereas our Wt3 performance commitment does not.

#### Line 3 Number of catchment management schemes

*The actual and forecast number of catchment management schemes. Catchment management options are those which use changes in land use, larger scale changes in activities (eg agricultural practices) and/or larger scale natural processes to deliver outcomes for water/wastewater services for customers. Catchment management options can also be used to deliver other obligations or ambitions such as environmental improvements.*

*The nature of catchment management schemes means that they often require partnership working to be effective and may provide multiple benefits through a single scheme, some of which might be societal and intergenerational in nature. We expect catchment management, and other soft infrastructure options (local use of natural processes such as SUDs), to be assessed objectively and our PR19 final methodology sets out further detail under sections on resilience, innovation and outcomes.*

This line states the total number of schemes that will be delivered and includes schemes to meet our obligations under the NEP and WINEP, discussed within 5.8A Water Resources Investment case.

The schemes identified have been limited to schemes that would improve raw water quality supplying our WTWs and for this submission schemes such as SUDS have not been included. Pilots of sustainable

management of natural resources (SMNR) approaches are currently being considered but these have been excluded from this total until the approach is developed further. The high number of schemes during year 3 of AMP7 relate to outcomes expected at the end of stage 1 of our three major related campaigns, Pestsmart, Nutrismart and Animal Health (further information on these campaigns can be found in the 5.8A Water Resources Investment case).

The stage 2 outcomes will not be expected until AMP8.

#### Line 4 Number of people receiving help paying their water 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 water bill.*

The table below reconciles the number of customers receiving help paying their bills. The number includes those receiving assistance through our social tariff scheme "HelpU" and Watersure Wales. The reason the MOS B12, Vulnerable customers on social tariffs, does not reconcile to WS18/WWS18 entries (lines C4 and C5 respectively) is that the MOS (B12) presents the total number of unique customers receiving help with their bill. The sum of this is dual customers plus water only customers plus waste only customers. The entry for line C4 of WS18 is the unique number of dual service and water only customers receiving help with their bill. The entry for line C5 of WWS18 is the unique number of dual service and wastewater only customers receiving help with their bill.

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
<b>MoS B12</b>												
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
<b>WS18 C4</b>												
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
<b>WWS18 C5</b>												
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

#### Line 5 Number of direct procurement water service schemes

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

We do not currently have any water schemes in AMP7 that meet the criteria for direct procurement with expenditure reported in App 21. Further information about our assessment of schemes for direct procurement can be found in the supporting information 5.7 Direct procurement report

#### Line 6 The volume of water traded

*The actual and forecast volume of water traded. The volume of water traded should include the total volume of potable, non-potable, raw and partially treated water that is imported and exported between incumbent water and sewerage and water only companies under both existing bulk supply arrangements and new trade agreements.*

The total actual volumes input for 2015-16 and 2016-17 are taken from the published Bulk Supply templates, the volume for 2017-18 are taken from the APR18. The Bulk Supply templates differ slightly to the APR as the APR submission includes estimates for some supplies which are finalised by the time that the Bulk Supply Template is published.

There is no forecast change in the volumes from 2017-18 for the rest of the period. We have no new trade agreements at this time, although there is an application with Ofwat for a variation of our

appointment for some of the sites currently supplied to SSE which could see a small drop in the volume of water traded (average bulk supply to SSE over the period is <0.1Mld).

**Line 7 Length of rivers improved as a result of WINEP Water Resource schemes**

*The actual and forecast length of river improved as a result of WINEP Water Resource 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.

The number has been defined as the length of river improved in kilometres based on the length quoted within the WINEP or NEP. Further information about our river improvement programme related to the water service can be found in 5.8A Water Resources Investment Case.

**Line 8 Greenhouse gas emissions from water operations**

*The actual and forecast measurement of the annual operational GHG emissions from the company's water operations.*

We are proposing a year on year energy consumption reduction that is supported by the 5.8T Energy investment case and 3.6 PR19 Costs efficiency, benchmarking and recovery

Until 2017-18 our operational carbon emissions were dominated by energy consumption from the grid. Our carbon emissions fell by 71% to 62 ktCO<sub>2</sub> (from 212kt in 16-17) against an internal target for 196 ktCO<sub>2</sub> by 2020.

This fall is largely due to a change in our electricity supply contract which changed on 1st April 2017 to Orsted and includes 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.

Our forecast for CO<sub>2</sub> emissions remain static at 10kt CO<sub>2</sub>e for AMP7 as this accounts for our transport fleet fuel usage. We do not have plans in AMP7 to make our fleet less CO<sub>2</sub> intensive.

**Line 9 Change in the average residential customer water bill over the period**

*The change in the average residential customer water bill over the period between 2024-25 and 2019-20 based on water 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 water bill in 2024-25, calculated consistently with the average bill as used in Discover Water is £168.96 in 2017-18 FYA CPIH deflated prices. This is not the same as the average total bill – water in App7 of £178.61 also in FYA CPIH deflated prices, due to retail component of the latter being calculated as the retail single service revenue for water divided by water only customer in line with the Ofwat financial model. The average residential customer water bill in 2019-20 is £185.84 in 2017-18 FYA CPIH deflated prices, giving a change of -9.09% over the period.

**Line 10 Water totex including cash items and atypical expenditure**

*The actual and forecast total water expenditure (totex) including cash items and atypical expenditure. Totex for 2017-20 is calculated from line 36 of WS1 deflated to the 2017-18 prices using FYA CPIH as contained in App23. Totex for 2020-25 is copied from line 36 of WS1.*

We have entered costs for years 2015-16 and 2016-17 all 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 the principal use adjustment.

The adjustments are as follows:

## Welsh Water Wholesale Water Services Business Plan Table Commentaries

	Water	
	2015-16	2016-17
	£m	£m
Water totex including cash items and atypical expenditure		
Per APR	232.562	312.04
Less grants and contribution not in price control that was not included in 2015-16 reports (as per guidance at that time)	-4.313	
	228.249	312.04
Customer side leaks- all treated as wholesale as this relates to a wholesale outcome (previously included as retail)	1.38	
CAT tables	229.629	312.04
Principal use adjustment		
Depreciation	-0.183	-0.958
Financing charge	-0.006	-0.050
Other operating expenditure	-0.189	-1.008
Principal use Capex adjustment	2.560	8.298
Revised TOTEX ( after CAT and Principal use adjustment)	232.000	319.330
Restated to 2017-18 CPIH	241.261	327.824

The APR tables for AMP6 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). Ofwat is aware of this and have included this in their Q & A feedback.

The principal use adjustment included in APR table 2A has been prepared on an accelerated depreciation basis (such as, full cost recharge) whereas the business plan tables use depreciation and financing charge incurred in the year.

### Line 11 Total number of residential and business customers who receive a water bill

*The actual and forecast number of residential and business customers who receive a water bill. This is a calculated line from the sum of WS3 lines 1 to 5.*

2015-16 and 2016-17 cells have been populated from previously submitted APR tables 2f and 2g. All other cells in this line are calculated.

### Line 12 Amount of planned water investment per customer billed

*The actual and forecast planned total water expenditure per customer. This is calculated from taking the total water expenditure in WS18 line 10 multiplied by 1000, divided by the total number of customers who receive a water bill in WS18 line 11.*

This is a calculated line.

### Line 13 Number of residential retail customers engaged with on the business plan

*The actual total number of water and wastewater residential retail customers engaged with in developing the company's business plan up to submission i.e. in years 2015-16, 2016-17, 2017-18 and 2018-19. The engagement is through all forms of customer engagement such as focus groups, surveys etc.*

The number reported is for only complete surveys i.e. more customers have been engaged but may have only completed part of a survey and so results have not been taken into account. The number of residential retail customers engaged with on Business plan includes; all household customers including

those categorised as worst served and vulnerable. This excludes future customer's figure (175) as these individuals are not as yet retail customers.

Further information on our customer engagement can be found in 1.1 Customer Engagement report

	2016-17	2017-18	2018-19	Total
Residential Customers	1,640	23,560	2,340	27,540
Future Customers	36	15	124	175

Line 14 Number of business customers engaged with on the business plan (Wales only)

*The actual total number of water and wastewater business customers engaged with in developing the company's business plan up to submission i.e. in years 2015-16, 2016-17, 2017-18 and 2018-19. The engagement is through all forms of customer engagement such as focus groups, surveys etc. This line only applies to Wales.*

For the purposes of this line we have interpreted 'business customers' as including all respondents that were not household customers, so includes all non-household customers (most of whom are business customers) and other respondents from stakeholder organisations.. The number reported is for only complete surveys, for example more customers have been engaged but may have only completed part of a survey and so results have not been taken into account.

Further information on our customer engagement can be found in 1.1 Customer Engagement report.

The breakdown of the number of customers engaged by year is provided below:

	2016-17	2017-18	2018-19	Total
Business Customers	234	1100	232	1566

## Wn1 - Wholesale network plus raw water transport and water treatment (explanatory variables)

### Table Validation

There are no validation errors in this table

Line 1 Total number of number of raw water transport stations

*For the avoidance of doubt this is the number of sites as opposed to the number of individual pumps.*

The number of raw water transport stations is not forecast to change during the remaining years of AMP6 or during AMP7. The data is as provided in the 2017-18 APR 4P.17.

Line 2 Total capacity of raw water transport pumping stations

*Total kW's of all transport pumpsets (duty, assist and standby - irrespective of the number that may be working at any one time) associated with raw water transport.*

The number of raw water transport stations is not forecast to change in the remaining years of AMP6 or during AMP7 and therefore the capacity will not change. The data is as provided in the 2017-18 APR 4P.19.

Line 3 Average pumping head for the raw water transport

*Raw water transport business unit as defined in RAG 4 and RAG 2. This is to be calculated using actual pumping head rather than the rating of the pumps.*

The average pumping head is not forecast to change in the remaining years of AMP6 or during AMP7. The data is as provided in the 2017-18 APR 4P.21.

Line 4 Total number of raw water transport import points.

*Points not used in the year should still be included.*

We have one raw water treatment import at Heronbridge which is a United Utilities raw water transport. We are not forecasting any change to the number reported in this line during the remaining years of AMP6 or during AMP 7.

Line 5 Water importer from 3<sup>rd</sup> parties' raw water transport system

*The average daily water imported from 3rd parties raw water transport systems.*

Our raw water transport of 12.71 MI/d is forecast to remain stable until 2024-25.

The figure reported in our 2017-18 APR table 4A.4 of 19.023MI/d includes 12.71MI/d for raw water and 6.31MI/d for treated water.

Line 6 Total number of raw water transport export points.

*Points not used in the year should still be included.*

There are no raw water transport exports forecast over the period.

Line 7 Water exported to 3<sup>rd</sup> parties raw water transport systems

*The average daily water exported to 3rd parties from raw water transport systems.*

There are no raw water transport exports forecast over the period.

Line 8 The length of all raw and pre-treated (non-potable) water transport mains for supplying customers.

*Include i) all amber coloured pipework in the examples given in Appendix 2 of RAG4.07, ii) raw water and pre-treated (non-potable) mains which deliver non-potable water to the end customer or a 3rd party water company, and iii) partially treated water mains which deliver non-potable water to the end customer (e.g. industrial process water and fire-fighting mains) or a 3rd party water company.*



*Exclude raw water abstraction mains and other conveyors reported in Table Wr1 Line 22 and raw and partially treated water mains that are situated within the boundaries of the water treatment service.*  
The length of main is not forecast to change in the remaining years of AMP6 or during AMP7 as there are currently no plans for any new mains to be laid or old mains to be removed. The data is as provided in the 2017-18 APR 4P.63 but round to zero decimal places.

**Line 9 Total water treated by SW simple disinfection works**

*The average daily distribution input derived from surface water works providing simple disinfection and pre-aeration only. Bulk supplies received should be included and bulk exports should be omitted.*  
We have no works in this category and therefore cells are left intentionally blank.

**Line 10 Total water treated at all SW1 works**

*The average daily distribution input derived from surface water works providing simple physical treatment only. Bulk supplies received should be included and bulk exports should be omitted.*  
We have no works in this category and therefore cells are left intentionally blank.

**Line 11 Total water treated at all SW2 works**

*The average daily distribution input derived from surface water works providing single stage complex physical or chemical treatment but excluding processes in W4, W5 & W6. Bulk supplies received should be included and bulk exports should be omitted.*  
We have no works in this category and therefore cells are left intentionally blank.

**Line 12 Total water treated at all SW3 works**

*The average daily distribution input derived from surface water works providing more than one stage of complex treatment but excluding processes in W4, W5 & W6. Bulk supplies received should be included and bulk exports should be omitted.*  
The total water treated at all SW3 works has reduced in line with the reduction of Distribution Input over the planning period. This aligns with the planned reduction in leakage throughout AMP7 and can be seen in the reduction in MI/d of treated water across all works categories.

**Line 13 Total water treated at all SW4 works**

*The average daily distribution input derived from surface water works providing one of the processes with very high operating costs. Bulk supplies received should be included and bulk exports should be omitted.*  
The total water treated at all SW4 works has reduced in line with the reduction of Distribution Input over the planning period. This aligns with the planned reduction in leakage throughout AMP7 and can be seen in the reduction in MI/d of treated water across all works categories.

**Line 14 Total water treated at all SW5 works**

*The average daily distribution input derived from surface water works providing two or more of the processes with very high operating costs. Bulk supplies received should be included and bulk exports should be omitted.*  
The total water treated at all SW5 works has reduced in line with the reduction of Distribution Input over the planning period. This aligns with the planned reduction in leakage throughout AMP7 and can be seen in the reduction in MI/d of treated water across all works categories.

**Line 15 Total water treated at all SW6 works**

*The average daily distribution input derived from surface water works providing processes with extremely high operating costs. Bulk supplies received should be included and bulk exports should be omitted.*  
We do not have any works in this category therefore cells have been intentionally left blank.

**Line 16 Total Water treated at all SW simple disinfection works**

*The average daily distribution input derived from ground water works providing simple disinfection and pre-aeration only. Bulk supplies received should be included and bulk exports should be omitted.*

We do not have any works in this category therefore cells have been intentionally left blank.

