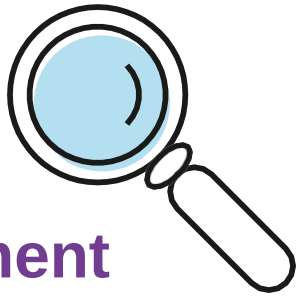
Commentary for the data tables

YorkshireWater



Purpose of this document

This document contains commentaries to support the PR19 data tables.

Where possible we have followed the guidance provided in the PR14 reconciliation rulebook and the PR19 methodology issued by Ofwat. If we have departed from the framework set out by Ofwat we have explained this in the commentary.

We understand the importance in the quality of this data submission and have therefore implemented quality assurance processes to check the accuracy of and completeness of the data contained within.

Our assurance approach for completion of the data tables is as set out in our published assurance plan, and annual reporting processes which are certified to ISO 9001:2000. This represents best practice as it is both long-established (since 2007) and externally verified.

Contents

Validation checks

Yorkshire Water PR19 Data Tables - validation checks

Summary

There are nine tables in our final PR19 data table spreadsheet which include a validation message at the point of submission. This document provides and explanation for each validation message and the reason why the messages have not been removed.

Table and Lines	Validation check
App4 • **Line 5 Column G-L** • **Line 9 Column G-L** • **Line 20 Column G-K**	The validation message in the above cells cannot be resolved because there is no data to report. Leaving cells blank creates a validation message. We have elected to insert 'no data' in these cells to make it clear that we have no data to report. This validation message remains and cannot be removed irrespective of the approach we chose to take.
App24 • **Block E Line 29** • **Block F Line 34**	This is a known validation message which has been reported and is explained in our data table commentary. This validation message cannot be removed.
WR6 • **Block A Line 7** • **Block B Line 9**	These cells are intentionally blank which has forced validation messages which cannot be removed.
WWS1 • **Block A Line 9**	The cells in WWS1 Line 9 should equal the Lines 8 and 16 in Table Bio3. Sludge treatment and sludge disposal cost, total operating expenditure, reconciles with total operating costs before depreciation (Line 6 and Line 14). This does not reconcile with total operating costs (Line 8 and Line 16) for sludge treatment and sludge disposal. The guidance says that total operating costs including historical cost depreciation on Bio3 should reconcile to total operating costs in in WWS1 (Line 9). The operating costs in Line 9 on WWS1 do not include any depreciation. This has created the validation error we cannot remove.
WWS2a • **Block A Line 11, 15 and 18-20**	**Line 11** - produces a message because we have schemes delivering in Yr4 that deliver an obligation under this driver but do not have storage solution (we are relocating the discharge) therefore there is no corresponding storage volume in WWS4. **Line 15** - produces a message because we have included investigation costs associated with Groundwater in this line however there is no corresponding output in WWn4 Line I 20. **Line 18** - produces a message due to a sampling investigation scheme delivering in Year 1 associated with this driver. This has no corresponding output in WWn4 Line I 19. **Line 19** - produces a message due to a sampling investigation scheme delivering in Year 1 associated with this driver. This has no corresponding output in WWn4 Line I 18. **Line 20** - produces a message. WWn4 line I 23 includes the outputs of both the "Reduction in Sanitary Parameters driver" as well as the "No Deterioration in Sanitary Parameters driver" the

	latter has been included in our WWS2/2a tables on a new line (Line 41) and hence line 20 alone doesn't validate.
WWS3 • **Line 1**	The numbers in Line 1 have been correctly input into the cells as 000's to 3 decimal places which should not cause a validation message. We have checked these numbers are within the expected range which is 'between 4,000 and 60,000'. Our numbers are correct, but the validation message has remained.
WWn2 • **Block A Line 2** • **Block A Line 3**	The numbers in these cells match our Annual Performance Report submission in Table 4O and updated to include a correction from a post submission query. The validation messages refer to columns which have been populated from the look up table "F_outputs_YKY'. The messages refer to obsolete site records which can't be removed from the table without amending the pre-populated records. The blank entries are correct, but the validation message remains. In making this update, we have broken the validation check link in the spreadsheet, which has caused a green "#Ref" in the 'other validation' column of the data validation checks table. This appears to be a matter that is internal to this table only.
WWn4 • **Block I Line 16** • **Block I Line 23**	There are no validation messages from the data in table blocks A to H1 however we note there are 'completion' messages in column AK which is erroneously showing a validation message as all cells are populated Line 16 show a validation message due to the inconsistency between the line definition and the validation calculation. The line definition we have used to calculate the populated figures, references population equivalent of residents (excluding holiday population) connected to STW's; whereas the line validation adds on trade effluent loads. As such our approach to populating this line, consistent with our Annual Performance Report, will always generate a validation message. The validation message remains. Line 23 has a validation message associated with this line which is linked to the line 20 validation message in WWS2a. There are two reasons that this validation check is showing. (1) We have included the outputs of both the "Reduction in Sanitary Parameters driver" as well as the "No Deterioration in Sanitary Parameters driver in this table however we have split these drivers across lines 20 and 41 within our WWS2a table. (2) This line includes a change in PE associates with sanitary parameters at Oxenhope and Draughton STW in 2021/2022 however as per the WWS2 guidance we have mapped investment to the primary driver associated with these schemes which is Phosphorus and hence they have been mapped to Line 19 of table WWS2a. The validation messages cannot be removed, and this has been explained in our table commentary.

R7 • **Block B Lines 7-10**	The validation message relates to an entry for Wales only companies. These lines do not apply to Yorkshire Water and are blank and therefore validation message cannot be removed.

Appointee tables

App1 – Performance commitments (PCs) and outcome delivery incentives (ODIs)A

Introduction

We have produced detailed appendices for Performance Commitments and Outcome Delivery Incentives (ODIs). We have not sought to replicate this within the commentary. The content of APP1 has been populated following the guidance supplied by Ofwat. The commentary below covers:

- References to supporting documents
- Exceptions in APP1; where content differs from the guidance or differs from
- Details of additional updates to APP1 since our May submission

Supporting commentary

For each of our performance commitments, we have documented working and decision making to support the content of APP1. This can be found in the supporting appendices performance commitment appendices:

- Performance commitments definitions
- Performance commitment and Outcome Delivery Incentives
- Supporting evidence

Exceptions in APP1

- **Working with others (PR19YKY_1)**, 2019/2020 forecast: the forecast performance is the total forecast for the AMP (rather than annual as reported in the Annual Performance Report). Further details can be found in the working with others chapter in the Performance commitment and outcome delivery incentives appendices.
- **Working with others (PR19YKY_1)**, standard outperformance payment 1: the outperformance payment rate is left blank as the incentive rate is set a 5% of the annual average totex of the partnerships schemes delivered above the target (as per the PR14 definition). The final incentive rate will be calculated at the end of the 2020-2025 period once the final level of totex has been confirmed. Cell DC7 has been set to 'No' to reflect this. Further details can be found in the working with others chapter in the Performance commitment and outcome delivery Incentives appendices.
- **Water recycling (PR19YKY_9),** 2020-2025 performance targets and longer-term projections have been inputted as a cumulative total, rather than the annual target as outlined in APP1 guidance. Further details can be found in the Performance commitment and outcome delivery incentives appendices.
- **Direct support given to customers (PR19YKY_12)**, 2018/2019 and 2019/2020 forecasts: the blind year forecasts have been updated since the PR14 reconciliation submission. The updated values have been included in APP1. Further details can be found in the direct support given to customers chapter in the Performance commitment and outcome delivery incentives appendices.
- **C-MeX (PR19YKY_19)** and **D-MeX (PR19YKY_10)**, 2020-2025 performance targets: for forecasting performance is not applicable and therefore we have left these cells blank.
- **Risk of sewer flooding in a storm (PR19YKY_34),** long term projections for performance have been inputted to for 5 years to 2030, due to uncertainties in the modelled data. Further details can be found in the performance commitment and outcome delivery incentives appendices.

- **AIM (PR19YK_39),** incentive rates: we have no AIM sites, therefore APP3 is a nil return. However, we have included calculated incentive rates in APP1 for completeness.

Updates to content submitted in May

Changes to performance commitments

Since the May submission, in response to feedback, we have made some changes to our performance commitments. The following amendments have been made to our performance commitments:

- **Inclusive Customer Service;** following strong support from customers and the Yorkshire Forum for Water Customers, we worked to develop the inclusive customer service performance commitment to be able to add this to our final submission.
- **Time taken to resolve customer reported mains leaks;** following our assurance approach, several issues with the reporting of the information were identified. It is not possible at this stage to have sufficient confidence in a systematic approach to reporting the time taken to fix a leak, particularly across some of our contractor organisations. As such, this performance commitment has been withdrawn from our submission.
- **Carbon;** previously referred to as 'Operational Carbon' this performance commitment has been materially amended to present an improved, stretching definition that encompasses our whole life carbon emissions. Further details are outlined in the performance commitment and outcome delivery appendix.

Amendments to APP1

The table below outlines the revisions made to the content of APP1 since the May submission.

Performance commitment name	Revision to APP1 May submission table
Changes applicable to Many	The wording of the outcome associated with the following performance commitments have been updated to start with 'Bills' rather than ' Innovation' - Working with others (1) - Creating value from waste (8) - Affordability of bills (11) - Cost of bad debt (13)
	All the performance commitments have been updated to reflect price control allocation as %, rather than yes/no as per the May submission table. Where the allocation has varied from the price controls outlined in the May submission, it is noted against the performance commitment below.
Working with others (PC reference = 1)	SCF no longer applicable as the associated cost adjustment claim has removed since the draft May submission. The cell is now blank (previously partly).
	Unit description updated from 'number of solutions' to ' number of projects' as per the wording of the final definition.
	Price control allocation reference to 'water resources' and 'residential retail' removed.
	Primary category amended from 'Catchment management' to 'Environmental'.

Land conserved and enhanced (PC reference = 2)	Following finalisation of the price control allocation, this has changed from 'water resources' & 'water networks' to 'water resources' & 'wastewater networks'.
Integrated catchment management (PC reference = 3)	Following Forum feedback, the PC short description, unit and unit description have been amended to reflect percentage (%) of catchments, rather than number. In addition, the decimal places being reported to has been amended to '1' from '0'
	As this performance commitment is in its infancy, it is considered that a non-financial incentive is more appropriate.
	Primary category amended from 'Environmental' to 'Catchment management'.
	Price control allocation reference to 'water network' removed.
Length of river improved (PC reference = 4)	Price control allocation reference to 'water network' removed.
Biosecurity implementation (PC reference = 5)	Short description amended to reflect that in the performance commitment definition.
	PC Unit description changed from "Number of biosecurity interventions" to "Number of pathways" as per the wording of the final definition.
	Price control allocation amended to reference only 'water resources' and 'bioresources' price controls.
Carbon (PC reference = 6)	Performance commitment updated and subsequent amendments have been made to: - The PC name (Carbon, previously Operational Carbon); - The PC short description ('The reduction in our total carbon footprint (CO2e)', previously 'The annual total of our operational carbon emissions, including the carbon we sequester in our land.' - ODI timing now 'End of AMP', previously 'In-period'; - Decimal places reported to, now '1', previously '0'.
	Price control allocation reference to 'residential retail' removed.
Education (PC reference = 7)	ODI type updated from 'Out and under' to 'Under' following customer feedback.
	Price control allocation reference to 'residential retail' removed.
Creating value from waste (PC reference = 8)	Performance commitment name has changed to a more customer friendly 'Creating value from waste' from 'Creating value from under-used resources and waste'.
	Price control allocation reference to 'residential retail' removed.
Water recycling (PC reference = 9)	Short definition update to reflect Ofwat comments.
	PC unit updated to clarify unit (Ml).
	Price control allocation reference to 'water resources' removed.
D-Mex (PC reference = 10)	Updated as per Ofwat guidance. PC unit description corrected to read 'D-MeX score' as per Ofwat guidance.
	SCF no blank (previously flagged as 'partly') to reflect Ofwat guidance.
	Update to specify number of decimal places the measure will be reported to '1' as per Ofwat guidance.
Affordability of bills (PC reference = 11)	Definition amended following Ofwat comments.
	Amendment to PC definition for consistency. Written as 'The percentage of' rather than '% of'.