**Line 17 Total water treated at all GW1 works**

*The average daily distribution input derived from ground water works providing simple physical treatment only. Bulk supplies received should be included and bulk exports should be omitted.*

We do not have any works in this category therefore cells have been intentionally left blank.

**Line 18 Total water treated at all GW2 works**

*The average daily distribution input derived from ground water works providing single stage complex physical or chemical treatment but excluding processes in W4, W5 & W6. Bulk supplies received should be included and bulk exports should be omitted.*

We do not have any works in this category therefore cells have been intentionally left blank.

**Line 19 Total water treated at all GW3 works**

*The average daily distribution input derived from ground water works providing more than one stage of complex treatment but excluding processes in W4, W5 & W6. Bulk supplies received should be included and bulk exports should be omitted.*

We do not have any works in this category therefore cells have been intentionally left blank.

**Line 20 Total water treated at all GW4 works**

*The average daily distribution input derived from ground water works providing one of the processes with very high operating costs. Bulk supplies received should be included and bulk exports should be omitted.*

As reported in our 2017-18 APR 4P.34 the very small volume (0.03 Ml/d) of Bulk Import flows from one Water Treatment Works (from Symonds Yat, which previously did not have a categorisation) are now included in this line. This number is forecast to remain stable through to 2024-25.

**Line 21 Total water treated at all GW5 works**

*The average daily distribution input derived from ground water works providing two or more of the processes with very high operating costs. Bulk supplies received should be included and bulk exports should be omitted.*

The total water treated at all GW5 works has reduced in line with the reduction of Distribution Input over the planning period. This aligns with the planned reduction in leakage throughout AMP7 and can be seen in the reduction in Ml/d of treated water across all works categories.

**Line 22 Total water treated at all GW6 works**

*The average daily distribution input derived from ground water works providing processes with extremely high operating costs. Bulk supplies received should be included and bulk exports should be omitted.*

We do not have any works in this category therefore cells have been intentionally left blank.

**Line 23 Total water treated at more than one type of works**

*Where water is treated at more than one type of works shown in lines 1 to 14 above, the average daily input which is recorded more than once in rows 1 to 14 above, entered as a negative.*

Lines 24 Total number of SW simple disinfection works

*Total number of surface water works providing simple disinfection and pre-aeration only*

The number of water treatment works until 2024-25 reflects four forecast changes with the proposed abandonment of;

- Halfway in 2018-19 (GW5)
- Portis in 2019-20 (SW3)
- Capel Curig in 2023-24 (SW5)
- Tre Castell in 2024-25 (GW5)

The number of WTW in 2017-18 is 62 eventually being forecast to reduce to 59 by 2024-25.

Line 25 Total number of SW1 works

*Total number of surface water works providing simple physical treatment only.*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 26 Total number of SW2 works

*Total number of surface water works providing single stage complex physical or chemical treatment but excluding processes in W4, W5 & W6*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 27 Total number of SW3 works

*Total number of surface water works providing more than one stage of complex treatment but excluding processes in W4, W5 & W6*

We forecast that the number of SW3 works will remain stable over the period, with the exception of the proposed abandonment of Portis WTWs in 2019-20.

Line 28 Total number of SW4 works

*Total number of surface water works providing one of the processes with very high operating costs.*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 29 Total number of SW5 works

*Total number of surface water works providing two or more of the processes with very high operating costs.*

We forecast that the number of SW5 works will remain stable over the period, with the exception of the proposed abandonment of Capel Curig WTWs in 2023-24.

Line 30 Total number of SW6 works

*Total number of surface water works providing processes with extremely high operating costs.*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 31 Total number of GW simple disinfection works

*Total number of ground water works providing simple disinfection and pre-aeration only*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 32 Total number of GW1 works

*Total number of ground water works providing simple physical treatment only*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 33 Total number of GW2 works

*Total number of ground water works providing single stage complex physical or chemical treatment but excluding processes in W4, W5 & W6*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 34 Total number of GW3 works

*Total number of ground water works providing more than one stage of complex treatment but excluding processes in W4, W5 & W6*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 35 Total number of GW4 works

*Total number of ground water works providing one of the processes with very high operating costs*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 36 Total number of GW5 works

*Total number of ground water works providing two or more of the processes with very high operating costs*

We forecast that the number of GW5 works will remain stable over the period, with the exception of the proposed abandonment of Halfway WTWs in 2018-19 and Trecastell WTWs in 2024-25.

Line 37 Total number of GW6 works

*Total number of ground water works providing processes with extremely high operating costs*

We do not have any works in this category therefore cells have been intentionally left blank.

Line 38 Number of treatment works requiring remedial action because of raw water deterioration

*The number of water treatment works that require remedial action because of raw water deterioration. All works should be supported by the drinking water inspectorate (DWI) or in the case of planned activity be proposed to the DWI. The works should be included in the year the substantive activity is planned to take place.*

Following a review of all raw water quality data and the performance of our WTW asset base, it was determined that only two WTWs qualified as receiving raw water where quality has deteriorated over time and which would satisfy the requirements outlined in DWI Information Letter 01/2013 – Guidance in Drinking Water Quality Requirements for gaining support.

Our interpretation of this “substantive activity” has been the period when the majority of the physical construction work was completed which may or may not align with the final DWI completion or hand over dates but is in line with when water was put into service.

Bryn Cowlyd and Tynywaun WTWs were submitted to DWI as quality schemes and supported by DWI for the business plan submission. This resulted in the issue of legal notice for the two sites; DWR 3333 and DWR 3334 respectively.

- Work at Bryn Cowlyd WTW was due for completion on the 31 December 2017. However, due to unforeseen ground conditions and engineering redesigns required, a Change Application was submitted to DWI in October 2017, resulting in an approved extension to 30 June 2018. A second Change Application was submitted to DWI following the severe weather in March 2018, known as Beast from the East, extending the deadline to 31 December 2018. That has been accepted and a new notice issued.
- Work at Tynywaun WTW was due for completion by 31 March 2018 but due to severe weather in the winter of 2017-18 and resource implications, final commissioning of the

various installations was delayed. A Change Application is currently with DWI for extension to 30 June 2018, and whilst we have received their verbal acceptance, we are awaiting a new notice. Work is now complete at Tynywaun WTW.

For the forecast period, there are zero entries. Only one scheme is supported by DWI for the period 2020-25 but it is unlikely to commence substantive construction until AMP8. There will be activity in this period but will be primarily on detailed design, planning and procurement. This will be the building of a new Cwm Taff Supply Strategy which will replace three existing works.

Line 39 Zonal population receiving water treated with orthophosphate.

*Zonal population receiving water treated with orthophosphate in thousands.*

As reported within our 2017-18 APR 4P.53 - On the 20 December 2017, an additional phosphate dosing plant at Alaw Water Treatment Works serving the North Anglesey Water Quality Zone became operational. The population within this zone who received water dosed with orthophosphate for this ten day period in 2017 are therefore included in the reported number of 2,983,955.

The year on year increases from 2017-18 to 2024-25 inclusive reflect increases in population projections produced by the Office of National Statistics (ONS) and Welsh Government as per WS3 line 15 commentary.

For forecast years the population projections are based upon / consistent with those used in the revised draft demand forecasts and WRMP19.

Line 40 Average pumping head water treatment

*Average pumping head for the water treatment business unit as defined in RAG 4.07 and RAG 2.07.*

*This is to be calculated using actual pumping head rather than the rating of the pumps.*

The average pumping head is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 41- 48 Please disclose the total number of WTW for each banding

Line 41 WTWs in size band 1

The 2017-18 figure is as per our 2017-18 APR table 4P line 91 (21 WTWs in band 1). We are forecasting the following changes:

- abandonment of Halfway WTW (2018-19);
- abandonment of Portis WTW (2019-20);
- abandonment of Capel Curig WTW (2023-24); and
- abandonment of Trecastell WTW (2024-25).

Line 42 WTWs in size band 2

The WTWs in size band 2 is not forecast to change in the remaining years of AMP6 or during AMP7

Line 43 WTWs in size band 3

The WTWs in size band 3 is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 44 WTWs in size band 4

The WTWs in size band 4 is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 45 WTWs in size band 5

The WTWs in size band 5 is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 46 WTWs in size band 6

The WTWs in size band 6 is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 47 WTWs in size band 7

The WTWs in size band 7 is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 48 WTWs in size band 8

We do not current have any WTWs in size band 8 and we are not forecasting this to change, therefore we are reporting zero for the remaining years of AMP6 and AMP7.

Line 49 Proportion of total DI band 1

The change to our proportion of total DI band 1 reflects four forecast changes with the proposed abandonment of:

- Halfway WTW in 2018-19;
- Portis WTW in 2019-20; (changes to DI Input Bands 1 and 5 input transferred to Cray WTW)
- Capel Curig WTW in 2023-24; (DI Input Bands 1 and 2 input transferred to Llyn Conwy WTW)
- Trecastell WTW in 2024-25 (DI Input Bands 1 and 4 input transferred to Glascoed WTW)

Figures based on a calculation so not definitive and flow from WTW is variable.

It is assumed that there will be no additional treatment works constructed or brought online by the end of 2024-25.

All active water treatment works produce water for the full year and there are no standby or emergency sources included in this list. The proportion of DI input includes input from bulk imports from Severn Trent as well a proportional factor of reduction of total distribution input over the five years.

Line 57 Total number of water treatment import

*Total number of water treatment import points. Points not used in the year should still be included.*

We have no water treatment import points therefore have intentionally entered zero in these cells.

Line 58 Water imported from 3<sup>rd</sup> parties' water treatment works

*The average daily water imported from 3rd parties water treatment systems.*

We have no water imported from 3<sup>rd</sup> parties therefore have intentionally entered zero in these cells.

Line 59 Total number of water treatment export

*Total number of water treatment export points. Points not used in the year should still be included.*

We have no water treatment export points, therefore have intentionally entered zero in these cells.

Line 60 Water exported to third parties' water treatment works

*The average daily water exported to 3rd parties from water treatment systems.*

We have no water exported to 3<sup>rd</sup> parties' water treatment works therefore have intentionally entered zero in these cells.

## Wn2 - Wholesale water network plus water distribution (explanatory variables)

### Table Validation

There are no validation errors in this table

Line 1 Total length of potable mains as at 31 March

*The total length of potable water mains on 31 March of report year*

The 2018-19 and 2019-20 projections are calculated by reference to the average of the annual increases in the previous years, such as between 2013-14 and 2017-18.

The table below provides a summary.

2013-14	2014-15	2015-16	2016-17	2017-18		2018-19	2019-20
<b>27218.7</b>	27275.3	27359.8	27563.6	27597	Average	27692	27786
<b>Change</b>	56.60	84.50	203.80	33.4	94.57	27597 + 94.57	27692 + 94.57

Please see commentary on lines 5 to 8, which when totalled provide the figure for this line 1 entry.

Line 2 Total length of potable mains relined

*The total length of mains relined in report year. Include all spray applied lining.*

There is currently no relining programme.

Line3 Total length of potable mains renewed

*The total length of mains renewed in report year. Include mains whose prime purpose is renewal of an existing main, even where existing main remains in service (i.e. is not abandoned immediately on commissioning of new main). Include mains sleeving/pipe cracking/sliplining where used for this category of work.*

The amount of portable mains renewed in the final two years of this AMP period reduces as there is less renewal work required in the affected zones to attain the appropriate level of service.

The dip in the 2018-19 reported figure is due to us implementing an improved internal process to manage our mains renewals programme. This includes the team completing the design work for the entire zone prior to commencement on site instead of a scheme by scheme piecemeal approach.

In addition, we are undertaking significant cleansing activity on our mains and are scheduled in 2018-19 to cleanse some 150kms of main. However, in accordance with the reporting guidance this cleansing work is not reported in this line.

Our forecast for length of mains are based upon three main investments cases plus a number of schemes.

See summary table below for further detail.

	2020-21	2021-22	2022-23	2023-24	2024-25
<b>Investment case - acceptability of water based around the distribution zonal studies solutions.</b>	95.8	95.8	95.8	95.8	95.8
<b>Investment case - Trunk main renewals</b>	0.5	0.5	0.5	0.5	0.5
<b>Investment case – Distribution burst main cluster work.</b>	6.6	6.6	6.6	6.6	6.6
<b>Scheme – Bolton Hill</b>			10		
<b>SOR Tunnel scheme</b>				1.8	
<b>Total (kms)</b>	<b>102.9</b>	<b>102.9</b>	<b>112.9</b>	<b>104.7</b>	<b>102.9</b>

**Line 4 Total length of new potable mains**

*The total length of new mains laid in report year. Include new mains and mains renewals involving upsizing, whose prime justification is the requirement for additional capacity.*

There is an increase in new mains length for 2018-19 and 2019-20 due to some upsizing as part of the zonal study programme and a new trunk main being delivered in line with the growth and development investment case.

The forecast for new mains has been based upon the average length of new mains laid over the last five year, which is felt to be representative of future growth rates. In addition we have included the forecast of known schemes where new mains will be laid during the AMP7 period.

The table below summarises the forecast figures.

	2020-21	2021-22	2022-23	2023-24	2024-25
<b>Starting position based on previous 5 year average</b>	41.3				
<b>Cardiff schemes</b>		+0.5			
<b>Schemes in Llangunnor</b>		+2.18			
<b>Priory Wood in year 3</b>			+0.17		
<b>Bwlch tunnel scheme</b>				+0.4	
<b>New mains for Capel Curig</b>				+6.0	
<b>Merthyr mains work</b>				+5.35	
<b>Merthyr WTW –New mains</b>					+27.35
<b>Total (kms)</b>	<b>41</b>	<b>44</b>	<b>41</b>	<b>53</b>	<b>69</b>

**Line 5 Total length of potable water mains ( $\leq 320\text{mm}$ )**

*The total length of all potable water mains greater than or equal to 320mm. Include all elements of trunk and distribution assets and system ancillaries. Include facilities intended for standby and emergency supplies.*

For the Blind Year calculations for 2018-19 and 2019-20, an average change has been calculated from the previous years reported lengths within the APR tables has been applied.