Direct support given to customers (PC reference = 12)	No amendments to APP1.
Cost of bad debt (PC reference = 13)	Amendment of number of decimal places, from '0' to '2' as more appropriate.
Priority services awareness (PC reference = 14)	PC name amended from ' Awareness of Priority Services Register' to 'Priority services awareness'.
Priority services satisfaction (PC reference = 15)	Short description amended to reflect that in the performance commitment definition.
	Definition updated following finalisation of the definition methodology.
	PC name amended as more customer friendly, from ' Meeting vulnerable customer needs' to 'Priority services satisfaction'.
	Incentive type amended from 'underperformance' to 'Non-financial incentive' due to the infancy of the performance commitment.
Inclusive customer service (PC reference = 16)	Performance commitment details added to APP1.
Gap sites (PC reference = 17)	Performance commitment renamed for clarification, from 'Gap sites (residential)' to 'Gap sites'.
	The outcome of this performance commitment has been revised, from 'Customers' to 'Bills' as more appropriate.
	Performance commitment developed following May submission. APP1 updated to reflect revised PC name, PC unit and PC unit description.
	Definition updated to specify number of decimal places the measure will be reported to '0'.
	Due to an additional performance commitment, the PC reference has been amended from 16 to 17. The PC unique ID updated (from PR19YKY_16 to PR19YKY_17).
Voids verification (PC reference = 18)	Wording amended in definition to address and clarify Ofwat comments.
	Definition amended to specify decimal places measure is reported to (to the nearest percentage)
	The outcome of this performance commitment has been revised, from 'Customers' to 'Bills'
	Due to an additional performance commitment, the PC reference has been amended from 17 to 18. The PC unique ID updated (from PR19YKY_17 to PR19YKY_18).
C-Mex (PC reference = 19)	PC unit description corrected to read 'C-MeX score' as per Ofwat guidance.
	Update to specify number of decimal places the measure will be reported to '1' as per Ofwat guidance.
	SCF no blank (previously flagged as 'partly') to reflect Ofwat guidance.
	Short description re-written.
	Due to an additional performance commitment, the PC reference has been amended from 18 to 19. The PC unique ID updated (from PR19YKY_18 to PR19YKY_19).
Drinking water quality (PC reference = 20)	SCF no longer applicable as the associated cost adjustment claim has been removed. The cell is now blank (previously partly).

	Update to specify number of decimal places the measure will be reported to '2' as more appropriate.
	Due to an additional performance commitment, the PC reference has been amended from 19 to 20. The PC unique ID updated (from PR19YKY_19 to PR19YKY_20).
Water supply interruptions (PC reference = 21)	Performance commitment name updated from 'Water Supply Interruptions (Customer Minutes Lost)' to 'Water supply interruptions'.
	Unit of measure updated from 'number' to 'time' and units from 'mins: secs' to 'hh:mm: ss' in line with Annual Performance Report reporting guidance.
	Due to an additional performance commitment, the PC reference has been amended from 20 to 21. The PC unique ID updated (from PR19YKY_20 to PR19YKY_21).
Leakage (PC reference = 22)	SCF no longer applicable as the associated cost adjustment claim has been removed. The cell is now blank (previously partly).
	Update to specify number of decimal places the measure will be reported to '1' as more appropriate.
	PC history updated from 'PR14 continuation' to 'PR14 revision' to reflect standard reporting definition.
	Due to an additional performance commitment, the PC reference has been amended from 21 to 22. The PC unique ID updated (from PR19YKY_21 to PR19YKY_22).
Unplanned outage (PC reference = 23)	Amendment of number of decimal places, from '0' to '2' as more appropriate.
	ODI type updated from 'Out and under' to 'Non-financial incentive'
	Due to an additional performance commitment, the PC reference has been amended from 22 to 23. The PC unique ID updated (from PR19YKY_22 to PR19YKY_23).
Mains repairs (PC reference = 24)	Amendment of number of decimal places, from '0' to '1' as more appropriate.
	PC history updated from 'PR14 continuation' to 'PR14 revision' to reflect standard reporting definition.
	Due to an additional performance commitment, the PC reference has been amended from 23 to 24. The PC unique ID updated (from PR19YKY_23 to PR19YKY_24).
Per capita consumption (PC reference = 25)	PC history updated from 'PR14 continuation' to 'PR14 revision' to reflect standard reporting definition.
	Due to an additional performance commitment, the PC reference has been amended from 24 to 25. The PC unique ID updated (from PR19YKY_24 to PR19YKY_25).
Drinking water contacts (PC reference = 26)	PC unit description updated to show normalised value. From 'Number of contacts received about drinking water aesthetics' to 'Number of contacts received about drinking water aesthetics / 10,000 population'.
	Short description re-written.
	Amendment of number of decimal places, from '0' to '1' as more appropriate.
	As per Ofwat comments, a definition has been developed based on industry standard definition.

	Due to an additional performance commitment, the PC reference has been amended from 25to 26. The PC unique ID updated (from PR19YKY_25 to PR19YKY_26).
	Asset health amended from 'all' to 'part'.
Significant water supply events (PC reference = 27)	Performance commitment name updated from ' Water Supply Interruptions (12 hours or longer)' to ' Significant water supply events'.
	Asset health removed
	Due to an additional performance commitment, the PC reference has been amended from 26 to 27. The PC unique ID updated (from PR19YKY_26 to PR19YKY_27).
Low pressure (PC reference = 28)	As per Ofwat comments, a definition has been developed based on industry standard definition.
	Due to an additional performance commitment, the PC reference has been amended from 27 to 28. The PC unique ID updated (from PR19YKY_27 to PR19YKY_28).
	Asset health amended from 'all' to 'part'.
Repairing or replacing customer owned pipes (PC reference = 29)	Asset health removed as previously incorrectly allocated.
	SCF no longer applicable as the associated cost adjustment claim has now been removed. The cell is now blank (previously partly).
	Due to an additional performance commitment, the PC reference has been amended from 28 to 29. The PC unique ID updated (from PR19YKY_28 to PR19YKY_29).
Time taken to resolve customer reported mains leaks	Performance commitment removed (as outlined above).
Pollution incidents (PC reference = 30)	Performance commitment name updated from ' Wastewater Pollution Incidents (Category 3)' to ' Pollution incidents'.
	PC history updated from 'PR14 continuation' to 'PR14 revision' to reflect standard reporting definition.
	Update to specify number of decimal places the measure will be reported to '1'.
Internal sewer flooding (PC reference = 31)	Asset health removed as previously incorrectly allocated.
	PC history updated from 'PR14 continuation' to 'PR14 revision' to reflect standard reporting definition.
Treatment works compliance (PC reference = 32)	Performance commitment name updated from 'Discharge Permit Compliance' to 'Treatment works compliance’
	Short definition updated to clarify that both water and wastewater treatment assets are applicable. Short definition now reads 'The performance of our water and wastewater assets to treat and dispose of wastewater in line with the discharge permit conditions'.
	SCF updated to 'part' (previously blank) to reflect final SCF schemes submitted.
	PC unit updated from 'number' to ' %'. PC description update from 'number of failing works' to ' % treatment work compliance'.
	Amendment of number of decimal places, from '0' to '2' as more appropriate.

Sewer Collapses (PC reference = 33)	Updated to show normalised reporting. PC unit description updated from 'number of sewer collapses' to 'number of sewer collapses per 1000 kilometres of all sewers'.
	PC history updated from 'PR14 continuation' to 'PR14 revision' to reflect standard reporting definition.
	Amendment of number of decimal places, from '0' to '2' as more appropriate.
	Primary category amended from 'Repair and maintenance' to 'Sewer blockages/collapses'.
Risk of sewer flooding in a storm (PC reference = 34)	Performance commitment name updated from 'Sewer flood risk' to 'Risk of sewer flooding in a storm'.
	PC unit updated from 'number' to ' %' to reflect definition. PC description update from 'Population equivalent vulnerable to flooding.' to '% of population vulnerable to flooding'.
External Sewer Flooding (PC reference = 35)	As per Ofwat comments, a definition has been developed based on industry standard definition.
	PC history updated from 'PR14 continuation' to 'PR14 revision'
	Performance commitment short definition updated to clarify external sewer flooding as 'The number of external flooding incidents per year caused by the escape of water originating from public sewers, affecting properties or single curtilages.'
	Asset health updated from 'all' to 'part'.
Surface water management (PC reference = 37)	SCF no longer applicable as the associated cost adjustment claim has now been removed. The cell is now blank (previously partly).
	Amendment of number of decimal places, from '2' to '0' as more appropriate.
	PC name updated from 'Surface Water Removed and or Attenuated' to 'Surface water management'
Risk of severe restrictions in a drought (PC reference = 38)	Asset health removed
	PC name updated from ' Drought Risk' to ' Risk of severe restrictions in a drought '.
	Following finalisation of price control, amended to water resources only (previously water networks plus included).
Abstraction Incentive Mechanism (PC reference = 39)	Primary category changed from 'Environmental' to 'Water resources/ abstraction' as per Ofwat guidance.
	Update to specify number of decimal places the measure will be reported to '1' as per Ofwat guidance.
	Direction of improvement amended to read 'up' instead of 'down'.
Quality Agricultural Products (PC reference = 40)	SCF updated to 'part' (previously blank) to reflect final SCF schemes submitted.
	Short definition amended to specify 'agricultural': The percentage of biosolids sent to agricultural land that achieves Biosolids Assurance Scheme (BAS) certification.
	Definition amended to include clarifications as requested by Ofwat.
Renewable Energy Generation (PC reference = 41)	SCF updated to 'part' (previously blank) to reflect final SCF schemes submitted.
	PC unit updated from 'kWh' to 'GWh' Short definition updated from 'The kilowatt hours of energy generated from the biogas we produce' to 'the gigawatt- hours of energy generated from the biogas we produce'.

	Asset health removed
	Definition amended to include clarifications outlined by Ofwat.

App2 – Leakage additional information and old definition reporting

Yorkshire Water has only two water resource zones, one that covers 99% of Yorkshire and the other covering 1% of Yorkshire. Leakage in the smaller zone is less than 1 Megalitres per day (Ml/d) so separate reporting is not justified with neither zone being in deficit, therefore we have completed the table at a whole company level.