The table below details the previous years reported lengths and the calculated change between each year. Also shown is the average change over the previous years which has been applied to years 2018-19 and 2019-20.

2013-14	2014-15	2015-16	2016-17	2017-18		2018-19	2019-20
<b>25338.9</b>	25390.2	25481.0	25674.6	25712.5	Average	25805.9	25899.3
<b>Change</b>	51.3	90.8	193.6	37.9	93.4	25712.5 + 93.4	25805.9 + 93.4

The forecast data for this line is based on the AMP 6 profile and also includes the applicable schemes included within the zonal studies solutions and burst mains clusters throughout AMP 7 for mains below 320mm.

The summary table below highlights the figures for each year.

Year	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
<b>Value</b>	25,899 + 41.3 (new mains) <b>25,940</b>	25,940 + 44 (Llangunnor +Cardiff Transfer) <b>25,984</b>	25,984 + 42 (new mains) <b>26,026</b>	26,026 +53 (Merthyr + Capel Curig + Bwlch) <b>26,079</b>	26,079 + 69 - 27.3 + 11.1 (Mainly Merthyr work) <b>26,131</b>



**Line 6 Total length of potable water mains > 320mm - ≤ 450mm**

*The total length of all potable water mains greater than 320mm up to and including 450mm. Include all elements of trunk and distribution assets and system ancillaries. Include facilities intended for standby and emergency supplies.*

For the Blind Year calculations for Years 2018-19 and 2019-20, an average change calculated from the previous years reported lengths within the APR tables has been applied.

The table below details the previous years reported lengths and the calculated change between each year. Also shown is the average change over the previous years which has been applied to years 2018-19 and 2019-20.

2013-14	2014-15	2015-16	2016-17	2017-18		2018-19	2019-20
<b>897.2</b>	899.9	902.4	909.5	908.2	Average	911.0	913.7
<b>Change</b>	2.70	2.50	7.10	-1.3	2.8	908.2 + 2.8	911.0 + 2.8

We are not forecasting any additions to this line for the period 2020-21 to 2024-25, to the diameter not currently known to impact on zonal studies work or trunk main schemes.

**Line 7 Total length of potable water mains > 450mm - ≤ 610mm**

*The total length of all potable water mains greater than 450mm up to and including 610mm. Include all elements of trunk and distribution assets and system ancillaries. Include facilities intended for standby and emergency supplies.*

For the blind year calculations for years 2018-19 and 2019-20, an average change calculated from the previous years reported lengths within the APR tables has been applied.

The table below details the previous years reported lengths and the calculated change between each year. Also shown is the average change over the previous years which has been applied to years 2018-19 and 2019-20.

2013-14	2014-15	2015-16	2016-17	2017-18		2018-19	2019-20
<b>551.3</b>	552.1	543.6	545.1	541.8	Average	539.4	537.1
<b>Change</b>	0.80	-8.50	1.50	-3.3	-2.4	541.8 + -2.4	539.4 + -2.4

Our forecast figures for this line remain relatively stable with some small increases, including:

- 2021-22 an increase of 0.5km for the Cardiff transfer main;
- 2023-24 an increase of 1.8km for the SOR pumping station scheme; and
- 2024-25 an increase of 5.4km for enabling work for Merthyr WTW.

**Line 8 Total length of potable water mains > 610mm**

*The total length of all potable water mains greater than 610mm. Include all elements of trunk and distribution assets and system ancillaries. Include facilities intended for standby and emergency supplies.*

For the blind year calculations for years 2018-19 and 2019-20, an average change calculated from the previous years reported lengths within the APR tables has been applied.

The table below details the previous years reported lengths and the calculated change between each year. Also shown is the average change over the previous years which has been applied to years 2018-19 and 2019-20.

2013-14	2014-15	2015-16	2016-17	2017-18		2018-19	2019-20
431.4	433.1	432.7	434.4	434.6	Average	435.4	436.2
Change	1.70	-0.40	1.70	0.2	0.8	434.6 + 0.8	435.4 + 0.8

Our forecast remains stable across the AMP 7 period, apart from a small increase in 2024-25 for enabling work for the Merthyr WTW scheme.

#### Line 9 Total capacity of booster pumping stations

*Total kW's of all treated water pumpsets (duty, assist and standby - irrespective of the number that may be working at any one time) associated with Treated water distribution (into and within). Refer to RAG 2 Appendix 2 for proportional allocation.*

We do not envisage any increase in this line for the remainder of AMP 6.

In line 31 we are forecasting three new booster pumping stations in 2024-25 with the increase in capacity shown in this line. These will support the Cwm Taf Water Supply Strategy, further information is provided in the investment case 5.8E Cwm Taf Water Supply Strategy.

#### Line 10 Total capacity of service reservoirs

*The total constructed capacity of treated water service reservoirs within the water supply system including treated water reservoirs at water treatment works and any secondary disinfection plant on reservoir sites. Include break pressure tanks. Exclude decommissioned assets.*

The prediction until the end of AMP 6 is that we will remove one small reservoir per year in the network to reduce our maintenance cost and improve resilience of water by operating the networks better. Small reservoirs normally serve dwindling rural communities and the demand on these reservoirs is low and can present a higher risk in terms of resonance of the water inside. These customers can be better served with the removal of these reservoirs and having new pipe work laid from other larger service reservoirs.

#### Line 11 Total capacity of water towers

*The total constructed capacity of treated water storage towers within the water supply system. Exclude decommissioned assets.*

There are no plans to build or decommission any water towers therefore the capacity of water towers is not forecast to change in the remaining years of AMP 6 or during AMP 7.

#### Line 12 Distribution input

*Distribution input is the average amount of potable water entering the distribution system. See below for a diagrammatic representation of what this should include.*

Forecast data for 2018-19 onwards is initially sourced from the demand forecasting model developed and underpinning the revised Draft Water Resources Management Plan 2019 (WRWP19). These represent 'normal year' DI forecasts.

The total leakage forecast captures the PR19 15% reduction commitment across AMP7. This reduction profile is also reflected in the distribution input forecast and the distribution losses forecast in line 26 and total leakage forecasts (line 25). These represent 'normal year' DI forecasts.

#### Line 13 Proportion of distribution input derived from impounding reservoirs

*Proportion of distribution input derived from impounding (gravity fed) reservoirs, including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources.*

The proportion of distribution input derived from impounding reservoirs is not forecast to change in the remaining years of AMP6 or during AMP7. Please note whilst the unit column within the PR19

table Wn2 lines 13 to 18 state 'Propn 0 to 1' the validation checks appears to require the data to be entered as a percentage figure.

**Line 14 Proportion of distribution input derived from pumped storage reservoirs**

*Proportion of distribution input derived from pumped storage reservoirs including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources. Please refer to additional guidance relating to number of sources. Pumped storage reservoirs will receive an element of gravity flow. If this flow makes a material contribution (>20%) to the volume of the reservoir the distribution input from this source should be allocated proportionally between the two reservoir types. When reporting source numbers the source should be allocated according to the type of flow that delivers the larger part of the reservoir's input. For example, if 60% of the reservoir's volume is pumped river water the source should be counted as a pumped storage source.*

The proportion of distribution input derived from pumped storage reservoirs is not forecast to change in the remaining years of AMP6 or during AMP7.

**Line 15 Proportion of distribution input derived from river abstractions**

*Including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources. Please refer to additional guidance in Wr1 line 16 relating to number of sources*

The proportion of distribution input derived from river abstractions is not forecast to change in the remaining years of AMP6 or during AMP7.

**Line 16 Proportion of distribution input derived from boreholes, groundwater works, excluding managed aquifer recharge (MAR) water supply schemes**

*Proportion of distribution input derived from groundwater works including bulk supply, but excluding managed aquifer recharge (MAR) water supply schemes. Operational sources from which no water has been obtained in the report year should not be included in the number of sources. Please refer to additional guidance in Wr1 line 16 guidance relating to number of sources.*

The proportion of distribution input derived from boreholes, groundwater works, excluding managed aquifer recharge (MAR) water supply schemes is not forecast to change in the remaining years of AMP6 or during AMP7.

**Line 17 Proportion of distribution input derived from artificial recharge (AR) water supply schemes**

*Including bulk supply. AR schemes are a subset of managed aquifer recharge (MAR) schemes, which functions by recharging an aquifer before or after abstraction. The water abstracted is not necessarily the water that has been recharged, so the water can be of natural quality and require more complex treatment. This excludes aquifer storage and recovery (ASR) water supply schemes (see line 20 below)*

We do not have any artificial recharge water supply schemes therefore have entered zero in this line.

**Line 18 Proportion of distribution input derived from aquifer storage and recovery (ASR) water supply schemes**

*Proportion of distribution input derived from ASR supply schemes including bulk supply. ASR schemes are a subset of managed aquifer recharge (MAR) schemes, which functions by recharging an aquifer, storing that water and maintaining its quality. The aim is to enable simple and less costly treatment of the re-abstracted water, and that the water recharged is predominantly the water that is re-abstracted. This excludes artificial recharge (AR) water supply schemes (see line 19 above).*

We do not have any aquifer storage and recovery water supply schemes therefore have entered zero in this line.

**Line 19 Proportion of distribution input from saline abstractions**

Proportion of distribution input derived from saline abstractions including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources.

We do not have any Saline abstraction therefore have entered zero in this line.

**Line 20 Proportion of distribution input from water reuse schemes**

Proportion of distribution input derived from reuse schemes. Direct effluent reuse, not returned to the environment.

We do not have any water reuse schemes therefore have entered zero in this line.

**Line 21 Water delivered (non-potable)**

*All non-potable water supplied as part of the appointed business. Include all non-potable water charged at standard and non-standard rates.*

We expect water delivered (non-potable) demand to follow the same profile as line WS2 line 24 water delivered (billed measured business) over the next AMP so we have profiled using the same percentage variance. The volume variances do not materially change.

**Line 22 Water delivered (potable)**

*All potable water supplied as part of the appointed business. This includes a) the average volume of water delivered for billed measured residential and business properties, b) the estimated volume of water delivered for billed unmeasured residential and business properties, c) supply pipe leakage, d) meter under registration for water delivered which is measured, e) unbilled water taken legally for legitimate purposes (public supplies for which no charge is made e.g. some sewer flushing etc, uncharged church supplies, fire training and fire-fighting supplies where these are not charged irrespective of whether or not they are metered). Do not include volumes associated with leakage allowance rebates to metered customers and f) water taken illegally providing it is based on actual occurrences using sound and auditable identification and recording procedures (if not this should be treated as distribution losses and excluded from this line).*

Reducing in line with forecasts of demand as per Revised Draft WRMP19 and reflects impacts of metering, population growth, water efficiency activity and future customer behaviours. The step change between 2017-18 and 2018-19 numbers is due to the impact of the convergence measures which have been highlighted at the Water UK Convergence Group at which Ofwat is represented.

**Line 23 Water delivered (billed measured residential)**

*Average volume of water delivered to residential properties which is measured (Ml/d). This is to include supply pipe leakage and meter under-registration. Additional meters fitted to measured residential properties for ancillary supplies (e.g. external hosepipes) which are non-commercial are to be included, as should any fitted to unmeasured residential properties if this is how revenue is allocated. Exclude miscellaneous use (Distribution system operational use, Water taken legally unbilled and Water taken illegally unbilled).*

Our forecast figures are increasing with development, population growth and metering levels. The step change between 2017-18 and 2018-19 numbers are due to the impact of the convergence measures which have been highlighted at the Water UK Convergence Group at which Ofwat is represented.

**Line 24 Water delivered (billed measured business)**

Average volume of water delivered to business properties which is measured (Ml/d). This is to include supply pipe leakage and meter under-registration. Additional meters fitted to measured business properties for ancillary supplies (e.g. external hosepipes) which are non-commercial are to

be included, as should any fitted to unmeasured business properties if this is how revenue is allocated. Exclude miscellaneous use (Distribution system operational use, Water taken legally unbilled and Water taken illegally unbilled).

A stable / relatively flat profile with some small year on year variances due to regression model behaviour as per forecasting process used to inform the WRMP.

#### Line 25 Total leakage

Total leakage measures the sum of distribution losses and supply pipe losses in mega litres per day (ML/d). It includes any uncontrolled losses between the treatment works and the customer's stop tap. It does not include internal plumbing losses.

Our blind year forecast reflects the AMP6 sustainable economic level of leakage (SELL) targets final water resources management plan 2014 (fWRMP14 / PR14).

Our forecast are aligned to the AMP7 SELL targets capturing the 15% leakage reduction commitment across AMP7.

#### Line 26 Distribution losses

Distribution losses represent the losses on the company's potable water distribution system, i.e. excluding supply pipe leakage, which is the customer's responsibility.

Small increase over the period – forecasts are based on volume / rates per property so change (increase) is expected in line with forecasts of total properties as per Revised Draft WRMP19.

The step change between 2017-18 and 2018-19 numbers are due to the impact of the convergence measures which have been highlighted at the Water UK Convergence Group where Ofwat are represented.

#### Line 27 Water taken unbilled

Total water taken unbilled (whether legally or illegally). Water used by the company for mains tests, flushing, washouts, running to waste, or incurred through burst mains or other leakage should be excluded.

All forecasts align to those used in and are consistent with the revised Draft Demand Forecast and WRMP19

This is increasing year on year reflecting the increases in properties counts. This component is forecast using a 'per property rate' set at base year levels (2015-16) and is multiplied by the forecast property counts to produce the volumes so an increase is expected in line with property growth.

#### Line 28 Total number of lead communication pipes

The total number of lead communication pipes within the undertaker's supply area.

We have £5m investment allocated within AMP6 to address lead communication pipes. We aim to deliver a decrease of almost 900 lead communication pipes per year in 2018-19 and 2019-20.

The APR methodology 4P.76 has been applied to arrive at the baseline value of number of lead communication pipes. The average cost of replacement based on a sample exercise is valued at approximately £2,800 per property. An investment line of £20million has been assigned for lead replacement in AMP7, to deliver a flat annual profile for 2020 - 2025. The investment value has been divided by the sample cost to arrive at the forecast replacement total of 7,143. A flat target profile has been applied for each AMP year producing an annual total of 1,429 replacements.