We can confirm that the is no difference between the Sustainable Economic Level of Leakage (SELL) used in our Water Resources Management Plan (WRMP) and those reported in our business plan submission. Our baseline short-run SELL has been calculated using:

- DMA cost curves generated from Yorkshire Water data by RPS, including reassessment of background leakage and natural rate of rise (where field tests were carried out to confirm background leakage)
- Cost of water curves from Yorkshire Water's WRAP model
- Carbon costs from the Department for Energy and Climate Change (DECC)
- Environmental costs from Environment Agency
- Social costs from Yorkshire Water repair data and Highways reports

We do not have a predicted deficit which would drive the long run SELL to be materially different from the short run SELL.

We have made a commitment in our WRMP to reduce leakage below SELL to achieve upper quartile performance and this is profiled over the next 25 years as:

	2018-19	2019-20	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26	2026-27	2027-28	2028-29	2029-30	2030-31	2031-32	2032-33	2033-34	2034-35	2035-36	2036-37	2037-38	2038-39	2039-40	2040-41	2041-42	2042-43	2043-44	2044-45
Total Leakage Ml/d	276.0	234.6	205.0	198.3	190.5	182.8	175.0	172.6	170.4	168.4	166.6	164.9	163.3	161.9	160.5	159.3	158.2	157.1	156.1	155.2	154.4	153.6	152.9	152.2	151.6	151.0	150.4

We have a detailed plan for the next 7 years, with identified workstreams, budgets and predicted savings. This is likely to evolve as costs and benefits are assessed so that future years plans are fully optimised and will be used to inform future plans. This detailed plan was used to predict SELL in 2025 and extrapolate forwards profiling the rate of change between the leakage target and using the 2025 reference point.

For the 2025 SELL, base year data on leakage, background leakage, natural rate of rise, detection cost and detected repair cost used to generate cost curves was adjusted for DMA specific activities in the 7-year plan such as pressure management, acoustic logging, service pipe renewal, DMA engineering or customer side leakage reduction. These cost curves resulted in a revised 2025 SELL of 333.83Ml/d

This is as expected as it incorporates current find and fix activity with new activities that previously were not economic as part of leakage maintenance that have only been considered now that planned reductions are so significant that even marginal activities are required to achieve the reduction.

As Yorkshire Water have only two water resource zones, one that covers 99% of Yorkshire and the other covering 1% of Yorkshire. Leakage in the smaller zone is less than 1 MLD so separate reporting is not justified and with neither zone being in deficit we have completed the tables at a whole company level.

As requested we have reviewed the difference between Yorkshire Water current reported leakage and Yorkshire Water consistency reported leakage and have concluded that the difference is insignificant, inconsistent and generally reducing as the table over the last 3 years shows. This supports our approach to predict the same values for consistency and current reporting within the water balance:

	2015/2016	2016/2017	2017/2018	Average
Current reporting (M/ld)	285.11	295.17	300.28	
Consistency reporting (M/ld)	293.77	296.56	296.36	
Variance (%)	3.0%	0.5%	-1.3%	0.7%

Applying upper and lower confidence limits

The upper and lower confidence limits have been based on increasing costs for both baseline and 2025 by 1%.

	Base SELL Ml/d	80 year discount cost £M	2025 SELL Ml/d	80 year discount cost £M
Lower	264.45	585.21	269.17	1116.98
Estimate	297.44	579.42	333.83	1105.92
Upper	341.10	585.21	449.33	1116.98

When profiled again using the change in target to create a profile it indicates that our target is below the lowest confidence band by the end of AMP6.

The Leakage per property per day and the Leakage per length of main per day have been calculated using the WRMP property forecast and the new development forecast which has been used to scale our leakage forecast from our Ml/d target.

Our customers demonstrate a high expectation and support for an improvement of our leakage performance. Our figures in APP2 represent our commitment to address concerns over leakage and demand issues as expressed by our customers and key stakeholders. Ensuring there is enough water to meet demands now and in the future is critical

The AMP7 Internal Sewer Flooding numbers (PR14 definition) have been calculated based on the % service improvement on an annual basis as per the Internal Sewer Flooding (PR19 definition) App1.

PCC values presented in line 41 have been estimated under the old reporting definition.

Average PCC has been determined by multiplying estimated unmeasured household and measured household PCC values by the estimated population for these two categories to give a total volume of water use.

This total volume has been divided by the total household population to give the average PCC.

App3 – Abstraction Incentive Mechanism - surface and ground water abstractions under the AIM threshold

We have reviewed our abstractions to determine whether any are suitable for inclusion in the Abstraction Incentive Mechanism (AIM). We considered sites in the PR19 Water Industry National Environment Programme (WINEP), as well as other sites that are not included in WINEP. This identified a total of 27 locations for consideration as AIM sites from the original list of potential sites was provided to us by the environment agency. We looked at each of these sites in more detail, applying filters to screen out inappropriate sites in accordance with the Ofwat guidance for AIM.

From this we concluded that at the start of AMP7 there are no appropriate sites for the AIM in our region, therefore this table is a nil return for PR19.

We will consider sites in the future as PR19 sustainable catchments investigations are completed. We will also work with local environmental stakeholders to identify potential sites which may benefit from reduced abstraction at low flows. If any sites are identified, we will apply the appropriate screening processes to determine if they suitability for future inclusion in the AIM.

App4 – Customer metrics

Line 2

Our measure of affordability is taken from CC Water's Water Matters annual survey and is based on respondents who agreed that the water/sewerage charges they pay are affordable. We will continue to use this survey result for future performance.

Line 5

Historical data is not available for the measure of those who find their bills acceptable. This will be captured in future years through our own monthly tracking survey and reported as an average. The forecasted numbers are based on benefits from our affordability programme of work.

Lines 7 and 8

Costs take into account the administration costs of applying support as well as the amount of financial help provided. The benefits include the reduction in arrears and increased payments.

Line 9

This data has not been captured historically. A pilot study was undertaken in 2018 to form the baseline performance. We aim to improve awareness year on year through our communications and engagement campaigns. The forecasted numbers are based on benefits from our engagement activity.

Lines 10 and 11

Accounts in arrears have been assumed to be account in the debt management system where one-month late payment or greater is being reported to our Credit Reference Agency.

Line 12

This measure is being reported from Water Matters, a survey by CC Water. Our customers' awareness of priority services has risen from 32% in 2013/2014 to 45% in 2017/2018 (peaking at 48% in 2014/2015)[1] which represents an overall increase of 13% over the four-year period. Since the winter of 2011 we have promoted our priority services and the increase demonstrates the realised benefit of targeted communications and, focussed, consistent and clear messaging.

There was a plateau and slight drop in awareness over the last three years as our promotional activity for the Priority Services Register (PSR) reduced slightly and we reach the limits of growth from the methods we have been using. As we move into 2020 and beyond we will be using our partnership relationships to help us develop and deliver more effective communications with our customers to allow for ongoing growth, particularly as we become more effective in other types of engagement.

Lines 13 and 14

We have projected year on year growth with our PSR in line with what we have experienced historically. We considered if the growth rate would rise at a more significant level however

[1] Source: Water Matters 2017, DJS on behalf of CCWater, released July 2018.

improved data cleansing and management will mean that there will be some offsetting against proposed data sharing with other companies.

Lines 15 to 19

Our current services have been broken down into the areas described in each line. The growth of each of these lines is based on the historical split of service uptake as a percentage against the overall number of customers on the PSR.

Line 20

This is not currently measured. The bespoke performance commitment 'Priority Services Satisfaction' will have a bespoke tracker in its measurement. The survey will cover measuring accessibility form a customer point of view. We have made assumptions based on our current monthly tracker which measures two things:

- "I am satisfied with the additional services"
- "The additional services are meeting my needs"

The current sample size is small due to the fact that our percentage of customers on the PSR is low. The tracker size is 300 customers per month so only a couple of people per month are on the PSR. This means a lower level of accuracy for reporting on but provides us an opportunity to predict what our performance will be using the proposed specific tracker.

Line 21

We have included all customers who have been contacted within the last two years to check the service level they required. We chose not to contact those that had come onto the priority services register within two years as it would be less likely that their needs would have changed. Those that had elected just the password service were not contacted during that review based on their lack of need of other services indicating it was unlikely that there were circumstances in which changes in their lives meant they would need other PSR services. We will be moving towards regular reviews of all customers on the PSR to ensure we have good quality data and that we adhere to GDPR (General Data Protection Regulation) requirement.

App5 – PR14 reconciliation performance commitments and App 6 – PR14 reconciliation sub measures

Following the guidance issued in May 2018 we have produced tables explaining the calculation steps we have followed for each of our financial Outcome Delivery Incentives (ODI) when forecasting whether we expect them to result in an underperformance penalty or an outperformance payment.

We can confirm that the forecast performance data used in App5 and App6 was assured by our external assurer Jacobs, as was the actual data for previous years that we reported in the Annual Performance Report tables 3a and 3b and which has been used in the total outperformance payment forecast entered in App27.

We can also confirm that the amount of underperformance penalty or outperformance payment being claimed matches that as determined by our reported performance except for SB4: Length of river improved which we explain in more detail later in this document.

WA1: Drinking water quality

Unit	Percentage	
Period	Calendar year measure	
Definition	The mean zonal percentage compliance from the regulatory sampling programme, as calculated by the DWI.	
Forecast Year	2018/2019	2019/2020
Performance Commitment Level	100.000%	100.000%
Forecast Performance Level	99.962%	99.962%
Performance Commitment Level Met?	No	No
Underperformance Penalty Deadband	99.950%	99.950%
Underperformance Within Deadband	Yes	Yes
Underperformance Penalty Incentive Rate	£8.920m per 0.01% additional failure	£8.920m per 0.01% additional failure
Underperformance Penalty	£0.000m	£0.000m

WA3: Drinking water contacts

Unit	Number	
Period	Financial year measure	
Definition	The number of times customers contact Yorkshire Water about discolouration, taste and odour and illness each year, in line with DWI reporting.	
Forecast Year	2018/2019	2019/2020
Performance Commitment Level	6,108	6,108
Forecast Performance Level	7,400	7,200
Performance Commitment Level Met?	No	No
Underperformance Penalty Deadband	6,108	6,108
Underperformance Within Deadband	No	No
Underperformance Penalty Incentive Rate	£0.0033m per contact	£0.0033m per contact
Underperformance Penalty	= 7,400 (Forecast Performance) – 6,108 (Deadband) = 1,292 * 0.0033 (Incentive Rate) =£4.264m	= 7,200 (Forecast Performance) – 6,108 (Deadband) = 1,092 * 0.0033 (Incentive Rate) =£3.604m
Outperformance Payment Deadband	6,108	6,108
Outperformance Within Deadband	N/A	N/A
Outperformance Payment Incentive Rate	£0.0030m per contact	£0.0030m per contact
Outperformance Payment	N/A	N/A

There was originally some ambiguity around whether or not Web-chats would be included in this measure, following an internal review process by the Regulatory Issues Group it was decided that these would be included, and this was then communicated to the DWI.