#### Line 29 Total number of galvanised iron communication pipes

The total number of galvanised iron communication pipes within the undertaker's supply area.

The number of galvanised iron communication pipes is not forecast to change in the remaining years of AMP6 or during AMP7. Galvanised pipes have only been recently identified in our network (APR reported these changes), additional surveying in AMP7 will provide an understanding of their impact and associated investment needs.

**Line 30 Total number of other communication pipes**

The total number of other (excluding lead & galvanised iron) communication pipes within the undertaker's supply area.

A flat target profile has been applied for each remaining AMP year producing an annual total of 6,893 replacements.

We have assumed that not all new connections need a communication pipe. Some properties (flats or terrace properties) may have one between two properties. Analysis has shown that approximately 70% of new connections result in a new communication pipe and our forecasts have been based on this analysis.

**Line 31 Total number of booster pumping stations**

The total number of booster pumping stations within the distribution system (potable only). Include those relating to peak network capacity provision and those designed to provide resilience and back up for pump failure. For the avoidance of doubt this is the number of sites as opposed to the number of individual pumps

We are not forecasting any changes to this line during AMP6.

We are forecasting three new booster pumping stations in 2024-25. These will support the Cwm Taf Water Supply Strategy, further information is provided in the investment case 5.8E Cwm Taf Water Supply Strategy.

**Line 32 Total number of service reservoirs**

The total number of treated water service reservoirs within the water supply system including treated water reservoirs at water treatment works and any secondary disinfection plant on reservoir sites. Include break pressure tanks. Exclude decommissioned assets. A single structure divided into separate cells counts as one reservoir.

The prediction until the end of AMP 6 is that we will remove one small reservoir per year in the network to reduce our maintenance cost and improve resilience of water by operating the networks better. Small reservoirs normally serve dwindling rural communities and the demand on these reservoirs is low and can present a higher risk in terms of resonance of the water inside. These customers can be better served with the removal of these reservoirs and having new pipe work laid from other larger service reservoirs.

**Line 33 Total number of water towers**

The total number of treated water service towers within the water supply system. Exclude decommissioned assets.

The number of water towers are not forecast to change in the remaining years of AMP6 or during AMP7.

**Overview of lines 34 to 41**

The changes to the pipe age categories will be as a result of the zonal studies solutions programme (95.8km/yr as outlined in lines 2-4 commentary). The focus of the zonal studies solutions is based on acceptability of water complaints, the majority of these complaints are attributed to discolouration associated with iron mains. Therefore we have assumed that all mains renewed as part of zonal studies will be iron mains.

The current % split of the iron mains pipe age profile of our networks (through GIS) is as below. An assumption has been made that the majority of poor performing zones will be based in the older pipe categories and have therefore split the renewal profiles accordingly.

Row Labels	Sum of LENGTH (km)	Percentage split	Percentage Renewal profile
<b>1881-1900</b>	772789.4576	6	10
<b>1901-1920</b>	2312455.848	19	20
<b>1921-1940</b>	1541615.212	13	20
<b>1941-1960</b>	2155129.108	18	20
<b>1961-1980</b>	2493935.141	21	20
<b>1981-2000</b>	1799089.769	15	10
<b>post 2001</b>	350245.5697	3	
<b>pre 1880</b>	512679.6401	4	
<b>Grand Total</b>	<b>11937939.75</b>	<b>100</b>	<b>100</b>

Line 34 Total length of potable mains laid or structurally refurbished pre-1880

*Total length of potable mains laid or structurally refurbished pre-1880*

The data is not forecast to change in the remaining years of AMP6.

The forecast figures for AMP7 show a decrease in the length for potable water mains laid in the years represented within lines 34 to 39 and is due to older mains being replaced / repaired during refurbishment.

Line 35 Total length of potable mains laid or structurally refurbished between 1881 and 1900

*Total length of potable mains laid or structurally refurbished between 1881 and 1900*

The forecast figures for remaining AMP6 period and AMP7 show a decrease in the length for potable water mains laid in the years represented within lines 34 to 39 and is due to older mains being replaced / repaired during refurbishment.

Line 36 Total length of potable mains laid or structurally refurbished between 1901 and 1920

*Total length of potable mains laid or structurally refurbished between 1901 and 1920*

The forecast figures for remaining AMP6 period and AMP7 show a decrease in the length for potable water mains laid in the years represented within lines 34 to 39 and is due to older mains being replaced / repaired during refurbishment.

Line 37 Total length of potable mains laid or structurally refurbished between 1921 and 1940

*Total length of potable mains laid or structurally refurbished between 1921 and 1940*

The forecast figures for remaining AMP6 period and AMP7 show a decrease in the length for potable water mains laid in the years represented within lines 34 to 39 and is due to older mains being replaced / repaired during refurbishment.

Line 38 Total length of potable mains laid or structurally refurbished between 1941 and 1960

*Total length of potable mains laid or structurally refurbished between 1941 and 1960*

The forecast figures for remaining AMP6 period and AMP7 show a decrease in the length for potable water mains laid in the years represented within lines 34 to 39 and is due to older mains being replaced / repaired during refurbishment.

Line 39 Total length of potable mains laid or structurally refurbished between 1961 and 1980

*Total length of potable mains laid or structurally refurbished between 1961 and 1980*

The forecast figures for remaining AMP6 period and AMP7 show a decrease in the length for potable water mains laid in the years represented within lines 34 to 39 and is due to older mains being replaced / repaired during refurbishment.

Line 40 Total length of potable mains laid or structurally refurbished between 1981 and 2000

*Total length of potable mains laid or structurally refurbished between 1981 and 2000*

The slight increase in length for potable water mains laid is due to some data integrity and capturing of historical data that was undertaken within GIS.

We are not forecasting to change during AMP7.

Line 41 Total length of potable mains laid or structurally refurbished post 2001

*Total length of potable mains laid or structurally refurbished post 2001*

The reported lengths for Line 41, show an increase which is an expected change to the total length due to the capture of new water network as a result of new housing sites and developments and Capital schemes within GIS.

Line 42 Average pumping head treated water distribution

*Average pumping head for the treated water distribution business unit as defined in RAG 4.07 and RAG 2.07. This is to be calculated using actual pumping head rather than the rating of the pumps.*

The average pumping head is not forecast to change in the remaining years of AMP6 or during AMP7.

Line 43 Total number of treated water distribution imports

*Total number of treated water distribution import points. Points not used in the year should still be included.*

This line and line 44 cover 8 bulk supply imports of treated water from Severn Trent. There is no forecast change in the imports over the period.

Line 44 Water imported from 3rd parties' treated water distribution systems

*The average daily water imported from 3rd parties treated water distribution systems.*

This line and line 43 cover 8 bulk supply imports of treated water from Severn Trent. There is no forecast change in the imports over the period.

Line 45 Total number of treated water distribution exports

*Total number of treated water distribution export points. Points not used in the year should still be included.*

This line and line 46 cover fifteen exports of treated water to Albion Water, Severn Trent (including water previously supplied to Dee Valley) and SSE. The volumes include the partially treated water to Albion Water's Shotton Paper Site.

Line 46 Water exported to 3rd parties' treated water distribution systems

*The average daily water exported to 3rd parties from treated water distribution systems.*

This line and line 45 cover fifteen exports of treated water to Albion Water, Severn Trent (including previously supplied to Dee Valley) and SSE. The volumes include the partially treated water to Albion Water's Shotton Paper Site.



## Wn3 - Wholesale revenue projections for the water network plus price control

### Table Validation

There are no validation errors in this table

This table includes all revenue expected by us in provision of our wholesale water 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 App 17 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 water network plus

*Projected total pay as you go (PAYG) for wholesale water network plus costs. Equals WS1 line 21 \* Wn4 line 14.*

Calculated.

Line 2 Pension deficit repair contributions ~ wholesale water network plus

*Projected total cost of pension deficit repair contributions for wholesale water 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 water network plus

*Projected run off (depreciation charge) on post 2020 wholesale water 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 water network plus

*Projected return on post 2020 wholesale water 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 water 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 water 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 water 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 water 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 water network plus

*Forecast current tax payable for wholesale water 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 App 29 – Wholesale tax).

Line 10 Re-profiling of allowed revenue ~ wholesale water network plus

*The impact of re-profiling the wholesale water 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 water network plus

*The PR14 reconciliation revenue adjustments associated with wholesale water 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.

<b>Water Network Plus revenue adjustments (2017-18 CPIH deflated prices)</b>	<b>2020-2021 £m</b>	<b>2021-2022 £m</b>	<b>2022-2023 £m</b>	<b>2023-2024 £m</b>	<b>2024-2025 £m</b>
End of Period ODIs	-2.298	-2.298	-2.298	-2.298	-2.298
Totex	4.958	4.958	4.958	4.958	4.958
WRFIM	-0.538	-0.538	-0.538	-0.538	-0.538
Blind year	-2.383	-2.383	-2.383	-2.383	-2.383
<b>Total Revenue Adjustments</b>	<b>-0.261</b>	<b>-0.261</b>	<b>-0.261</b>	<b>-0.261</b>	<b>-0.261</b>

Line 12 Total wholesale water network plus revenue requirement

*The company's projected total wholesale water network plus revenue requirement. Equals the sum of Wn3 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 Wn3 Wholesale water resources and Wn3 Wholesale water network plus. For the purposes of completing this cell we have calculated the revenue requirement for 2019-20 from WS13 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 water 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 water revenue requirement of £327.581m which has been split 16.9% Water resources and 83.1% Water network plus to give outturn revenue requirement for 2019-20 of £55.282m for Water resources and £272.300m for Water network plus.

Wholesale Water							
WS13		<b>2019-20</b>					
Line 12	Allowed Revenue	317.960					
Line 25	G&C actual		10.087				
Line 26	G&C over recovery		1.470				
calc -(25-26)	G&C allowed	(8.617)					
Fin Mod (FD14)	Other income (inc 3rd party)		15.227				<Water Real AR> row 56: Other income (incl 3rd party income)
			1.198				Inflation factor 2012-13 to 2019-20 outturn
	3rd Party income	18.239					
	Revenue Requirement	327.581					
	Revenue Requirement (£m)	<b>2020-21</b>	<b>2021-22</b>	<b>2022-23</b>	<b>2023-24</b>	<b>2024-25</b>	<b>2020-25</b>
Wr3 Line 12	Water Resources	49	49	50	50	50	248
Wn3 Line 12	Water network plus	239	241	244	247	250	1,221
	Revenue Requirement	288	290	293	297	300	1,469
		17.0%	16.9%	16.9%	16.8%	16.8%	<b>16.9%</b>
		83.0%	83.1%	83.1%	83.2%	83.2%	<b>83.1%</b>
A12 (2019-20)	Split of FD14 2019-20 Rev Req	2019-20					
Wr3	A12 (2019-20)	55.282		<b>16.9%</b>			
Wn3	A12 (2019-20)	272.300		<b>83.1%</b>			
		327.581					

#### Lines 13 – 19

These lines contain the “miscellaneous” income received by the appointed business. The lines in App 17 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 water network plus

*Projected third party revenue covered by the wholesale water network plus price control. Appendix 1 of RAG4.07 provides further information on the income to be categorised as third party.*

The non-potable water income has been allocated to water network plus using the cost attribution model used to inform charge setting and the water resources RCV allocation work.

#### Line 14 Bulk supplies contract not qualifying for water trading incentives (signed before 1 April 2020) water network plus

*Income from bulk supplies (for potable and non-potable supplies) to another water undertaker, where the contract does not qualify for water trading incentives or was signed before 1 April 2020.*

The income from bulk supplies of water treated water bulk supplies have been allocated to water network plus using the cost attribution model used to inform charge setting and the water resources RCV allocation work.

Line 15 Bulk supplies contract qualifying for water trading incentives (to be signed on or after 1 April 2020) water network plus

*Income from bulk supplies (for potable and non-potable supplies) to another water undertaker, where the contract qualifies for water trading incentives and will be signed on or after 1 April 2020.*

No new bulk supplies during the period have been included in the Business Plan.

Line 16 Rechargeable works water network plus

*Rechargeable works, as listed in Appendix 1 of RAG4.07.*

All rechargeable works income for wholesale water has been allocated to the water network plus control.

Line 17 Other non-price control third party services water network plus

*All other non-price control income for third party services e.g. excluded charges, as listed in Appendix 1 of RAG4.07.*

Income from hire of water tankers and has been allocated 100% to the water network plus sub-control. There is no forecast income from the hire of stand pipes as we have recently outsourced this activity as part of the measures we are taking to improve network performance. The income now only comes from the volume of water supplied through the standpipes which is recorded in volumetric income.

Line 18 Total non-price control income (third party services) water network plus

*Projected total income from third party services outside of the wholesale water network plus price control. Equals the sum of Wr3 lines 14 to 17.*

Calculated.

Line 19 Wholesale water network plus non-price control income (principal services)

*Projected income from principal services for which costs are not covered by the wholesale water network plus price control e.g. recreational use of protected land, as listed in Appendix 1 of RAG4.07.*

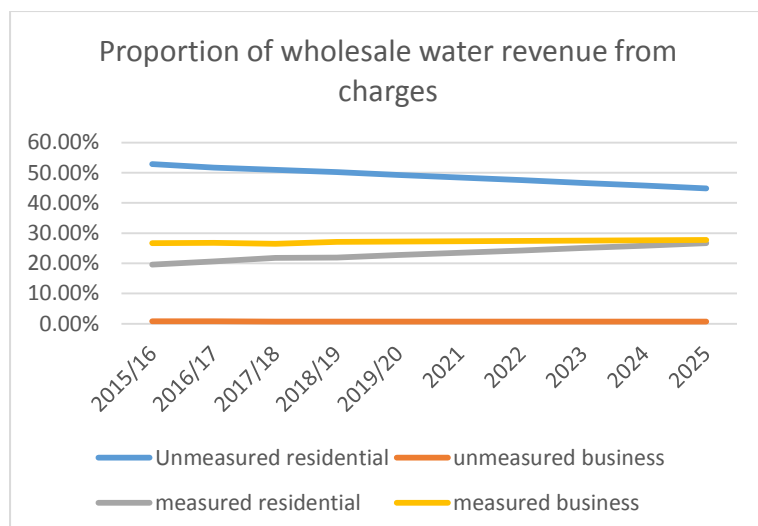
This is the rental income from mobile phone masts on appointed assets land. The income is allocated to sub-control in proportion to weighted average site income from 2015-16 to 2017-18.