WA4: Water quality stability and reliability factor

Unit	Assessment			
Period	Financial year measure (some sub-measures are calendar year measures)			
Definition	An overall assessment of long term stability and reliability for water quality, based on a basket of indicators. Assessment is based on the recent historical trend of the indicators. Assessment will give a classification of Improving, Stable or Deteriorating.			
Forecast Year	**2018/2019**		**2019/2020**	
Performance Commitment Level	Stable		Stable	
Forecast Performance Level	Stable		Stable	
Performance Commitment Level Met?	Yes		Yes	
Underperformance Penalty	£0.000m		£0.000m	
Sub-Measure Performance				
WTW coliform non-compliance	Upper Reference Level	0.070%	Upper Reference Level	0.070%
	Reference Level	0.040%	Reference Level	0.040%
	Forecast Performance	0.021%	Forecast Performance	0.021%
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
SRE coliform non-compliance	Upper Reference Level	0.240%	Upper Reference Level	0.240%
	Reference Level	0.000%	Reference Level	0.000%
	Forecast Performance	0.000%	Forecast Performance	0.000%
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Turbidity	Upper Reference Level	4	Upper Reference Level	4
	Reference Level	0	Reference Level	0
	Forecast Performance	0	Forecast Performance	0
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Enforcements	Upper Reference Level	1	Upper Reference Level	1
	Reference Level	0	Reference Level	0
	Forecast Performance	0	Forecast Performance	0
	Performance Level Met?	Yes	Performance Level Met?	Yes

	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Reactive equipment failures	Upper Reference Level	8,380	Upper Reference Level	8,380
	Reference Level	6,771	Reference Level	6,771
	Forecast Performance	4,200	Forecast Performance	4,200
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable

- As the S&R Factor has been assessed as Stable overall no penalty is applied.
- There was originally some ambiguity in how the penalty mechanism for the Stability & Reliability Factors would be calculated and applied, should it be appropriate. This was addressed and a document outlining the process was agreed with the Yorkshire Forum for Water Customers and Ofwat (15/9/2016). A copy of this document, meeting our customer promises (Stability and Reliability Factors), can be found on our website (https://www.yorkshirewater.com/sites/default/files/Stability and Reliability Factors Customer Final_0.pdf).

WB1: Leakage

Unit	Megalitres per day (Ml/d)	
Period	Financial year measure	
Definition	The sum of distribution losses and supply pipe losses. This includes any uncontrolled losses between the treatment works and the customer's stop tap. It does not include internal plumbing losses.	
Forecast Year	2018/2019	2019/2020
Performance Commitment Level	292.1	287.1
Forecast Performance Level	277.0	235.0
Performance Commitment Level Met?	Yes	Yes
Underperformance Penalty Deadband	297.1	292.1
Underperformance Within Deadband	N/A	N/A
Underperformance Penalty Incentive Rate	£0.101m per megalitre a day	£0.101m per megalitre a day
Underperformance Penalty	N/A	N/A
Outperformance Payment Deadband	274	274
Outperformance Within Deadband	Yes	No
Outperformance Payment Incentive Rate	£0.051m per megalitre a day	£0.051m per megalitre a day

Outperformance Payment	£0.000m	= 274 (Deadband) – 235 (Forecast Performance) = 39 * 0.051 (Incentive Rate) =£1.970m

To ensure we can better manage future extreme weather impacts on our leakage performance, significant further investment has been allocated to meet our AMP6 service levels and deliver upper quartile performance by the end of the first year of AMP7. Our investment plans to target upper quartile performance for leakage have been assured by Jacobs to ensure our plans are both affordable and deliverable. This additional investment will increase our find and fix resource as well as additional mains rehabilitation and communication pipe replacement activity. This is reflected in the forecast performance levels for 2018/2019 and 2019/2020.

WB2: Water supply interruptions

Unit	Minute	
Period	Financial year measure	
Definition	Number of minutes lost per property served in the year with supply interruptions of three hours or longer (irrespective of whether it was planned, unplanned or caused by a third party).	
Forecast Year	2018/2019	2019/2020
Performance Commitment Level	12.00	12.00
Forecast Performance Level	6.00	4.00
Performance Commitment Level Met?	Yes	Yes
Underperformance Penalty Deadband	12.00	12.00
Underperformance Within Deadband	N/A	N/A
Underperformance Penalty Incentive Rate	£2.610m per minute	£2.610m per minute
Underperformance Penalty	N/A	N/A
Outperformance Payment Deadband	12.00	12.00
Outperformance Within Deadband	No	No
Outperformance Payment Incentive Rate	£2.610m per minute	£2.610m per minute
Outperformance Payment Cap	8.08	8.08
Outperformance Payment	= 12.00 (Deadband) – 8.08 (Payment Cap) = 3.92 * 2.610 (Incentive Rate) =£10.227m	= 12.00 (Deadband) – 8.08 (Payment Cap) = 3.92 * 2.610 (Incentive Rate) =£10.227m

- Our forecast performance is below the Outperformance Payment Cap and we are forecasting to receive the maximum allowed outperformance payment for this measure.

- To deliver our upper quartile plan and to achieve sector leading performance on this measure we have increased our capital funding by £10m to fund additional pressure and flow monitoring on our distribution network. This funding will allow for earlier event recognition and improve the accuracy of our reporting.
- We will also be creating a "Supply Restoration" team which is a change to our approach to incident response that will focus proactively on the restoration of supplies using continuous supplies techniques. This is reflected in the forecast performance levels for years 2018/2019 and 2019/2020.

WB4: Water network stability and reliability factor

Unit	Assessment			
Period	Financial year measure (some sub-measures are calendar year measures)			
Definition	An overall assessment of long term stability and reliability for water quality, based on a basket of indicators. Assessment is based on the recent historical trend of the indicators. Assessment will give a classification of Improving, Stable or Deteriorating.			
Forecast Year	2018/2019		2019/2020	
Performance Commitment Level	Stable		Stable	
Forecast Performance Level	Stable		Stable	
Performance Commitment Level Met?	Yes		Yes	
Underperformance Penalty	£0.000m		£0.000m	
Sub-Measure Performance				
Total bursts	Upper Reference Level	7,710	Upper Reference Level	7,710
	Reference Level	6,000	Reference Level	6,000
	Forecast Performance	8,010	Forecast Performance	8,010
	Performance Level Met?	No	Performance Level Met?	No
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Interruptions >12 hours	Upper Reference Level	659	Upper Reference Level	659
	Reference Level	220	Reference Level	220
	Forecast Performance	220	Forecast Performance	220
	Performance Level Met?	Yes	Performance Level Met?	Yes

	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
DG2 low pressure	Upper Reference Level	67	Upper Reference Level	67
	Reference Level	15	Reference Level	15
	Forecast Performance	15	Forecast Performance	15
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Customer contacts for discolouration	Upper Reference Level	1.570	Upper Reference Level	1.570
	Reference Level	1.180	Reference Level	1.180
	Forecast Performance	0.700	Forecast Performance	0.700
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Distribution index TIM (100 - mean zonal compliance)	Upper Reference Level	0.340%	Upper Reference Level	0.340%
	Reference Level	0.200%	Reference Level	0.200%
	Forecast Performance	0.200%	Forecast Performance	0.200%
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Reactive equipment failures	Upper Reference Level	2,261	Upper Reference Level	2,261
	Reference Level	1,825	Reference Level	1,825
	Forecast Performance	1,100	Forecast Performance	1,100
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable

- The forecast S&R Factor for the remainder of AMP6 has been assessed as Stable overall and no penalty has been applied.

- There was originally some ambiguity in how the penalty mechanism for the Stability & Reliability Factors would be calculated and applied, should it be appropriate. This was addressed and a document outlining the process was agreed with the Yorkshire Forum for Water Customers and Ofwat (15/9/2016). A copy of this document, meeting our customer promises (Stability and Reliability Factors), can be found on our website (https://www.yorkshirewater.com/sites/default/files/Stability and Reliability Factors Customer Final_0.pdf).
- the Yorkshire Forum for Water Customers Our forecast shows an upward trend in Total Bursts. This is due to our programme of work to improve our leakage performance and does not reflect an anticipated deterioration in the condition of our assets. Overall, we are still assessing this sub-measure as stable.
- Please note, when we submitted App6 as part of the PR14 Reconciliation in July we had entered a value of 7,500 for 2019/2020 for this sub-measure in error, we have now rectified this in the App6 table.

WC1: Length of river improved

Unit	Kilometres (Km)	
Period	Financial year measure	
Definition	The length of river in the Yorkshire Water region improved during 2015-2020 against Water Framework Directive component measures.	
Forecast Year	2018/2019	2019/2020
Performance Commitment Level	-	100
Forecast Performance Level	-	106
Performance Commitment Level Met?	-	Yes
Underperformance Penalty Deadband	-	97
Underperformance Within Deadband	-	N/A
Underperformance Penalty Incentive Rate	-	£0.146m per kilometre
Underperformance Penalty	-	N/A
Outperformance Payment Deadband	-	103
Outperformance Within Deadband	-	No
Outperformance Payment Incentive Rate	-	£0.077m per kilometre
Outperformance Payment	-	= 106.45 (Forecast Performance) – 103 (Deadband) = 3.45 * 0.077 (Incentive Rate) =£0.265m

WC2: Solutions delivered by working with others

Unit	Number	
Period	Financial year measure	
Definition	The number of intervention solutions delivered through working with multi-agencies, organisations or individuals. The performance commitment is a total commitment, held at appointee level. It spans water and waste water controls and specific targets have not been allocated to the individual controls.	
Forecast Year	2018/2019	2019/2020
Performance Commitment Level	3 (12 Cumulative)	4 (16 Cumulative)
Forecast Performance Level	10 (31 Cumulative)	8 (39 Cumulative)
Performance Commitment Level Met?	Yes	Yes
Outperformance Payment Deadband	12 (Cumulative number of Interventions Delivered in AMP)	16 (Cumulative number of Interventions Delivered in AMP)
Outperformance Within Deadband	No	No
Outperformance Payment Incentive Rate	5% of totex cost of Yorkshire Water cost for each eligible intervention.	5% of totex cost of Yorkshire Water cost for each eligible intervention.
Outperformance Payment	= £0.060m (average cost of interventions in year) * 5% =£0.003m (Reward per intervention above target) =10 (Forecast Interventions) – 3 (Target) = 7 * £0.003m =£0.021m total outperformance payment =£0.021m * 64% (% of total cost of interventions that relate to clean water schemes) = £0.013m water only outperformance payment	= £0.294m (average cost of interventions in year) * 5% =£0.015m (Reward per intervention above target) =8 (Forecast Interventions) – 4(Target) = 4 * £0.015m =£0.059m total outperformance payment =£0.059m * 100% (% of total cost of interventions that relate to clean water schemes) = £0.059m water only outperformance payment

- There was some ambiguity about how the reward for this measure was calculated and how it should be distributed between water and waste water, specifically around what we classed as an eligible intervention. This has now been resolved and agreed with our assurers and via our internal assurance processes, and we are now calculating our outperformance payment by calculating 5% of the average cost of all interventions in the report year and then multiplying this be the number of interventions greater than our target for that year.
- We have further refined how we split the outperformance payment between the water (WC2) and waste water (SB3) Performance Commitments. Previously this was done using a percentage split based on the relative size of the two parts of the business. To ensure a more accurate split we are now assigning the outperformance payment based on the

percentage of total cost of the interventions completed within the report year that relate to either water or waste water.

- The improvements to our calculation has resulted in small amendments to the figures previously submitted for this Performance Commitment in the Annual Performance Report for 2015/2016 and 2016/2017.

Reporting Year	Outperformance Payment using Previous Calculation Method (£m)	Outperformance Payment using Improved Calculation Method (£m)
2015/2016	£0.000240	£0.000246
2016/2017	£0.000168	£0.000042

WC3: Amount of land conserved and enhanced

Unit	Hectares (Ha)	
Period	Financial year measure	
Definition	The amount of land that the company conserves and enhances, for example Biodiversity 2020, Ancient Woodlands and Sites of Special Scientific Interest (SSSIs). This includes land within the region and includes both Yorkshire Water and non-Yorkshire Water land. **The performance commitment is a total commitment, held at appointee level. It spans water and waste water controls and specific targets have not been allocated to the individual controls.**	
Forecast Year	**2018/2019**	**2019/2020**
Performance Commitment Level	-	11,736
Forecast Performance Level	-	11,689
Performance Commitment Level Met?	-	No
Underperformance Penalty Deadband	-	11,501
Underperformance Within Deadband	-	Yes
Underperformance Penalty Incentive Rate	-	£0.020m per hectare
Underperformance Penalty	-	£0.000m
Outperformance Payment Deadband	-	11,971
Outperformance Within Deadband	-	N/A
Outperformance Payment Incentive Rate	-	£0.013m per hectare
Outperformance Payment	-	N/A

- Our forecast shows that we are expecting to fail this Performance Commitment, although we will still be in the deadband and therefore there is no underperformance penalty to be applied.
- Our forecast underperformance is due to a 47 Ha area of SSSI land at Newton Dale that was sold just before the start of the AMP, which we had included when proposing our target for this measure and which had been agreed by Ofwat.

- As this change was marginal a business decision was taken that we would not request a formal change of target from Ofwat for this measure and would instead accept that we would not be able to meet the original target, although we still expect to meet our revised internal target of 11,689. This decision was agreed with the Yorkshire Forum for Water Customers and our assurers.
- Please note, when we submitted App5 as part of the PR14 Reconciliation in July we had entered a value of 11,684 for this measure in error, we have now rectified this in the App5 table.

SA1: Internal sewer flooding

Unit	Number	
Period	Financial year measure	
Definition	Total number of incidents of internal sewer flooding of homes and businesses in the year. The measure includes incidents due to other causes, including blocked and defective gullies and overloaded serwers in rainfall events up to and including 1 in 30 year return period. Incidents in exceptional rainfall events are excluded. The measure includes incidents arising from assets transferred to Yorkshire Water in October 2011.	
Forecast Year	**2018/2019**	**2019/2020**
Performance Commitment Level	1,919	1,919
Forecast Performance Level	1,796	1,463
Performance Commitment Level Met?	Yes	Yes
Underperformance Penalty Deadband	2,029	2,029
Underperformance Within Deadband	N/A	N/A
Underperformance Penalty Incentive Rate	£0.220m per incident	£0.220m per incident
Underperformance Penalty	N/A	N/A
Outperformance Payment Deadband	1,808	1,808
Outperformance Within Deadband	No	No
Outperformance Payment Incentive Rate	£0.057m per incident	£0.057m per incident
Outperformance Payment Cap	1,651	1,651
Outperformance Payment	= 1,808 (Deadband) – 1,796 (Forecast Performance) = 12 * £0.057 (Incentive Rate) =£0.690m	= 1,808 (Deadband) – 1,651 (Payment Cap) = 157 * £0.057 (Incentive Rate) =£9.027m

- Our forecast performance is below the Outperformance Payment Cap for 2019/2020 and therefore we are forecasting to receive the maximum allowed outperformance payment for this measure.
- To meet our target for upper quartile internal flooding performance, we have increased the level of repair and maintenance on our sewer network to drive down internal property flooding due to other causes. This is expected to deliver improved performance in the

remainder of AMP6. This is reflected in the forecast performance levels for 2018/2019 and 2019/2020.

SA3: Pollution

Unit	Number	
Period	Calendar year measure	
Definition	Total number of Category 1-3 pollution incidents caused by a discharge or escape from any Yorkshire Water waste water asset each year (this covers all consented and non-consented intermittant events but not continuous discharges). This measure includes all waste water assets, that is, surface water assets are included and excludes impacts from private pumping stations that will transfer to Yorkshire Water in 2016[2].	
Forecast Year	**2018/2019**	**2019/2020**
Performance Commitment Level (Cat 3s Only)	211	211
Forecast Performance Level (Cat 3s Only)	180	155
Performance Commitment Level Met?	Yes	Yes
Underperformance Penalty Deadband	211	211
Underperformance Within Deadband	N/A	N/A
Underperformance Penalty Incentive Rate	£0.185m per incident	£0.185m per incident
Underperformance Penalty	N/A	N/A
Outperformance Payment Deadband	147	147
Outperformance Within Deadband	No	No
Outperformance Payment Incentive Rate	£0.185m per incident	£0.185m per incident
Outperformance Payment	= 211(Deadband) – 180 (Forecast Performance) = 31 * £0.185 (Incentive Rate) =£5.739m	= 211 (Deadband) – 155 (Forecast Performance) = 56 * £0.185 (Incentive Rate) =£10.367m

- To meet our upper quartile pollution performance target, we have increased the level of repair and maintenance on our sewer network. We have added additional telemetry to our sewer network to allow us to target failing assets before they impact the environment by spilling and adding to our pollution incidents. This improvement is reflected in the forecast performance levels for 2018/2019 and 2019/2020.
- The ODI relates to Category 3s only, Category 1 & 2s are recorded as a reputational measure.
- When we submitted our Pollution data as part of the PR14 Reconciliation on the 13th of July we were forecasting two category 1 & 2 incidents for 2018/2019, based on the information that we had at that time. However, since then we had a series of incidents in July and August that have led us to reforecast our 2018/2019 performance and we are now expecting to outturn at 7 incidents this year.

[2] Final Determination stated transfer would occur in 2015 but official date for transfer of pumping stations is 1 October 2016

- We have updated the App5 table to show this changed performance.

SA4: Sewer network stability and reliability factor

Unit	Assessment			
Period	Financial year measure (some sub-measures are calendar year measures)			
Definition	An overall assessment of long term stability and reliability for the sewer network, based on a basket of indicators. Assessment is based on the recent historical trend of the indicators. Assessment will give a classification of Improving, Stable or Deteriorating.			
Forecast Year	**2018/2019**		**2019/2020**	
Performance Commitment Level	Stable		Stable	
Forecast Performance Level	Stable		Stable	
Performance Commitment Level Met?	Yes		Yes	
Underperformance Penalty	£0.000m		£0.000m	
Sub-Measure Performance				
Sewer collapses	Upper Reference Level	369	Upper Reference Level	369
	Reference Level	255	Reference Level	255
	Forecast Performance	238	Forecast Performance	238
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Pollution incidents (CSO, RM, FS and SPS)	Upper Reference Level	251	Upper Reference Level	251
	Reference Level	203	Reference Level	203
	Forecast Performance	170	Forecast Performance	170
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Properties flooded due to other causes	Upper Reference Level	379	Upper Reference Level	379
	Reference Level	302	Reference Level	302
	Forecast Performance	355	Forecast Performance	330
	Performance Level Met?	No	Performance Level Met?	No
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Properties flooded overloaded sewers, excluding severe weather	Upper Reference Level	110	Upper Reference Level	110
	Reference Level	72	Reference Level	72
	Forecast Performance	72	Forecast Performance	72

	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Sewer blockages	Upper Reference Level	22,936	Upper Reference Level	22,936
	Reference Level	20,695	Reference Level	20,695
	Forecast Performance	17,075	Forecast Performance	17,075
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Reactive equipment failures	Upper Reference Level	7,282	Upper Reference Level	238
	Reference Level	5,869	Reference Level	5,869
	Forecast Performance	3,510	Forecast Performance	3,510
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable

- There was originally some ambiguity in how the penalty mechanism for the Stability & Reliability Factors would be calculated and applied, should it be appropriate. This was addressed and a document outlining the process was agreed with the Yorkshire Forum for Water Customers and Ofwat (15/9/2016). A copy of this document, 'Meeting our customer promises' (Stability and Reliability Factors), can be found on our website (https://www.yorkshirewater.com/sites/default/files/Stability and Reliability Factors Customer Final_0.pdf).
- The number of properties flooded due to other causes has deteriorated in 2017/2018. However, as part of our planned Upper Quartile improvement plan, which we have discussed in more detail in the Block for SA1, we expect our performance on this sub-measure to improve in 2018/2019 and 2019/2020, and so return to being stable.
- As this S&R Factor has been assessed as stable overall, no penalty has been applied.

SB2: Waste water quality stability and reliability factor

Unit	Assessment			
Period	Financial year measure (some sub-measures are calendar year measures)			
Definition	An overall assessment of long term stability and reliability for waste water quality, based on a basket of indicators. Assessment is based on the recent historical trend of the indicators. Assessment will give a classification of Improving, Stable or Deteriorating.			
Forecast Year	**2018/2019**		**2019/2020**	
Performance Commitment Level	Stable		Stable	
Forecast Performance Level	Stable		Stable	
Performance Commitment Level Met?	Yes		Yes	
Underperformance Penalty	£0.000m		£0.000m	
Sub-Measure Performance				
Sewage Treatment Works non-compliance	Upper Reference Level	8	Upper Reference Level	8
	Reference Level	0	Reference Level	0
	Forecast Performance	5	Forecast Performance	5
	Performance Level Met?	No	Performance Level Met?	No
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Population equivalent non-compliance	Upper Reference Level	0.6%	Upper Reference Level	0.6%
	Reference Level	0.0%	Reference Level	0.0%
	Forecast Performance	0.0%	Forecast Performance	0.0%
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable
Reactive equipment failures	Upper Reference Level	20,848	Upper Reference Level	20,848
	Reference Level	15,651	Reference Level	15,651
	Forecast Performance	13,000	Forecast Performance	12,500
	Performance Level Met?	Yes	Performance Level Met?	Yes
	Sub-Measure Assessment	Stable	Sub-Measure Assessment	Stable

- As the S&R Factor has been assessed as Stable overall no penalty is applied.
- There was originally some ambiguity in how the penalty mechanism for the Stability & Reliability Factors would be calculated and applied, should it be appropriate. This was addressed and a document outlining the process was agreed with the Yorkshire Forum for

Water Customers and Ofwat (15/9/2016). A copy of this document, ‘Meeting our customer promises’ (Stability and Reliability Factors), can be found on our website (https://www.yorkshirewater.com/sites/default/files/Stability and Reliability Factors Customer Final_0.pdf).