Line 20 – 23 Water network plus charges (business & residential)

*The proportional allocation of the projected wholesale water 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 water network plus charges.*

Wholesale water change in proportion of residential revenue due to meter optants and new connections is calculated to be 0.9% from unmeasured residential which moves to 0.78 to measured wastewater and 0.12% to measured business. Unmeasured business remains static. It is assumed that the revenue from network plus and water resources 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 water network plus allowed revenue**

*Projected total wholesale water network plus allowed revenue from wholesale water network plus charges. Charges income should be equal to building blocks income less price control income from other sources. Equals Wn3 line 11 minus line 12.*

Calculated.

**Line 25 Water network plus grants and contributions (price control)**

*Projected grants and contributions covered by the wholesale water network plus price control. This represents the wholesale water network plus element of the total grants and contributions received for the wholesale water service contained in App28 lines 7 to 10.*

All grants or contributions within the price control have been allocated to the water network plus control.

**Line 26 Water network plus grants and contributions (non-price control)**

*Projected grants and contributions not covered by the wholesale water network plus price control. This represents the wholesale water network plus element of the total 'other' non-price control grants and contributions received for the wholesale water service contained in App28 line 12.*

All non-price control contributions are expected for services provided by the water network plus control. No grants have been forecast to be received.

**Line 27 Total revenue wholesale water network plus control**

*Projected total wholesale water network plus revenue requirement for the wholesale water network plus price control including projected grants and contributions covered by the wholesale water network plus price control. Equals Wn3 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	2022	2023	2024	2025
	£m	£m	£m	£m	£m
	2017-18 FYA (CPIH deflated)				
<b><u>Summary</u></b>					
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>
	<b>24.40</b>	<b>22.77</b>	<b>23.00</b>	<b>23.08</b>	
<b>Total Grants &amp; Contributions</b>	<b>0</b>	<b>4</b>	<b>7</b>	<b>1</b>	<b>23.124</b>
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>
	<b>24.52</b>	<b>24.54</b>	<b>24.56</b>	<b>24.58</b>	<b>24.605</b>
<b>Total Other income</b>	<b>6</b>	<b>6</b>	<b>5</b>	<b>5</b>	
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>
	<b>48.92</b>	<b>47.31</b>	<b>47.57</b>	<b>47.66</b>	<b>47.729</b>
<b>Total "miscellaneous" income</b>	<b>7</b>	<b>9</b>	<b>3</b>	<b>7</b>	

The individual lines for App 17 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
			2017-18 FYA (CPIH deflated)					
<b>B</b>	<b>Wholesale - other price control income</b>							
13	Third party revenue							
	<u>Consists of non-potable water (not bulk supplies):</u>							
	<i>Band A Raw &lt;50 MI</i>							
	<i>Band A Partial &lt; 50MI</i>							
	<i>Band B Raw &gt;50 MI</i>							
	<i>Band B Partial &gt;50 MI</i>							
	<i>Special agreements – (WSHNONPOT9, 10a and 10b)</i>							
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	
<b>C</b>	<b>Non-price control income (third party)</b>							
14	Bulk supplies							
	<u>Consists of:</u>							
	<i>Bulk supplies water</i>							
	<i>Bulk supplies wastewater</i>							
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>							
	<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>							

# Welsh Water Wholesale Water Network Business Plan Commentaries

	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
		2017-18 FYA (CPIH deflated)					
	<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 &amp; water tankers</i>						
	<i>Reception and disposal of waste (costs&amp; 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
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	
<b>D</b>	<b>Non-price control income (principal services)</b>						
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	



## Welsh Water Wholesale Water Network Business Plan Commentaries

		Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
<b>F</b>	<b>Grants &amp; Contributions</b>							
25	Wholesale grants and contributions (price control)							
	<u>Consists of capital income:</u>							
	Infrastructure charges							
	Requisitions and self-lay							
	Connection charges (s45 - Water)							
	Diversions							
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>							
	Sewer vetting, adoption agreements (PR19)							
	Feasibilities							
	Grants							
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
<b>Water</b>					
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
<b>Wastewater</b>					
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
<b>Wholesale</b>					
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
<b>Water</b>					
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
<b>Wastewater</b>					
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
<b>Wholesale</b>					
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 Wholesale Water Network Business Plan 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%	0.12%

	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%

## Wn4 - Cost recovery for water network plus

### Table Validation

There are no validation errors in this table

#### Line 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 water 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 Water 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 water network plus is 24.5 years, corresponding to a “natural” RCV run off rate of 4.08% (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 water 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 adjustments to the RCV run off rates (indexed by RPI) for wholesale water 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 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 water network plus. Equals the sum of Wr4 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 water 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 Water 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 water network plus is 24.5 years, corresponding to a “natural” RCV run off rate of 4.08% (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 water 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 water 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 water network plus. Equals the sum of Wr4 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 – Water Network Plus**

**Line 11 “Natural” PAYG rate – water network plus**

*Proposed "natural" PAYG rates for wholesale water network plus relevant to the wholesale water network plus revenue / totex projected in Wn3. 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>WS1 line 11</i>	119.4	115.6	112.4	109.8	111.7
Totex (net G&Cs) (£m) <i>WS1 line 21</i>	273.1	270	262.8	253.4	259
PAYG rate (%)	43.73%	42.80%	42.76%	43.33%	43.15%

	2025-26	2026-27	2027-28	2028-29	2029-30
Opex (£m)	98.4	97.4	96.4	95.4	94.4
Totex (net G&Cs) (£m)	227.3	224.9	222.4	219.9	217.4
PAYG rate (%)	43.29%	43.29%	43.33%	43.37%	43.41%

Line 12 Adjustments to PAYG rate to address transition from RPI to CPI ~ water network plus

*Proposed adjustments to the PAYG rates for wholesale water 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 water network plus

*Proposed other adjustments to the PAYG rates for wholesale water 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 ~ water network plus

*Proposed total PAYG rates to be applied to wholesale water network plus totex. Equals the sum of Wn4 lines 11 to 13.*

Calculated.

## Wn5 - Weighted average cost of capital for the water 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 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

*Total Market Return (TMR)*

The total yield required by investor to invest in a well-diversified benchmark index.

### Line 3 Risk free rate

*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 water resources

*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- water resources.

*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 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



## Wn6 - Wholesale water network plus special cost factors

### Table Validation

There are no validation errors in this table

#### Overview

We are not submitting special factors for the econometric modelling at this time due to the on-going cost assessment working group. However, we are submitting two claims for atypically large investments.

#### Line 1 Description of special cost claim

*Description of costs being put forward for a special cost claim. A separate table block should be filled in for each cost type that has been identified as requiring special treatment (adjustment / exclusion). This description will need to be able to identify the supporting evidence elsewhere in the business plan that sets out the case to the special treatment.*

This claim relates to the investment relating to our major project to provide improved resilience and performance by replacing a number of existing works with a new large water treatment works in Merthyr Tydfil, to be completed across AMP7 and AMP8. It is planned to start in 2020-21 so there is no spend prior to AMP7. The AMP7 element of the project is to construct a new service reservoir and associated connections, which will provide resilience to a major part of our network against interruptions to supply. We do not anticipate commencing construction of the new treatment works until AMP8.

#### Line 2 Type of special cost claim

*Type of special cost claim proposed. This will be one of 'atypically large investment', 'material new costs', 'regional operating circumstances' or 'other (specify)'. See final methodology document for identification of what can be considered as a special cost claim.*

This claim is for an atypically large investment.

#### Line 3 Total expenditure used for the purpose of business plan

*Company's total expenditure related to the proposed special cost claim. Costs in this line should be consistent with business plan costs and should be gross of any capital contributions or grants. Total expenditure is as set out in the Regulatory Accounting Guidelines.*

The project is planned to start in 2020-21 so there is no spend prior to AMP7.

The programme of work and planned expenditure is detailed in Supporting Document 5.8F PR19 IC: Cwm Taf Water Supply. The whole of the total expenditure on this project within AMP7 is included in this line as a special cost factor claim.

#### Line 4 Historic total expenditure

*Historic total expenditure related to the proposed special cost claim. This should be gross of any capital contributions or grants. Total expenditure is as set out in the Regulatory Accounting Guidelines.*

We have not shown any historical expenditure on this line, as there is no pre-2021 expenditure on this specific project.

Naturally, we are spending botex to maintain the existing sites currently but this level of spend will continue through AMP7 until the new site is commissioned in AMP8. The business case for the complete project reflects the expected reduction in both operating costs and capital maintenance costs, but this will not be seen until AMP8. The whole of the AMP7 project cost is related to resilience improvements and therefore it is not appropriate to compare historical costs with this investment level.

**Line 5 Description of special cost claim**

*Description of costs being put forward for a special cost claim. A separate table block should be filled in for each cost type that has been identified as requiring special treatment (adjustment / exclusion). This description will need to be able to identify the supporting evidence elsewhere in the business plan that sets out the case to the special treatment.*

This line relates to the expenditure on our major programme of investment to improve our performance relating to customer acceptability of water.

**Line 6 Type of special cost claim**

*Type of special cost claim proposed. This will be one of 'atypically large investment', 'material new costs', 'regional operating circumstances' or 'other (specify)'. See final methodology document for identification of what can be considered as a special cost claim.*

This claim is for an atypically large investment.

**Line 7 Total expenditure used for the purpose of business plan**

*Company's total expenditure related to the proposed special cost claim. Costs in this line should be consistent with business plan costs and should be gross of any capital contributions or grants. Total expenditure is as set out in the Regulatory Accounting Guidelines.*

This line relates to the expenditure on our major programme of investment to improve our performance relating to customer acceptability of water, which qualifies for a special cost factor as an 'atypically large investment'. As identified in our investment case we are not claiming the whole of the expenditure as a special cost factor, only the element that is enhancement expenditure. We have shown the relevant AMP6 enhancement expenditure in this line for 2018-19 and 2019-20 as a comparator. The programme of work and the breakdown of total expenditure is detailed in the Supporting Document 5.8I: PR19 IC: Acceptability of Water Service Improvement.

**Line 8 Historic total expenditure**

*Historic total expenditure related to the proposed special cost claim. This should be gross of any capital contributions or grants. Total expenditure is as set out in the Regulatory Accounting Guidelines.*

We have shown the relevant AMP6 enhancement expenditure in this line for 2018-19 and 2019-20 as a comparator. The proposed programme for AMP7 is a significant uplift on this level.

## Wr1 - Wholesale water resources (explanatory variables)

### Table Validation

No validation errors appear in this table

#### Line 1 Water from impounding reservoirs

*Water from impounding (gravity fed) reservoirs, including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources.*

The forecast for the volume of water from impounding reservoirs is based on 'normal year' demand. We have forecast a reduction each year as a result of our focus on reducing leakage.

#### Line 2 Water from pumped storage reservoirs

*Water from pumped storage reservoirs including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources. Please refer to additional guidance relating to number of sources. Pumped storage reservoirs will receive an element of gravity flow. If this flow makes a material contribution (>20%) to the volume of the reservoir the distribution input from this source should be allocated proportionally between the two reservoir types. When reporting source numbers the source should be allocated according to the type of flow that delivers the larger part of the reservoir's input. For example, if 60% of the reservoir's volume is pumped river water the source should be counted as a pumped storage source.*

The forecast for the volume of water from pumped storage reservoirs is based on 'normal year' demand. We have forecast a reduction each year as a result of our focus on reducing leakage.

#### Line 3 Water from river abstractions

*Water from river abstractions including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources. Please refer to additional guidance relating to number of sources.*

The forecast for the volume of water from river abstractions is based on 'normal year' demand. We have forecast a reduction each year as a result of our focus on reducing leakage.

#### Line 4 Water from boreholes, groundwater works, excluding managed aquifer recharge (MAR) water supply schemes

*Water from groundwater works including bulk supply, but excluding managed aquifer recharge (MAR) water supply schemes. Operational sources from which no water has been obtained in the report year should not be included in the number of sources. Please refer to additional in Wr1 line 13 guidance relating to number of sources.*

The forecast for the volume of water from Water from boreholes , groundwater works, excluding managed aquifer recharge (MAR) water supply schemes is based on 'normal year' demand. We have forecast a reduction each year as a result of our focus on reducing leakage.

#### Line 5 Water from artificial recharge (AR) water supply schemes

*Water from AR supply schemes including bulk supply. AR schemes are a subset of managed aquifer recharge (MAR) schemes, which functions by recharging an aquifer before or after abstraction. The water abstracted is not necessarily the water that has been recharged, so the water can be of natural quality and require more complex treatment. This excludes aquifer storage and recovery (ASR) water supply schemes (see line below).*

There has been no water from artificial recharge water supply schemes in 2017-18 and there are no future plans for any schemes.

We do not obtain any water from artificial recharge water supply schemes and are not planning to have any schemes in the next AMP. We have therefore forecast zero in this line.

**Line 6 Water from aquifer storage and recovery (ASR) water supply schemes**

*Water from ASR supply schemes including bulk supply. ASR schemes are a subset of managed aquifer recharge (MAR) schemes, which functions by recharging an aquifer, storing that water and maintaining its quality. The aim is to enable simple and less costly treatment of the re-abstracted water, and that the water recharged is predominantly the water that is re-abstracted. This excludes artificial recharge (AR) water supply schemes (see line above).*

There has been no water from artificial recharge water supply schemes in 2017-18 and there are no future plans for any schemes.

We do not obtain any water from artificial recharge water supply schemes and are not planning to have any schemes in the next AMP. We have therefore forecast zero in this line.