SB3: Solutions delivered by working with others

Unit	Number	
Period	Financial year measure	
Definition	The number of intervention solutions delivered through working with multi-agencies, organisations or individuals. **The performance commitment is a total commitment, held at appointee level. It spans water and waste water controls and specific targets have not been allocated to the individual controls.**	
Forecast Year	**2018/2019**	**2019/2020**
Performance Commitment Level	3 (12 Cumulative)	4 (16 Cumulative)
Forecast Performance Level	10 (31 Cumulative)	8 (39 Cumulative)
Performance Commitment Level Met?	Yes	Yes
Outperformance Payment Deadband	12 (Cumulative number of Interventions Delivered in AMP)	16 (Cumulative number of Interventions Delivered in AMP)
Outperformance Within Deadband	No	No
Outperformance Payment Incentive Rate	5% of totex cost of Yorkshire Water cost for each eligible intervention.	5% of totex cost of Yorkshire Water cost for each eligible intervention.
Outperformance Payment	= £0.060m (average cost of interventions in year) * 5% =£0.003m (Reward per intervention above target) =10 (Forecast Interventions) – 3 (Target) = 7 * £0.003m =£0.021m total outperformance payment =£0.021m * 36% (% of total cost of interventions that relate to waste water schemes) = £0.008m waste water only outperformance payment	= £0.294m (average cost of interventions in year) * 5% =£0.015m (Reward per intervention above target) =8 (Forecast Interventions) – 4 (Target) = 4 * £0.015m =£0.059m total outperformance payment =£0.059m * 0% (% of total cost of interventions that relate to waste water schemes) = £0.000m waste water only outperformance payment

- There was some ambiguity about how the reward for this measure was calculated and how it should be distributed between water and waste water, specifically around what we classed as an eligible intervention. This has now been resolved and agreed with our assurers and via our internal assurance processes, and we are now calculating our outperformance payment by calculating 5% of the average cost of all interventions in the report year and then multiplying this be the number of interventions greater than our target for that year.
- We have further refined how we split the outperformance payment between the water (WC2) and waste water (SB3) Performance Commitments. Previously this was done using a percentage split based on the relative size of the two parts of the business. To ensure a more accurate split we are now assigning the outperformance payment based on the percentage of total cost of the interventions completed within the report year that relate to either water or waste water.

- The improvements to our calculation has resulted in small amendments to the figures previously submitted for this Performance Commitment in the Annual Performance Report for 2015/2016 and 2016/2017.

Reporting Year	Outperformance Payment using Previous Calculation Method (£m)	Outperformance Payment using Improved Calculation Method (£m)
2015/2016	£0.000240	£0.000175
2016/2017	£0.000213	£0.000783

SB4: Length of river improved

Unit	Kilometres (Km)	
Period	Financial year measure	
Definition	The length of river in the Yorkshire Water region improved during 2015-2020 against Water Framework Directive component measures.	
Forecast Year	**2018/2019**	**2019/2020**
Performance Commitment Level	-	340
Forecast Performance Level	-	357
Performance Commitment Level Met?	-	Yes
Underperformance Penalty Deadband	-	337
Underperformance Within Deadband	-	N/A
Underperformance Penalty Incentive Rate	-	£0.146m per kilometre
Underperformance Penalty	-	N/A
Outperformance Payment Deadband	-	343
Outperformance Within Deadband	-	No
Outperformance Payment Incentive Rate	-	£0.077m per kilometre
Outperformance Payment based on Forecast Performance	-	= 357 (Forecast Performance) – 343 (Deadband) = 14 * £0.077 (Incentive Rate) =£1.073m
Outperformance Payment being Claimed	-	= 357 (Forecast Performance) – 356 (Internally Agreed Target) = 1 * £0.077 (Incentive Rate) =£0.077m

- The reward we have claimed for length of river improved is less than that 'earned' based on forecast performance. This is due to an error in setting the original target which was identified after the Final Determination had been published.
- Our correspondence with Ofwat on this issue confirmed that the original target would not be changed but a business decision was made to only claim the outperformance payment greater than the revised internal target of 356km.
- This being the case we are only claiming £0.077m of reward (for the forecast 1km delivered greater than our internal target of 356km) compared to £1.073m which we are forecasting to earn against our original target of 340km.

SB5: Amount of land conserved and enhanced

Unit	Hectares (Ha)	
Period	Financial year measure	
Definition	The amount of land that the company conserves and enhances, for example Biodiversity 2020, Ancient Woodlands and Sites of Special Scientific Interest (SSSIs). This includes land within the region and includes both Yorkshire Water and non-Yorkshire Water land. **The performance commitment is a total commitment, held at appointee level. It spans water and waste water controls and specific targets have not been allocated to the individual controls.**	
Forecast Year	**2018/2019**	**2019/2020**
Performance Commitment Level	-	11,736
Forecast Performance Level	-	11,684
Performance Commitment Level Met?	-	No
Underperformance Penalty Deadband	-	11,501
Underperformance Within Deadband	-	Yes
Underperformance Penalty Incentive Rate	-	£0.020m per hectare
Underperformance Penalty	-	£0.000m
Outperformance Payment Deadband	-	11,971
Outperformance Within Deadband	-	N/A
Outperformance Payment Incentive Rate	-	£0.013m per hectare
Outperformance Payment	-	N/A

- Our forecast shows that we are expecting to fail this Performance Commitment, although we will still be in the deadband and therefore there is no underperformance penalty to be applied.
- Our forecast underperformance is due to a 47 Ha area of SSSI land at Newton Dale that was sold just before the start of the AMP, which we had included when proposing our target for this measure and which had been agreed by Ofwat.
- As this change was marginal a business decision was taken that we would not request a formal change of target from Ofwat for this measure and would instead accept that we would not be able to meet the original target, although we still expect to meet our revised internal target of 11,689. This decision was agreed with the Yorkshire Forum for Water Customers and our assurers.
- Please note, when we submitted App5 as part of the PR14 Reconciliation in July we had entered a value of 11,684 for this measure in error, we have now rectified this in the App5 table.

RB2: Number of people who we help to pay their bill

Unit	Number
Period	Financial year measure
Definition	The number of customers who are assisted to pay their bill. This includes, but is not limited to WaterSure, Resolve and the Community Trust, plus the number of those who take up a water meter as a result of targeted advice following identification of an affordability issue (customers should not be double counted).

This is not a financial ODI and so has no associated outperformance payment or underperformance penalty associated with it, however, we have changed our forecast performance for 2018/2019 and 2019/2020 since we submitted the PR14 Reconciliation in July and so wanted to highlight this and explain the reason for the change,

Forecast Year	2018/2019	2019/2020
Originally Reported Forecast	24,000	24,000
Performance Commitment Level Met?	-	Yes
Revised Forecast	29,000	40,000
Performance Commitment Level Met?	-	Yes

- We were always forecasting to achieve this PC but since our original submission we now have additional funding for our social tariff. This funding has been agreed with the Consumer Council for Water and the Yorkshire Forum for Water Customers.
- We have updated the data in App5 to reflect our new forecast.

App7 - Proposed price limits and average bills

We have provided evidence showing that the proposed total residential bills are affordable for customers, including those on low incomes and have described our efforts to mitigate affordability risks, including any social tariff scheme or schemes that currently apply or will be applied during 2020-25 in chapters 2, 7 and 13 of our PR19 plan.

Sources of inputs

Blocks A, B, C, F, G, H and I are populated from other PR19 data tables.

Block E has been linked to the 'BPT Extracts' output table of the data mapping tool.

'[BPT-FM-Mapping-tool-v7.1 (2) inc.xlsx]BPT Extracts'I20:M24.

Block H

2018/2019 – this has been completed with our forecasted average bill for 2018/2019.

2019/2020 – this has been completed with our forecasted average bill for 2019/2020.

2020-2025 is calculated.

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App8 - Appointee financing

Sources of inputs

Block A

Line 1 – net debt

This information is sourced from table App19 and is adjusted to the correct price base using APP23.

Line 2 and 3

This information is sourced from table App18 and is adjusted to the correct price base using APP23.

Block B

Lines 4-12, 44 – 50 and 54

These are sourced from the Ofwat RCV adjustment feeder model as per requests.

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App9 - Adjustments to RCV from disposals of interest in land

Table App9 – 'Adjustments to RCV from disposals of interest in land' is used to state the past performance of land disposals. Inputs into App9 land disposals data table come from the following data sources:

- Annual Performance Reports (actual)
- Annual Performance Reports (forecast)
- Ofwat RCV Adjustment Feeder Model
- Ofwat RCV Midnight Adjustment Model

The data reconciliation has been performed using internal information held by Yorkshire Water. App9 data has been assured by our external financial assurer Deloitte.

The assurance statements from Deloitte is provided as part of the PR14 reconciliation submission.

The App9 data table is part pre-populated by Ofwat and part completed by Yorkshire Water using Annual Performance Reports, Land and Property forecasts and the Ofwat RCV Adjustments Feeder Model. The table has been completed as set out below.

- WACC and discounting period information has been pre-populated by Ofwat.
- Forecast at previous review completed using 'PR14 RCV midnight adjustment – Calc 2 – RCV calcs'.
- 2014/2015 actual sales completed using Finance Results 2015 report – 'FIN ACC 26'.
- 2015/2016 to 2017/2018 actual sales completed using Annual Performance Reports.
- 2018/2019 and 2019/2020 forecast sales completed using Land and Property team forecast information. Forecast split 50:50 to water and wastewater.
- 2014-20 NPV effect of 50% of proceeds from disposals of interest in land completed using the RCV Adjustment Feeder model.

The adjustments to RCV from the disposal of land are transferred to the App25 PR14 reconciliation adjustments summary – Block B.

The adjustments to RCV from the disposal of land are transferred to the 'RCV Adjustments Feeder Model – Inputs'.

App10 - Financial ratios

Block A Lines 1 to 12 and Block B Lines 23 to 34

Ofwat ratios

Ofwat ratios are populated using data taken from the Ofwat financial model – "Analysis Appointee" tab

One adjustment was made to the output from this tab as follows, which impacts the alternative calculation of the adjusted ICR:

- Line 178 of the "Analysis Appointee" tab was amended to be a positive figure rather than a negative figure.

Block A Lines 13 to 19 and Block B Lines 35 to 41

Company specific ratios

We have included the following additional ratios (on both a notional and actual basis)

- Adjusted cash interest cover (revised alternative calculation)
  This is the same as Ofwat's alternative calculation, except for the following adjustments:
  - Additional £6m of non-building block revenue that cannot be incorporated within Ofwat's financial model. This represents £6m of deferred income from an accounting adjustment for IFRIC18

- Adjusted cash interest cover (Ratings Agency calculation)
  This seeks to replicate our understanding of how Moody's calculate their adjusted ICR.
  The calculation is the same as Ofwat's alternative calculation, except for the following adjustments:
  - Additional £6m of non-building block revenue that cannot be incorporated within Ofwat's financial model. This represents £6m of deferred income from an accounting adjustment for IFRIC18

- Adjusted cash interest cover (Yorkshire Water Covenanted basis)
  This reflects our actual covenanted senior conformed ICR.
  The calculation is the same as Ofwat's alternative calculation, except for the following adjustments:
  - Additional £6m of non-building block revenue that cannot be incorporated within Ofwat's financial model. This represents £6m of deferred income from an accounting adjustment for IFRIC18
  - Inclusion of movements in working capital

- FFO / Net debt (revised alternative calculation)
  This seeks to replicate our understanding of how S&P calculate their FFO to net debt.
  The calculation is the same as Ofwat's alternative calculation, except for the following adjustments:
  - Additional £6m of non-building block revenue that cannot be incorporated within Ofwat's financial model. This represents £6m of deferred income from an accounting adjustment for IFRIC18

- Gearing (alternative)
  This seeks to replicate our actual covenanted gearing ratio.
  The calculation is the same as Ofwat's, except for the following adjustments:
    - RCV restated at year end nominal price base, rather than average year (App23 used for inflation data)

- Adjusted cash interest cover (excluding legacy)
  This is the same as Ofwat's calculation, except for the following adjustments:
    - Legacy revenue, as determined within Ofwat's financial model, has been deducted from FFO to calculate the ratio on a consistent basis to prior periods.