**Line 7 Water from saline abstractions**

*Water from saline abstractions including bulk supply. Operational sources from which no water has been obtained in the report year should not be included in the number of sources.*

There has been no water from saline abstraction in 2017-18 and there are no future plans for any schemes.

We do not obtain any water from saline abstraction and are not planning to have any saline abstraction schemes in the next AMP. We have therefore forecast zero in this line.

**Line 8 Water from reuse schemes**

*Water from reuse schemes. Direct effluent reuse, not returned to the environment.*

There has been no water from reuse schemes in 2017-18 and there are no future plans for any reuse schemes.

We do not obtain any water from reuse schemes and are not planning to have any reuse schemes in the next AMP. We have therefore forecast zero in this line.

**Line 9 Number of impounding reservoirs**

*Number of sources of impounding reservoirs. Please refer to additional guidance in Wr1 line 16 relating to number of sources.*

There are no plans for any new pumped storage reservoirs to be built in this AMP or in AMP7, the number has been forecast to remain static, as per 2017-18 APR Table 4P line 7.

**Line 10 Number of pumped storage reservoirs**

*Number of sources of pumped storage reservoirs. Please refer to additional guidance in Wr1 line 16 relating to number of sources. Pumped storage reservoirs will receive an element of gravity flow. The source should be allocated according to the type of flow that delivers the larger part of the reservoir's input. For example, if 60% of the reservoir's volume is pumped river water the source should be counted as a pumped storage source.*

There are no plans for any new pumped storage reservoirs to be built in this AMP or in AMP7, the number has been forecast to remain static as per 2017-19 APR Table 4P line 8.

**Line 11 Number of river abstractions**

*Number of sources of river abstractions. Please refer to additional guidance in Wr1 line 16 relating to number of sources.*

The number of river abstractions is forecast to remain static until 2022-23. In 2022-23, investment is being completed to build a new river abstraction plant on River Dysynni, this will improve the capacity so that there is no supply deficit in this water resource zone to ensure sufficient volumes of water for our customers. There are no other plans to build any other river abstraction plants.

Line 12 Number of groundwater works excluding managed aquifer recharge (MAR) water supply schemes.

*Number of sources of groundwater works, excluding MAR water supply schemes. Please refer to additional guidance in Wr1 line 16 relating to number of sources. For detailed definitions of water supply schemes, see associated data lines for distribution input.*

There are no plans for any new groundwater works to be built in this AMP or in AMP7, the number has been forecast to remain static, as per 2017-18 APR table 4P line 10.

Line 13 Number of artificial recharge (AR) water supply schemes

*Number of sources of AR water supply schemes. Please refer to additional guidance in Wr1 line 16 relating to number of sources. For detailed definitions of water supply schemes, see associated data lines for distribution input.*

We currently do not have any artificial recharge water supply schemes in 2017-18 and there are no future plans for any schemes, as per 2017-18 APR 4P line 11.

Line 14 Number of aquifer storage and recovery (ASR) water supply schemes

*Number of sources of ASR water supply schemes. Please refer to additional guidance in Wr1 line 16 relating to number of sources. For detailed definitions of water supply schemes, see associated data lines for distribution input.*

We do not have any aquifer storage and recovery water supply schemes, and we are not planning to have any schemes in the next AMP. We have therefore forecast zero in this line, as per 2017-18 APR table 4P line 12.

Line 15 Total number of Number of saline abstraction schemes

*Sources of saline abstraction schemes. Please refer to additional guidance in Wr1 line 16 relating to number of sources*

We currently do not have any saline abstraction plants in 2017-18 and there are no future plans for any schemes.

We do not have any saline abstraction plants and are not planning to have any saline abstraction schemes in the next AMP. We have therefore forecast zero in this line.

Line 16 Total number of sources

*The total number of sources operated by a company. This should equal the sum of Wr1 lines 9 to 15. Subject to RAG4, a source is defined as an independent raw water supply that directly supplies a treatment works, such as impounding reservoirs, river abstractions and groundwater. Standby or mothballed sources from which no water has been obtained in the year should not be included.*

Calculated.

Line 17 Number of reuse schemes

*Total number of reuse schemes. Do not include in number of sources (line 16).*

There have been no reuse schemes in 2017-18 and there are no future plans for any reuse schemes. We are not planning to have any reuse schemes in the next AMP and have therefore forecast zero in this line.

Line 18 Total number of water reservoirs

*Total number of reservoirs used for holding raw water. This line shall include impounding reservoirs, pumped storage reservoirs and bank side storage facilities.*

The number of water reservoirs is forecast to remain static until 2022-23. In 2022-23, we are expecting a new bankside storage reservoir on the River Dysynni to become operational to address

water supply deficit in this water resource zone. The number of water reservoirs is then forecast to remain static for the remainder of the AMP.

Line 19 Total capacity of water reservoirs

*Total constructed capacity of all reservoirs used for holding raw water. This line shall include impounding reservoirs, pumped storage reservoirs and bank side storage facilities.*

As per line 18 there is no change to the number of water reservoirs until 2022-23, so the capacity is forecast to remain static. In 2022-23, we are expecting a new bankside storage reservoir on the River Dysynni to become operational to address water supply deficit in this water resource zone. The capacity of this reservoir is 8MI, so the volume has increased to 461,232 in 2022-23 and is then forecast to remain static for the remainder of the AMP.

Line 20 Total number of intake and source pumping stations

*Total number of surface water intake and groundwater works associated with raw water systems. For the avoidance of doubt this is the number of sites as opposed to the number of individual pumps.*

There is no plan to change to the number of intake and source pumping stations until 2022-23, so the number is forecast to remain static. In 2022-23, we are expecting a new bankside storage reservoir on the River Dysynni to become operational to address water supply deficit in this water resource zone. As a result the forecast has been increased to 45 from 2022-23 and is then forecast to remain static for the remainder of the AMP.

Line 21 Total capacity of intake and source pumping stations

*Total kW's of all abstraction pumpsets (duty, assist and standby - irrespective of the number that may be working at any one time) associated with raw water abstraction. Refer to RAG 2 Appendix 2 for proportional allocation.*

The total capacity of intake and source pumping stations will remain static until 2022-23. In 2022-23 we are expecting a new bankside storage reservoir on the River Dysynni to become operational to address water supply deficit in this water resource zone. The new pumping station will have a capacity of 18kW so the forecast has been increased to 2,833 from 2022-23 and is then forecast to remain static for the remainder of the AMP.

Line 22 Total length of raw water abstraction mains and other conveyors

*The length of all mains or other conveyors associated with raw water abstraction either between water resources defined assets (eg a river intake pumping station and a surface water reservoir) or between the sources or from source and the first water resource asset. Include all green coloured pipework in the examples given in Appendix 2 of RAG4.07.*

- In 2017-18 as reported in the 2017-18 APR
- In 2018-19 Based on historical figures the length of raw water abstraction mains and other conveyors has been forecast to reduce by 3km per annum.
- 2019-2020 Based on historical figures the length of raw water abstraction mains and other conveyors has been forecast to reduce by 3km per annum.

We have three capital investment schemes planned for AMP 7 that will change the length of raw water abstraction mains and other conveyors.

- In 2022-23 a new pumping station built on the River Dysynni is planned to become operational, this is forecast to increase the length by 5km;
- In 2023-24 we have forecast the removal of 2.6km of raw water mains at Capel Currig; and
- In 2024-25 we will be removing Trecastell from active service and we have forecast the removal of 2.8km of raw water mains.

The breakdown is shown in the table below;

	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25
<b>Brought forward</b>		542	539	536	536	536	541	538
<b>AMP6 average annual reduction</b>		-3	-3					
<b>WRMP and planned reductions and additions</b>						5	-2.6	-2.8
<b>Length of Raw Water etc mains</b>	542	539	536	536	536	541	538	536

**Line 23 Average pumping head ~ raw water abstraction**

*Average pumping head for the raw water abstraction business unit as defined in RAG 4.07 and RAG 2.07. This is to be calculated using actual pumping head rather than the rating of the pumps.*

The average pumping head for the blind year is assumed to remain the same as with the pumping volumes over the planning period

The average pumping head (AVPH) is forecast to remain static for the remainder of this AMP and the next AMP. The Dyssyni pumping scheme is coming in during 2022-23 which feeds Pen-y-Bont WTW averaging 1 Ml/d flow but has a relatively small lift value and will not impact the AVPH forecast.

**Line 24 Total number of raw water abstraction imports**

*Total number of raw water abstraction import points. Points not used in the year should still be included.*

There are no raw water abstraction imports.

There are currently no plans for raw water abstraction imports to be included so the forecast remains at zero.

**Line 25 Water imported from 3rd parties' raw water abstraction systems**

*The average daily water imported from 3rd parties raw water abstraction systems.*

There are no raw water abstraction imports.

There are currently no plans for raw water abstraction imports to be included so the forecast remains at zero.

**Line 26 Total number of raw water abstraction exports**

*Total number of raw water abstraction export points. Points not used in the year should still be included.*

This line and line 27 cover the export from Elan Valley to Severn Trent. There is no forecast change in the export over the period.

**Line 27 Water exported to 3rd parties' from raw water abstraction systems**

*The average daily water exported to 3rd parties from raw water abstraction systems.*

This line and line 26 cover the export from Elan Valley to Severn Trent. There is no forecast change in the export over the period.

## Wr2 – Wholesale water resource opex

### Table Validation

No validation errors appear in this table

#### Line A1 Opex Analysis: 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 insure total is consistent with Table WS1 line 1.*

The basis of allocation across the asset types was:

- All cost centres within the water resources area were allocated to the appropriate assets
- Actuals were run for those cost centres and a % split was made on the basis of this calculation
- The appropriateness of the allocation for use for 2018-19 to 2024-25 was confirmed by the Head Water Resources

#### Line A2 Opex Analysis: Income Treated as negative expenditure

*Income received from sales which are external to the appointed business and which directly relate to the water processes. It should be input as a negative number. This will include:*

- Electricity sales from sources such as Hydro, PV, and wind to external parties.
- Electricity sales from back-up generators under the National Grid 'STOR'.
- Renewables Obligation Certificates (ROCs) and payments made under the non-domestic RHI and Feed-in Tariff schemes.

*Assuming no atypicals, please insure total is consistent with Table WS1 line 2.*

The majority of this relates to hydro income. However, there is a small element that relates to water recharged to the regulated waste business. Using the water attribution costing model used to inform the charges setting process, this is allocated between the Water upstream services and further to Water Resources, using EA licences as the cost driver.

#### Line A3 Opex Analysis: 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 insure total is consistent with Table WS1 line*

There are no local authority rates and the cumulo rates have been allocated based on MEAV as the cost driver.

#### Line A4 Opex Analysis: Other Direct

*Other direct costs not included in previous lines 1-3.*

This includes IRE expenditure and has been allocated on a causal basis. For those costs that cannot be allocated in this way, the costs have been split on the basis of allocated costs. The reduction in AMP7 is because the IRE spend is forecast to reduce.

#### Line A5 Opex Analysis: Other Indirect

*Other indirect costs not included in previous lines 1-3.*

This cost has increased in 2018-19 and continues for the remainder of AMP6 and AMP7 because of the increase costs of the Dam Safety team relating to delivery of the Dam safety programme. The difference of £0.223 compared to the APR relates to the principal use adjustment which has been allocated across the areas based on indirect costs.

#### Line A6 Opex Analysis: Total before depreciation

*Total before depreciation. The sum of Wr2 lines 1 to 5. Assuming no atypicals, please insure total is consistent with Table WS1 line 9.*

Calculated cell.



Line A7 Opex Analysis: Historical Cost Depreciation

*Historical depreciation charge for relevant fixed assets.*

We have made the assumption that this relates to both the depreciation of tangible fixed assets and the amortisation of intangible assets. The split across areas is based on Gross MEAV.

Line A8 Opex Analysis: Total operating costs (excluding 3rd party)

*Total operating expenditure for the wholesale business only within each business category. The sum of Wr2 lines 6 and 7.*

Calculated sum.

Line B9: Application charge

*Please provide a forecast of application charges based on predicted number of applications likely to be made for new licences or licence renewals.*

We have assumed that there are no new applications likely to be made for new licences or licence renewals.

Line B10: Advertising charge

*Please provide a forecast of the advertising charges based on predicted number of applications likely to be made for new licences or licence renewals.*

We have assumed that there are no new applications likely to be made for new licences or licence renewals.

Line B11: Standard charge

*Please provide a forecast of the standard charge based on existing standard unit charge rates.*

This agrees back to table WS1 line 3.

Line B12: Abstraction charge

*Sum of Wr2 lines 9 to 11 excluding any compensation received from the EA.*

Calculated sum.

## Wr3 - Wholesale revenue projections for the water resources price control

### Table Validation

No validation errors appear in this table

This table includes all our revenue expected for the provision of our wholesale water resources 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 water resources

*Projected total pay as you go (PAYG) for wholesale water resources costs. Equals WS1 line 21 \* Wr4 line 19.*

Calculated.

#### Line 2 Pension deficit repair contributions wholesale water resources

*Projected total cost of pension deficit repair contributions for wholesale water resources.*

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 water resources

*Projected run off (depreciation charge) on post 2020 wholesale water resources 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 wholesale water resources

*Projected return on post 2020 wholesale water resources 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 water resources

*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 water resources

*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 water resources

*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 water resources

*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 water resources

*Forecast current tax payable for wholesale water resources.*

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 water resources

*The impact of re-profiling the wholesale water resources 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 1.1C.

Line 11 PR14 reconciliation revenue adjustments wholesale water resources

*The PR14 reconciliation revenue adjustments associated with wholesale water resources.*

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 water resources.

Line 12 Total wholesale water resources revenue requirement

*The company's projected total wholesale water resources revenue requirement. Equals the sum of Wr3 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 Wr3 Wholesale water resources and Wn3 Wholesale water network plus. For the purposes of completing this cell we have calculated the revenue requirement for 2019-20 from WS13 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 water 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 water revenue requirement of £327.581m which has been split 16.9% Water resources and 83.1% Water network plus to give outturn revenue requirement for 2019-20 of £55.282m for Water resources and £272.300m for Water network plus.