- FFO / Net debt (excluding legacy)
  This is the same as Ofwat's calculation, except for the following adjustments:
    - Legacy revenue, as determined within Ofwat's financial model, has been deducted from FFO to calculate the ratio on a consistent basis to prior periods.

App11 - Income statement based on the actual company structure

We have completed the model in line with the expectations and have made no changes or exceptions.

Sources of inputs

This has been linked to the ‘BPT Extracts’ output table of the data mapping tool.

'[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx]BPT Extracts'H48:L66

For inputs to be correct the financial model has been set as ‘un-notionalised’

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App11a - Income statement based on a notional company structure

We have completed the model in line with the expectations and have made no changes or exceptions.

Sources of inputs

This has been linked to the 'BPT Extracts' output table of the data mapping tool.

'[BPT-FM-Mapping-tool-v7.1 (2) inc.xlsx]BPT Extracts'H48:L66

For inputs to be correct the financial model has been set as 'notionalised'.

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App12 - Balance sheet based on the actual company structure

As stated in our Annual Performance Report our "Regulatory financial reporting takes information from published statutory financial statements and adjusts that information to take account of differences between statutory financial reporting in accordance with UK Generally Accepted Accounting Principles (UK GAAP) and Regulatory Accounting standards (RAGs). On adoption of new UK GAAP there was a choice between Financial Reporting Standards, FRS101 and FRS102. We have elected to report under FRS102."

Sources of inputs

2 - Intangible assets- 'F_Outputs'! K$269- line 3 'Investments ~ loans to group companies8 - Inventories ~ actual company structure'

8 - Inventories ~ actual company structure - source:
+'F_Outputs'! K$273 to P273

9 - Trade and other receivables - source:
+'F_Outputs'! K$274 to P274

13 - Trade and other payables - source:
-'F_Outputs'! K$279 to P279

17 - Current tax liabilities ~ actual company structure - source:
-'F_Outputs'! K$284 to P284

22 - Borrowings - source:
-'F_Outputs'! K$282 to P282

24 - Retirement benefit obligations - source:
-'F_Outputs'! K$285 to P285

25 - Provisions - source:
-'F_Outputs'! K$286 to P286

31 - Deferred tax ~ actual company structure - source:
+'F_Outputs'! K$293 to P293

35 - Other reserves - source:
+'F_Outputs'! K$298 to P298

37 - Retained profits ~ wholesale - source:
+'FinStat_Appointee'! K114-SUM (G87:G88) to P114 – sum (L87:L88)

38 - Retained profits ~ residential retail - source:
+'FinStat_Residential'! K85 to P85

39 - Retained profits ~ business retail - source:
+'FinStat_Business'! K85 to P85

41 - Capex creditor ~ wholesale - source:

-SUM ('Appointee'! K196:K200) to P196:P200

42 - Capex creditor ~ residential retail - source:
-'Appointee'! K194 to P194

43 - Capex creditor ~ business retail - source:
-'Appointee'! K195 to P195

45 - Cash and cash equivalents ~ wholesale - source:
+'FinStat_Wholesale'! K78 to P78

46 - Cash and cash equivalents ~ residential retail - source:
+'Retail_Residential'! K794 to P794

47 - Cash and cash equivalents ~ business retail - source:
+'Retail_Business'! K932 to P932

To assist in the population of the data tables, we have included an additional Block within the '[BPT-FM-Mapping-tool-v7.1 (2) inc.xlsx] spreadsheet titled 'YKYlinks', this links to the financial model as described above.

For inputs to be correct the financial model has been set as 'un-notionalised'

Adjustments to sources of inputs for modelling purposes

We have included the opening balance for the following lines as they were not linked to the input mapping tool:

- 5 - Derivative financial instruments
- 23 - Derivative financial instruments
- 26 - Deferred income ~ G&C's
- 27 - Deferred income ~ adopted assets

We have not applied any movement to the Derivative financial instruments.

We have not applied any movement to deferred income due to any values that we included within the financial model appearing to result in the model deducting the 'deferred' income from the revenue control, therefore we have not included any forecast movement, as we would have had to adjust the income statement and cashflow offline.

App12a - Balance sheet based on a notional company structure

Sources of inputs

2 - Intangible assets
'F_Outputs'! K$269- line 3 'Investments ~ loans to group companies8 - Inventories ~ actual company structure'

8 - Inventories ~ actual company structure - source:
+'F_Outputs'! K$273 to P273

9 - Trade and other receivables - source:
+'F_Outputs'! K$274 to P274

13 - Trade and other payables - source:
-'F_Outputs'! K$279 to P279

17 - Current tax liabilities ~ actual company structure - source:
-'F_Outputs'! K$284 to P284

22 - Borrowings - source:
-'F_Outputs'! K$282 to P282

24 - Retirement benefit obligations - source:
-'F_Outputs'! K$285 to P285

25 - Provisions - source:
-'F_Outputs'! K$286 to P286

31 - Deferred tax ~ actual company structure - source:
+'F_Outputs'! K$293 to P293

35 - Other reserves - source:
+'F_Outputs'! K$298 to P298

37 - Retained profits ~ wholesale - source:
+'FinStat_Appointee'! K114-SUM (G87:G88) to P114 – sum (L87:L88)

38 - Retained profits ~ residential retail - source:
+'FinStat_Residential'! K85 to P85

39 - Retained profits ~ business retail - source:
+'FinStat_Business'! K85 to P85

41 - Capex creditor ~ wholesale - source:
-SUM ('Appointee'! K196:K200) to P196:P200

42 - Capex creditor ~ residential retail - source:
-'Appointee'! K194 to P194

43 - Capex creditor ~ business retail - source:
-'Appointee'! K195 to P195

45 - Cash and cash equivalents ~ wholesale - source:
+'FinStat_Wholesale'! K78 to P78

46 - Cash and cash equivalents ~ residential retail - source:
+'Retail_Residential'! K794 to P794

47 - Cash and cash equivalents ~ business retail - source:
+'Retail_Business'! K932 to P932

To assist in the population of the data tables, we have included an additional Block within the '[BPT-FM-Mapping-tool-v7.1 (2) inc.xlsx] spreadsheet titled 'YKYlinks', this links to the financial model as described above.

For inputs to be correct the financial model has been set as 'notionalised'

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App13 - Trade receivables

Sources of inputs

Blocks A and B were populated by our internal finance team.

Blocks C, D and E are calculated using the information from Block A and B and other PR19 data tables.

Adjustments to sources of inputs for modelling purposes

These tables have not been linked to the financial model due to the 'circularity' of inputs and outputs.

As the values calculated in Block C, D and E are used to drive the financial model, which rely on the inputs to Block A and B, if outputs are taken from the model into Block A and B this causes different values to be calculated within the financial model and then different numbers to be generated.

App14 - Trade and other payables

Sources of inputs

All inputs in section A have been calculated by our internal finance team.

Block C is calculated using section an information and Block C from App13.

Adjustments to sources of inputs for modelling purposes

These tables have not been linked to the financial model due to the 'circularity' of inputs and outputs.

As the values calculated in Block C are used to drive the financial model, which rely on the inputs to Block A, if outputs are taken from the model into Block A causes different values to be calculated within the financial model and then different numbers to be generated.

App15 - Cashflow based on the actual company structure

Sources of inputs

This has been linked to the ‘BPT Extracts’ output table of the data mapping tool.

'[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx]BPT Extracts'H77:L113

For inputs to be correct the financial model has been set as ‘un-notionalised’

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App15a - Cashflow based on a notional company structure

Sources of inputs

This has been linked to the ‘BPT Extracts’ output table of the data mapping tool.

'[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx]BPT Extracts'H77:L113

For inputs to be correct the financial model has been set as ‘notionalised’

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App16 - Tangible fixed assets

Sources of inputs

Block A – 2019/2020 opening balance has been sourced from our internal finance team, this I based on our internal business plan. Block B has been sourced from the financial model.

Block C – The proposed disposals have been included by our internal finance team

Block D – 2019/2020 opening balance has been included by our finance team, 2020-2025 has been sourced from the financial model.

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

App17 - Appointee revenue summary

Sources of inputs

This table is populated from other data tables, there are no inputs.

Adjustments to sources of inputs for modelling purposes

No adjustments have been made

App18 - Share capital and dividends

1. Equity shares

Existing data is taken from the 2018 Accounts.

No shares are assumed to be issued throughout AMP7.

2. Equity dividends

Base dividends have been calculated in accordance with Ofwat's guidance. Key assumptions are as follows:

PR14 FD RCV at March 2020 adjusted for log downs per App25

- 77.2% actual gearing (see initial gearing assumption below)
- 5.0% initial yield
- 2.0% CPIH inflation being the long-term assumption

Base dividends are assumed to be paid as a final dividend at the year end.

Dividends are stated net of any "round trip" dividends.

Dividend yield calculated based on actual equity, rather than notional equity for consistency with actual gearing used in dividend calculation.

No interim dividends have been assumed.

No special dividends have been assumed.

No scrip dividends have been assumed.

Initial gearing assumption

- March 2020 (outturn) RCV forecast (FD inflated using App23 inflation assumptions)
- Deduct RCV log downs per App25 (inflated to outturn using App23)
- Net debt at 31 March 2020 obtained from App12
- Net debt divided by adjusted RCV to give gearing percentage

3. Preference shares

Yorkshire Water has no preference shares.

App19 - Debt and interest costs

Overview

App19 contains information regarding the debt held by Yorkshire Water Services ("YW" or the "Company") payable to debt providers external to Kelda ("debt") held by the company together with the associated interest rates and financing costs. It includes the debt held by Yorkshire Water's subsidiaries that has been on-lent by these subsidiaries to the Company.

Debt

The debt opening balances for 2019/2020 is split between fixed rate debt, floating rate debt and inflation-linked debt and includes both designated financial hedging arrangements and non-designated financial hedging arrangements.

2018/2019 to 2019/2020 debt movements

The 2019/2020 opening balances have been calculated by taking the 2017/2018 actual balance sheet position and then making adjustments for actual and forecast movements in debt during 2018/2019. These movements include:

- new debt issued to 31/07/2018;
- forecast new debt issued for the remainder of the 2018/2019 financial year;
- changes to terms on certain inflation linked swaps;
- accretion forecasts and accretion payment forecasts;
- debt repaid to 31/07/2018;
- debt forecast to be repaid for the remainder of the 2018/2019 financial year; and
- the effect of any of the above on the forecast amounts of the Company's cash position and amounts drawn on its banking facilities ("RCF") by 31/03/2019.

Similar adjustments have also been made to forecasts for the 2019/2020 financial year to provide the opening debt position for the beginning of AMP7.

2020/2021 to 2024/2025 debt movements

New debt issuances in this period have been calculated within our own internal financial model as the amounts of new debt required to finance our totex requirements.

All new debt issued is assumed to be fixed rate debt, as our existing index linked debt is already above our assumed target level of 40% of the total debt.

Debt repayments in this period represent repayments due on our existing debt.

Indexation of index-linked loans has been calculated by applying the inflation forecasts contained within App23 to our existing index linked debt.

Key assumptions

Key assumptions include:

- Inflation (RPI and CPI) and interest rate (LIBOR) forecasts have been aligned to those used elsewhere within the PR19 financial tables.
- The interest rate on forecast new debt issued is as per the assumptions contained within the Company's Board approved 2018/2019 Business Plan
- All new forecast new debt carries the assumption that the new debt is raised mid-year and attracts 6 months of interest.