Wholesale Water							
WS13		<b>2019-20</b>					
12	Allowed Revenue	317.960					
25	G&C actual		10.087				
26	G&C over recovery		<u>1.470</u>				
calc -(25-26)	G&C allowed	(8.617)					
Fin Mod	Other income (incl. 3rd party)		15.227	<Water Real AR> row 56: Other income (incl. 3rd party income) Inflation factor 12/13 to 19/20 outturn			
(FD14)			1.198				
	3rd Party income	<u>18.239</u>					
	Revenue Requirement	<u><u>327.581</u></u>					
A12 (2019-20)	Split of FD14 19/20 Rev Req	<b>2019-20</b>					
Wr3	A12 (2019-20)	55.282		<b>16.9%</b>			
Wn3	A12 (2019-20)	<u>272.300</u>		<b>83.1%</b>			
		<u><u>327.581</u></u>					
	Revenue Requirement (£m)						
		20-21	21-22	22-23	23-24	24-25	20-25
Wr3 Line 12	Water Resources	49	49	50	50	50	248
Wn3 Line 12	Water network plus	239	241	244	247	250	1,221
	Revenue Requirement	288	290	293	297	300	1,469
		17.0%	16.9%	16.9%	16.8%	16.8%	<b>16.9%</b>
		83.0%	83.1%	83.1%	83.2%	83.2%	<b>83.1%</b>

#### 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 water resources

*Projected third party revenue covered by the wholesale water resources price control. Appendix 1 of RAG4.07 provides further information on the income to be categorised as third party.*

The non-potable water income has been allocated to water resources using the cost attribution model used to inform charge setting and the water resources RCV allocation work.

#### Line 14 Bulk supplies contract not qualifying for water trading incentives (signed before 1 April 2020) water resources

*Income from bulk supplies (for potable and non-potable supplies) to another water undertaker, where the contract does not qualify for water trading incentives or was signed before 1 April 2020.*

The main source of income from Bulk supplies is from the Elan Valley supply to Severn Trent water this has been allocated 100% to Water Resources. The income from bulk supplies of treated water bulk supplies have been allocated to water resources using the cost attribution model used to inform charge setting and the water resources RCV allocation work. The income from the Elan Valley bulk supply includes a share of distribution from the Trust Fund set up when the original agreement was established therefore the actual trend of income is a factor of the performance of the fund as

well as the amount of water provided. The methodology employed to forecast the expected income is considered reasonable given the uncertainty around the trust fund income.

Line 15 Bulk supplies contract qualifying for water trading incentives (to be signed on or after 1 April 2020) water resources

*Income from bulk supplies (for potable and non-potable supplies) to another water undertaker, where the contract qualifies for water trading incentives and will be signed on or after 1 April 2020.*

No new bulk supplies during the period have been included in the Business Plan.

Line 16 Rechargeable works water resources

*Rechargeable works, as listed in Appendix 1 of RAG4.07*

No rechargeable works income relates to services provided from the water resources sub-control.

Line 17 Other non-price control third party services water resources

*All other non-price control income for third party services e.g. excluded charges, as listed in Appendix 1 of RAG4.07.*

The s20 reservoir operating agreement income has been allocated to the water resources sub-control. A new agreement has been made to reflect the increased capital expenditure for dam safety. The charges in this agreement increase annually by CPIH + 1% so the forecast expenditure at 2017-18 prices is increasing to reflect this.

Line 18 Total non-price control income (third party services) water resources

*Projected total income from third party services outside of the wholesale water resources price control. Equals the sum of Wr3 lines 14 to 17.*

Calculated.

Line 19 Wholesale water resources non-price control income (principal services)

*Projected income from principal services for which costs are not covered by the wholesale water resources price control e.g. recreational use of protected land, as listed in Appendix 1 of RAG4.07.*

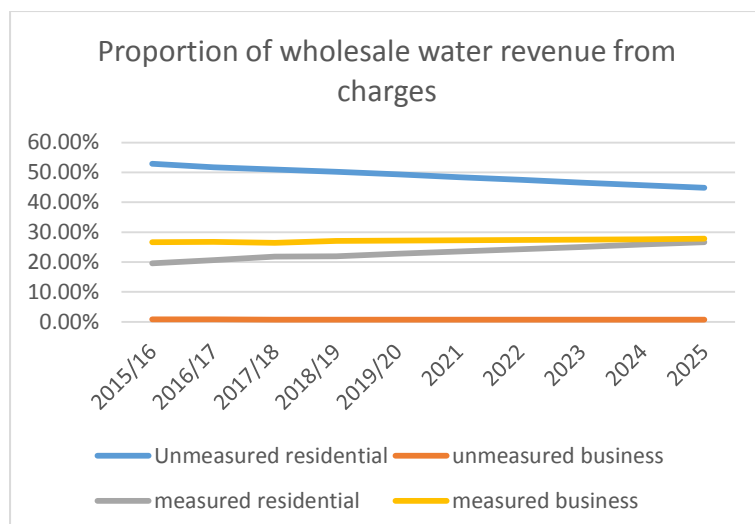
This is the rental income from mobile phone masts on appointed assets land. The income is allocated to sub-control in proportion to weighted average site income from 2015-16 to 2017-18.

Line 20 – 23 Water resources charges (business & residential)

*The proportional allocation of the projected wholesale water resources 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 water resources charges.*

Wholesale water change in proportion of residential revenue due to meter optants and new connections is calculated to be 0.9% from unmeasured residential which moves to 0.78% to measured wastewater and 0.12% to measured business. Unmeasured business remains static. It is assumed that the revenue from network plus and water resources 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 water resources allowed revenue**

*Projected total wholesale water resources allowed revenue from wholesale water resources charges. Charges income should be equal to building blocks income less price control income from other sources. Equals Wr3 line 11 minus line 12.*

Calculated.

**Line 25 Water resources grants and contributions (price control)**

*Projected grants and contributions covered by the wholesale water resources price control. This represents the wholesale water resources element of the total grants and contributions received for the wholesale water service contained in App28 lines 7 to 10.*

No grants or contributions within the price control are forecast for the water resources sub-control.

**Line 26 Water resources grants and contributions (non-price control)**

*Projected grants and contributions not covered by the wholesale water resources price control. This represents the wholesale water resources element of the total 'other' non-price control grants and contributions received for the wholesale water service contained in App28 line 12.*

A grant for work undertaken at Llys-y-Fran reservoir that is expected to be received in 2020-21 has been included in the water resources sub-control. No other capital income is forecast for this sub-control.

**Line 27 Total revenue wholesale water resources control**

*Projected total wholesale water resources revenue requirement for the wholesale water resources price control including projected grants and contributions covered by the wholesale water resources price control. Equals Wr3 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)			
<b><u>Summary</u></b>						
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>
<b>Total Grants &amp; Contributions</b>		<b>24.400</b>	<b>22.774</b>	<b>23.007</b>	<b>23.081</b>	<b>23.124</b>
 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>
<b>Total Other income</b>		<b>24.526</b>	<b>24.546</b>	<b>24.565</b>	<b>24.585</b>	<b>24.605</b>
 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>
<b>Total "miscellaneous" income</b>		<b>48.927</b>	<b>47.319</b>	<b>47.573</b>	<b>47.667</b>	<b>47.729</b>

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>B</b>	<b>Wholesale - other price control income</b>						
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	
<b>C</b>	<b>Non-price control income (third party)</b>						
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	



Welsh Water - Water Resources Table Commentaries

	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						
	<i>Consists of:</i>						
	<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)						
	<i>Consists of "Excluded" charges (Li.Con B)</i>						
	<i>s20 Reservoir operating agreements (NRW)</i>						
	<i>s20 Reservoir operating agreements (additional capex) (NRW)</i>						
	<i>Stand pipes</i>						
	<i>Water tanks &amp; water tankers</i>						
	<i>Reception and disposal of waste (costs&amp; 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

		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	
<b>D</b>	<b>Non-price control income (principal services)</b>							
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 2015-16 to 2017-18
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 2015-16 to 2017-18
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 2015-16 to 2017-18
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 2015-16 to 2017-18
App17	Other non-price control (principal services)		0.878	0.878	0.878	0.878	0.878	

	Year ending Mar	2021 £m	2022 £m	2023 £m	2024 £m	2025 £m	Apportionment to sub-controls
		17/18 FYA (CPIH deflated)					
<b>F</b>	<b>Grants &amp; Contributions</b>						
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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# Welsh Water - Water Resources Table Commentaries

	Measured	Measured	Measured	Measured	Measured
<b>Water</b>					
<b>Household</b>	19.61%	20.69%	21.84%	21.95%	21.02%
<b>Non-Household</b>	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
<b>Wastewater</b>					
<b>Household</b>	25.20%	25.28%	26.75%	26.85%	26.02%
<b>Non-Household</b>	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
<b>Wholesale</b>					
<b>Household</b>	22.85%	23.34%	24.69%	24.78%	23.92%
<b>Non-Household</b>	21.92%	22.33%	22.31%	22.40%	22.24%
	45%	46%	47%	47%	46%

	Unmeasured	Unmeasured	Unmeasured	Unmeasured	Unmeasured
<b>Water</b>					
<b>Household</b>	52.92%	51.73%	50.95%	50.22%	51.46%
<b>Non-Household</b>	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
<b>Wastewater</b>					
<b>Household</b>	55.59%	54.90%	53.23%	53.49%	54.30%
<b>Non-Household</b>	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
<b>Wholesale</b>					
<b>Household</b>	54.46%	53.57%	52.28%	52.11%	53.10%
<b>Non-Household</b>	0.77%	0.76%	0.72%	0.72%	0.74%
	55%	54%	53%	53%	54%

## Welsh Water - Water Resources 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%	0.12%

	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%

## Wr4 - Cost recovery for water resources

### Table Validation

No validation errors appear 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 water resources. (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 Water Resources 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 water resources is 29.0 years, corresponding to a “natural” RCV run off rate of 3.45% (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 CPIH) for wholesale water resources 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 water resources 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 water resources. Equals the sum of Wr4 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 water resources. (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 Water Resources 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 water resources is 29.0 years, corresponding to a “natural” RCV run off rate of 3.45% (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 water resources 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 water resources 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 water resources. Equals the sum of W4 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 water resources. 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 Water Resources 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 water resources is 29.0 years, corresponding to a “natural” RCV run off rate of 3.45% (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 water resources, 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 water resources, 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 water resources. Equals the sum of Wr4 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 – Water Resources

Line 16 “Natural” PAYG rate – Water Resources

*Proposed “natural” PAYG rates for wholesale water resources relevant to the wholesale water resources revenue / totex projected in Wr3. 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
<b>Opex (£m)</b> <i>WS1 line 11</i>	32.3	33.6	34.3	34.4	31.6
<b>Totex (net G&amp;Cs) (£m)</b> <i>WS1 line 21</i>	55.2	72.1	71.5	67.2	54.2
<b>PAYG rate (%)</b>	58.59%	46.53%	48.04%	51.23%	58.42%

	2025-26	2026-27	2027-28	2028-29	2029-30
<b>Opex (£m)</b>	36.82	36.46	36.09	35.73	35.37
<b>Totex (net G&amp;Cs) (£m)</b>	62.5	61.9	61.3	60.7	60.1
<b>PAYG rate (%)</b>	58.88%	58.88%	58.88%	58.88%	58.88%



Line 17 Adjustments to PAYG rate to address transition from RPI to CPI water resources

*Proposed adjustments to the PAYG rates for wholesale water resources 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 water resources

*Proposed other adjustments to the PAYG rates for wholesale water resources 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 water resources

*Proposed total PAYG rates to be applied to wholesale water resources totex. Equals the sum of Wr4 lines 16 to 18.*

Calculated.

## Wr5 – Weighted average cost of capital for the water resources control

### Table Validation

No validation errors appear 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 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 – water resources

*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- water resources.

*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 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

## Wr6 - Water resources capacity forecasts

### Table Validation

No validation errors appear in this table

General methodology Blocks B – Y Lines 7 - 13

The capacity for each of our 24 water resources zones has been forecast and commentary has been provided for each of these zones. This table shows the total capacity. Overall this is forecast to reduce slightly each year as a result of the impact of climate change. There are two investment schemes to increase the capacity of two water resource zones: Tywyn Aberdyfi shown in Block E and Pembrokeshire shown in Block Y

Block A Lines 1 - 6

The capacity of raw water in each of the 24 water resource zones for 2018-19 has been forecast and entered into Blocks B – Y. The total is entered into Block A. this is the total for all of our water resource zones.

#### Line 1 Pre-2020 capacity (DYAA)

*This is the company total pre-2020 capacity available in all WRZs as measured by water resources yield. The pre-2020 capacity is based on the assets and sources as available on 31 March 2020 (reported in 2019-20) and is then forecast forwards to account for any changes. These forecasts should be provided for the dry year annual average (DYAA) planning period.*

#### Line 2 Pre-2020 capacity (DYCP)

*This is the company total pre-2020 capacity available in all WRZs as measured by water resources yield. The pre-2020 capacity is based on the assets and sources as available on 31 March 2020 (reported in 2019-20) and is then forecast forwards to account for any changes. These forecasts should be provided for the dry year critical period (DYCP) planning period where applicable.*

#### Line 3 Post-2020 incumbent capacity (DYAA)

*This is the company total available post-2020 capacity, as available in all WRZs, and measured using water resources yield. The post-2020 capacity is based on the incremental water resources yield funded through the water resources control after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYAA planning period.*

This is the total of the forecast increase in capacity from the two zones that have been identified in the draft WRMP. Tywyn Aberdyfi (Block E line 10) and Pembrokeshire (Block Y line 10).

#### Line 4 Post-2020 incumbent capacity (DYCP)

*This is the company total available post-2020 capacity, available in all WRZs, as measured using water resources yield. The post-2020 capacity is based on the incremental water resources yield funded through the water resources control after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYCP planning period where applicable.*

This is the total of the forecast increase in capacity from the two zones that have been identified in the draft WRMP. Tywyn Aberdyfi (Block E line 11) and Pembrokeshire (Block Y line 11).

#### Line 5 Post-2020 third party bilateral capacity (DYAA)

*This is the company total available post-2020 third party bilateral capacity, available in all WRZs, as measured using water resources yield. The post-2020 third party bilateral capacity is based on the*

*incremental water resources yield provided by bilateral entrants after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYAA planning period.*

This line has not been completed as there is no bi-lateral market in Wales.

**Line 6 Post-2020 third party bilateral capacity (DYCP)**

*This is the company total available post-2020 third party bilateral capacity, available in all WRZs, as measured using water resources yield. The post-2020 third party bilateral capacity is based on the incremental water resources yield provided by bilateral entrants after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYCP planning period where applicable.*

This line has not been completed as there is no bi-lateral market in Wales.

**Blocks B to AC Capacity ~ WRZ forecasts**

**Line 7 WRZ name**

*Name of WRZ which should be consistent with WRMP naming terminology.*

We can confirm the names align with those in the WRMP.

**Line 8 Pre-2020 capacity (DYAA)**

*This is the individual WRZ pre-2020 capacity as measured by water resources yield. The pre-2020 capacity is based on the assets and sources as available on 31 March 2020 (reported in 2019-20) and is then forecast forwards to account for any changes. These forecasts should be provided for the DYAA planning period.*

The forecast capacity in these zones is decreasing due to the forecast effects of climate change on our water supply availability.

**Line 9 Pre-2020 capacity (DYCP)**

*This is the individual WRZ pre-2020 capacity as measured by water resources yield. The pre-2020 capacity is based on the assets and sources as available on 31 March 2020 (reported in 2019-20) and is then forecast forwards to account for any changes. These forecasts should be provided for the DYCP planning period where applicable.*

The forecast capacity in these zones is decreasing due to the forecast effects of climate change on our water supply availability.

**Line 10 Post-2020 incumbent capacity (DYAA)**

*This is the individual WRZ available post-2020 capacity, as measured using water resources yield. The post-2020 capacity is based on the incremental water resources yield funded through the water resources control after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYAA planning period.*

This has been completed for only two blocks:

Block E – Tywyn Aberdyfi

Block Y – Pembrokeshire

The capacity reported in these blocks corresponds to the draft WRMP.

**Line 11 Post-2020 incumbent capacity (DYCP)**

*This is the individual WRZ available post-2020 capacity, as measured using water resources yield. The post-2020 capacity is based on the incremental water resources yield funded through the water resources control after 1 April 2020. This will be the total post-2020 capacity available up to and*

*including the year being reported for. These forecasts should be provided for the DYCP planning period where applicable.*

This has been completed for only two blocks:

Block E – Tywyn Aberdyfi

Block Y – Pembrokeshire

The capacity reported in these blocks corresponds to the draft WRMP.

**Line 12 Post-2020 third party bilateral capacity (DYAA)**

*This is the individual WRZ available post-2020 third party bilateral capacity, as measured using water resources yield. The post-2020 third party bilateral capacity is based on the incremental water resources yield provided by bilateral entrants after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYAA planning period.*

These cells are intentionally reported as zero.

**Line 13 Post-2020 third party bilateral capacity (DYCP)**

*This is the individual WRZ available post-2020 third party bilateral capacity, as measured using water resources yield. The post-2020 third party bilateral capacity is based on the incremental water resources yield provided by bilateral entrants after 1 April 2020. This will be the total post-2020 capacity available up to and including the year being reported for. These forecasts should be provided for the DYCP planning period.*

These cells are intentionally reported as zero.

**Block B WRZ 1 Forecasts North Eryri Ynys Mon**

The capacity of raw water in this water resource zone has been forecast for 2019-20 to reduce as a result of the impact of climate changes.

**Block C WRZ 2 Forecasts Clwyd Coastal**

The capacity of raw water in this water resource zone is forecast to reduce by a small amount over the period from 2020-21 to 2044-45, as a result of the impact of climate change. This reduction in some years is not large enough to alter the reported number when rounded to 2 decimal places.

**Block D WRZ 3 Forecasts Alwen Dee**

The capacity of raw water in this water resource zone is forecast to reduce over the period from 2020-21 to 2044-45 as a result of the impact of climate change.

**Block E WRZ 4 Forecasts Tywyn Aberdyfi**

The capacity of raw water in this water resource zone is forecast to reduce over the period 2019-20 to 2021-22 as a result of climate change. However, from 2022-23 investment is being completed to improve the river abstraction capacity. This will improve the capacity so that there is no supply deficit in this water resource zone to ensure sufficient volumes of water for our customers. There is an increase in capacity in lines 10 and 11 because the investments will provide extra capacity and offset the impacts of climate change.

**Block F WRZ 5 Forecasts Bala**

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

**Block G WRZ 6 Forecasts Blaenau Ffestiniog**

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block H WRZ 7 Forecasts Barmouth

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block I WRZ 8 Forecasts Lleyr Harlech

The capacity of raw water in this water resource zone is forecast to reduce over the period from 2020-21 to 2044-45 as a result of the impact of climate change.

Block J WRZ 9 Forecasts Dyffryn Conwy

The capacity of raw water in this water resource zone is forecast to increase slightly over the period from 2020-21 to 2044-45 as a result of the impact of climate change (as a result of wetter winters in this WRZ).

Block K WRZ 10 Forecasts South Meirionydd

The capacity of raw water in this water resource zone is forecast to reduce slightly over the period as a result of the impact of climate change.

Block L WRZ 11 Forecasts Ross on Wye

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block M WRZ 12 Forecasts Elan Builth

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block N WRZ 13 Forecasts Hereford CUS

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block O WRZ 14 Forecasts Llyswen

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block P WRZ 15 Forecasts Monmouth

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block Q WRZ 16 Forecasts Pilleth

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block R WRZ 17 Forecasts Brecon Portis

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block S WRZ 18 Forecasts Vowchurch

The capacity of raw water in this water resource zone has been forecast for 2019-20.

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block T WRZ 19 Forecasts Whitbourne

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block U WRZ 20 Forecasts SEWCUS

The capacity of raw water in this water resource zone is forecast to reduce over the period as a result of the impact of climate change.

Block VWRZ 21 Forecasts Tywi CUS

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block W WRZ 22 Forecasts Mid & South Ceredigion

The capacity of raw water in this water resource zone is forecast to remain static as there should be enough raw water available that the capacity should not be impacted by climate change.

Block X WRZ 23 Forecasts North Ceredigion

The capacity of raw water in this water resource zone is forecast to reduce over the period as a result of the impact of climate change.

Block Y WRZ 24 Forecasts Pembrokeshire

The capacity of raw water in this water resource zone is forecast to reduce over the period 2019-20 to 2021-22 as a result of climate change. However, from 2022-23 investment is being completed to update the water raw water pumping station. This will improve the capacity so that there is no supply deficit in this water resource zone to ensure sufficient volumes of water for our customers. There is an increase in capacity in lines 10 and 11 because the investments will provide extra capacity and offset the impacts of climate change.



## Wr7 - New water resources capacity forecast cost of options beginning in 2020-25

### Table Validation

No validation errors appear in this table

### Overview

We have generated supply demand balances for our 24 WRZs and identified that two zones, Tywyn Aberdyfi and Pembrokeshire, are forecast to have shortfalls in supply across the 30 year planning period. To resolve these imbalances we need to identify options which either reduce demand or increase supplies. WRMP guidance requires us to justify best value solutions based on a combination of least cost, customer views and environmental impact.

Our options appraisals work and our customer and stakeholder engagement has taken place in parallel with the development of our supply demand balances. We do this to gain a holistic understanding of the supply position and then build this understanding into the development of solutions. Our preferred schemes to resolve the forecast supply demand deficit are therefore selected to provide complimentary benefits for other drivers, such as where we have either strong customer and stakeholder views to do so, or where there are clear links to other strategies.

To obtain a preferred set of solutions that resolves the supply demand imbalances in the Tywyn Aberdyfi and Pembrokeshire zones, we followed a robust process that is compliant with regulatory guidance and best practice, is thorough in its appraisal of possible options, and takes full account of external and internal engagement. The key principles of our decision making process are:

- Conduct detailed customer and stakeholder engagement to understand their views and preferences for our options
- Undertake a detailed options appraisal process, including SEA/HRA and WFD assessment, to generate a set of costed, feasible supply side and demand side options
- Utilise the UKWIR Industry Standard “Economics of Balancing Supply and Demand” (EBSD) methodology to generate the ‘least cost’ plan
- Review against Welsh Government objectives as set out in the Environment (Wales) Act, Water Strategy for Wales and Future Generations Act
- Ensure our options are aligned with our PR19 priorities, our 2050 vision and our Biodiversity Plan

### Block A for company level information

#### Lines 1 – 7 Asset Type

*Company defined asset types as used for option build-up. These asset types (e.g. civils) should be consistent with those used for WRMPs and business plans.*

Asset type categories are in line with our standard cost models, used for the cost estimating of capital programme.

#### Line 8 – 14 Assumed Asset Life

*The assumed asset life for each asset type identified in lines 1-7 should also be provided. These asset lives should also be consistent with those used for WRMPs and business plans.*

Asset lives are in line with our standard cost models.

**Line 15 Nominal pre-tax cost of capital**

*This is the weighted average nominal pre-tax cost of capital (%) for the water company's investment in post-2020 water resource capacity.*

This value is consistent with the wholesale WACC in line 20 of App32 and represents the weighted average cost of capital for the wholesale business where we have accepted Ofwat's early view of this value.

**Blocks B to M for each WRZ**

**Line 1 WRZ name**

*Name of water resources zone (WRZ) which should be consistent with WRMP naming terminology.*

Naming is consistent with the WRMP.

**Line 2 Principal planning scenario driver**

*The principal planning scenario driver will be either dry year annual average (DYAA) or dry year critical period (DYCP) based on the assessment completed in the WRMP. Where the WRZ has issues at both DYAA and DYCP the reported planning scenario should be for the largest deficit. The water resources options reported in Blocks B1 to Q3 should be for all planning scenarios regardless of the principal scenario reported here.*

The scenarios used are those in the WRMP.

**Line 3 Water resources total cost - all options**

*Total water resources cost for all options within the WRZ.*

This is a calculated line

**Line 4 Annualised unit cost of post-2020 capacity**

*The calculated annualised unit cost of post-2020 capacity for the WRZ*

These are an output from the RECKON annualised unit cost model and guidance as published by Ofwat.

**Blocks B1 to P3 for each option (all water resources options reported regardless of planning scenario), for each WRZ**

**Line 5 Option name**

*Option name as used in WRMP*

Naming is consistent with the WRMP.

**Line 6 Option reference no.**

*Option reference number as used in WRMP*

Naming is consistent with the WRMP.

**Line 7 Post-2020 capacity**

*Post-2020 capacity for the option*

Values are consistent with those reported in Wr6 Line10 in Blocks E and Y.

**Lines 8 – 14 Water resources option costs**

*Water resource control capex for the option individually reported for each identified asset types on an annual basis (allocated in line with RAG 4.07)*

Consistent with those in the WRMP.

**Line 15 Opex**

*Water resources control average opex reported on an annual basis (allocated in line with the water resources activity envelope). The average opex should reflect the options forecast operation in the*

*planning period reflecting variation in usage based on expected climatic conditions. This will be consistent with company WRMP reporting where opex costs based on utilisation have been reported.*  
Consistent with those in the WRMP.

Line 16 Water resources total costs

*Total water resources control costs for option (allocated in line with RAG 4.07)*

Calculated line.

Line 17 Network plus water total cost

*Total network plus water control costs for option (allocated in line with RAG 4.07)*

Consistent with those in the WRMP.

## Wr8 - Wholesale water resources special cost factors

### Table Validation

No validation errors appear in this table

#### Overview

This table should capture any costs that the company considers should be excluded from comparative cost modelling (special cost claims) for the wholesale water resources price control. We are not submitting special factors for the econometric modelling at this time due to the on-going cost assessment working group. However, we are submitting a claim for an atypically large investment programme.

#### Line 1 Description of special cost claim

*Description of costs being put forward for a special cost claim. A separate table block should be filled in for each cost type that has been identified as requiring special treatment (adjustment / exclusion). This description will need to be able to identify the supporting evidence elsewhere in the business plan that sets out the case to the special treatment.*

This special cost claim relates to the investment driven by our statutory responsibilities under the Reservoirs Act 1975. In AMP7 we will see increased investment due to new regulations introduced in Wales in 2016 driven by the Floods and Water Management Act 2010. It is this substantially increased investment that we are submitting as a special cost factor. We have not included our full reservoirs programme as a special cost factor, only the additional element that is required by the new legislation.

#### Line 2 Type of special cost claim

*Type of special cost claim proposed. This will be one of 'atypically large investment', 'material new costs', 'regional operating circumstances' or 'other (specify)'. See final methodology document for identification of what can be considered as a special cost claim.*

A description of the type of cost claim has been provided.

#### Line 3 Total expenditure used for the purpose of business plan

*Company's total expenditure related to the proposed special cost claim. Costs in this line should be consistent with business plan costs and should be gross of any capital contributions or grants. Total expenditure is as set out in the Regulatory Accounting Guidelines.*

We have not included our full reservoirs programme as a special cost factor, only the additional element that is required by the new legislation. We have shown expenditure in this line for 2018-19 and 2019-20, which is the AMP6 enhancement expenditure we have shown for reservoirs in table WS2. The programme of work and the breakdown of total expenditure for AMP7 is detailed in Supporting Document 5.8B PR19 IC: Reservoir Safety.

#### Line 4 Historic total expenditure

*Historic total expenditure related to the proposed special cost claim. This should be gross of any capital contributions or grants. Total expenditure is as set out in the Regulatory Accounting Guidelines.*

Although naturally we have invested in maintenance of reservoirs and dams historically, we have not shown this expenditure in the table. We have taken the approach – our interpretation of the guidance - that because we are only showing the additional “atypically large investment” expenditure in line 3, and not the total expenditure, we should not include the historical total expenditure on dam maintenance in line 4, otherwise the two lines would be inconsistent. Details of the total historical expenditure on dams and maintenance for AMP6 is included in Supporting Document 5.8B PR19 IC: Reservoir Safety.