New debt issued from 31/03/2018 to 31/07/2018.

Post the 31/03/2018 financial year end the following new debt has been issued by the Company and included within the forecasts:

- On 27/07/2018 Yorkshire Water raised the following:
    - £50m 2.881% fixed rate debt - repayable 11/07/2030.
    - £25m 0.8125% inflation linked (CPI) debt - repayable 11/07/2019.

Changes to inflation linked swaps from 31/03/2018 to 31/07/2018.

Yorkshire Water has a portfolio of inflation swaps with a notional value of £1.289bn. At the inception of some swaps, Yorkshire Water agreed to include mandatory break clauses in their terms to reduce the associated credit charges from bank counterparties. On 2 July 2018 Yorkshire Water completed a transaction that has resulted in:

- swaps with a notional value £117.5m with 21/20/2020 mandatory break dates had their break dates extended by 10½ years to 21/08/2030;
- swaps with a notional value of £256.6m with termination dates of 21/02/2029 and 21/02/2034 had their maturities extended to 21/02/2043;
- the repayment (to be made in November 2018) of the accretion element of the above £374.2m of swaps (currently forecast at circa £130m); and
- delivered significant interest savings to Yorkshire Water by increasing the interest receivable on the receipt leg of certain swaps as follows:

Year	Figure
2018/2019	£10.0m
2019/2020	£10.0m
2020/2021	£23.1m
2021/2022	£25.1m
2022/2023	£25.1m
2023/2024	£25.1m
2024/2025	£25.1m
2025/2026	£26.1m
2026/2027	£26.1m
2027/2028	£26.1m
2028/2029	£26.1m
2029/2030	£32.1m

Interest costs

The key assumptions on Interest costs are:

- App 19 details the cash interest rate that reflects what the Company pays on its debt. This includes the impact of all the Company's derivatives (i.e. on floating rate debt from designated financial instruments and on amounts associated with non-designated financial instruments) but excludes any market to market adjustments.
- For any inflation linked swap restructurings that have been carried out by the Company and where this has resulted in new interest receivable amounts, the interest rates applied have been derived to ensure that the actual fixed amount receivable is reported.
- There has been no interest capitalised (or forecast to be capitalised) in any year.

Existing interest rates

- Existing interest rates have been calculated within our own internal financial model as the amount of interest on our existing debt at March 2020, divided by the amount of debt.
- All existing debt repayments carry the assumption that the debt is repaid mid-year and attracts 6 months of interest.
- Interest rates are quoted on a nominal basis.
- Inflation (RPI and CPI) and interest rate (LIBOR) forecasts have been aligned to those used elsewhere within the PR19 financial tables.
- Our index linked swaps have been excluded from this analysis and included separately in line 17. This is a different classification to that used within our Annual Performance Report and App20 but was necessary to ensure the correct output within Ofwat's financial model.

New interest rates

- New nominal interest rates of 3.50% are in accordance with Ofwat's recommended cost of new debt plus issuance and liquidity costs (3.4% cost of new debt plus 0.1% issuance and liquidity costs).
- The equivalent real RPI stripped rate for index linked debt has been assumed to be 0.49%.
- Cash balances are assumed to earn no interest.

Weighted interest rates

- Weighted interest rates have been calculated within our own internal financial model as the amount of total interest, divided by the amount of debt.
- All new debt issued, and existing debt repayments carry the assumption that the debt is raised or repaid mid-year and attracts 6 months of interest.
- Fixed interest is quoted on a nominal basis
- Index linked interest is quoted on a real basis

Floating rate debt interest paid

- This represents the total of the interest payable on our existing floating rate debt portfolio and the interest receivable on our index linked swap portfolio.
- The interest payable on our existing floating rate debt portfolio has been calculated within our own internal financial model based on the terms of each individual instrument.
- The interest receivable on our existing index linked swap portfolio has been calculated within our own internal financial model based on the terms of each individual instrument.
- Interest costs reduce from 2019/2020 to 2020/2021 due to additional benefits receivable following the restructuring of our index linked swap portfolio.

Adjustments for reconciliation with balance sheet.

No adjustments are necessary as the debt reported in App19 agrees to the debt included in App12.

App20 - Cost of debt / analysis of debt

Overview

App20 contains information regarding the cost of debt, together with an analysis of debt held by Yorkshire Water's ("YW" or the "Company") that is payable to debt providers external to the Company ("debt") held by the Company as at 31 March 2018. App20 includes all of the debt held by YW's subsidiaries that has been on-lent by these subsidiaries to the Company.

This table updates the information provided to Ofwat during May 2017 regarding YW's debt instruments, updated for debt instruments issued between 01 April 2017 and 31 March 2017 and debt instruments that have matured or been partially repaid during that period. App20 also aligns with the information provided for the Company's 2018 Annual Performance Report submission.

Debt

The Company's debt is split between fixed rate debt, floating rate debt and inflation linked debt. All inflation linked debt is tied to RPI. The Company had no CPI linked debt as at 31 March 2018. App20 includes both designated financial hedging arrangements and non-designated financial hedging arrangements.

Alongside each item of debt, the following, where applicable, has been included:

- a brief description of the debt;
- instrument identifier (ISIN);
- credit rating;
- currency;
- whether the debt is subordinated (Class A / Class B);
- years to maturity;
- coupon, and for floating rate instruments details of the market index to which the instrument is tied together with the applicable margin;
- unamortised debt issue costs; and
- the fair value of the debt.

App20 includes the principal sum outstanding as at 31 March 2018 (excluding unamortised debt issue costs) and where applicable the amount used to calculate the nominal interest cost and cash interest payment. The latter primarily relates to:

- non-designated financial debt instruments (including inflation linked swaps and Finance Lease swaps);
- the Company's revolving credit facility; and
- the Company's banking and liquidity facilities.

For the Company's revolving credit facility and liquidity facilities the calculations for (i) the interest costs on any amounts drawn; and (ii) commitment fees on undrawn amounts, have been disclosed separately.

As at 31 March 2018 Yorkshire Water did not have any debt with forward starting dates. Neither does the Company have any operational leases that will be categorised as Finance Leases under IFRS16.

For YW's amortising debt, we have reported the weighted average time to maturity, rather than the final maturity. Amortising debt has been clearly indicated within the table.

Derivatives

App20 provides details of all the Company's financial derivatives including both those in a designated hedging arrangement and those in a non-designated hedging arrangement.

- For designated hedging arrangements we have reported these together with the debt instruments to which the derivative relate (i.e. we have reported the debt instrument net of the impact of any hedging arrangement).
- The Company has non-designated hedging arrangements in the form of inflation linked swaps and Finance Lease swaps. App20 include these swaps by reporting both the paid and received legs separately in the appropriate lines.

Further information regarding YW's portfolio of inflation linked swaps is provided in section 4 below.

Yorkshire Waters portfolio of inflation linked swaps

To help mitigate both the Company's inflation risk and interest rate risk Yorkshire Water maintains a portfolio of inflation linked swaps that are linked to RPI for both the interest payment leg and for debt payments settled during the life of these swaps.

Yorkshire Water's inflation linked swaps are contracts where interest is both paid by the Company and received by the Company on a notional amount of £1,289m. The cashflows associated with these inflation linked swaps are as follows:

- Six monthly interest receivable linked to the London Interbank Offered Rate (LIBOR).
- Six monthly interests payable linked to inflation (RPI).
- An RPI-linked debt amount that is payable on (i) maturity of the swaps or (ii) at certain predetermined dates over the duration of the swaps the latter being referred to as pay-as-you-go ("PAYG") swaps.
- In addition, a proportion of the inflation linked swaps receives six monthly interest amounts based on a fixed rate.

The maturity dates of YW's portfolio of inflation linked swaps range from 2026 to 2063.

Approximately two-thirds of YW's portfolio of inflation linked swaps require the Company to pay the accretion on the notional amount at maturity as a single payment. The remaining one-third require YW to make periodic payments of the accretion at five-yearly intervals (PAYG) with the last such payment having been made in August 2016 and the next payment due in August 2021. The PAYG swaps are identified within the 'Further information' column.

Currently just over a fifth of the Company's inflation linked swaps include mandatory break dates whereby the contracts for these swaps will be automatically terminated, for a cash settlement at the swaps mark-to-market rate, at the break date unless both YW and the respective swap counterparty agree to restructure the swap (e.g. to remove the mandatory break or to defer the mandatory break to a later date). The notional value of the swaps with break dates is as follows:

- £151.5m with break dates in February 2023;
- £23.4m with break dates in February 2025; and
- £117.5m with break dates in February 2030.

The above analysis includes swap restructurings that have occurred post the 31 March 2018 balance sheet date. The inflation linked swaps with break dates are identified within the 'Further information' column.

Index linked debt and inflation

App20 includes columns that report the relevant real RPI coupon rate and also convert the rates of fixed and floating rate instruments into real RPI terms. Yorkshire Water has used the Ofwat assumption for RPI of 2.8% per year.

The Company had no CPI (or CPIH) linked debt as at 31 March 2018.

Key assumptions

Key assumptions include the following:

- Inflation (RPI) at 2.80% per annum.
- One-month LIBOR at 0.40% for the Company's revolving credit facility.
- Six-month LIBOR at 0.48% for the Company's inflation linked swaps and for certain cross currency, European Investment Bank and Finance Lease debt.
- Six-month LIBOR at 0.49% for certain cross currency swaps and fixed to floating rate bond and bank debt.
- Twelve-month LIBOR at 0.72% for the Company's Finance Lease swaps.
- For the Company's Finance Leases, the interest rate used is the implied rates within each individual lease agreement.
- In relation to the inflation linked swaps that receives six monthly interest amounts based on a fixed rate; the interest rates applied have been derived to ensure that the actual fixed amount receivable is reported.
- There has been no interest capitalised (or forecast to be capitalised) in any year.

App21 - Direct procurement for customers

We support the principle and methodology of direct procurement for customers. Despite taking the broadest possible interpretation of the methodology, we have concluded that at the moment we do not have qualifying schemes, however we have developed a robust assessment methodology and intend to use this to search for future qualifying opportunities.

For further detail concerning why schemes were discounted, please see Appendix 11a.

App22 - Pensions

This table contains information on pensions and includes the forecast accounting charges separately for defined benefit and defined contribution schemes, as well as cash contributions for ongoing defined benefit schemes and deficit recovery.

The Yorkshire Water final salary pension scheme (Defined benefit) is closed to new entrants. Consequently, the company is forecasting reducing accounting charges for defined benefit schemes as staff retire from the business or pursue their careers elsewhere. Staff leavers (and therefore cost) have been forecast to continue to reduce at circa 5% up to 2024/2025.

We have assumed that as new staff join the business they will continue the trend of taking up defined contribution schemes, along with an efficiency assumption made in future years that headcount will reduce overall. Cash contributions for defined benefit pension deficit recovery has been reflected up to 2022 as agreed with OFWAT in IN13/17 and confirmed again February 2017.

Pension forecast allocations across Price Controls have been forecast on the basis of Regulatory Accounting Guidelines 2.07 and uses forecast employee time analysis produced as part of the Annual Performance Report.

The final salary pension scheme (Defined benefit) is closed to new entrants. The cost continues to reduce at circa 5%, this run rate has been continued up to 2024/2025.

Increases to Defined contribution reflects new entrants to the scheme. With an assumption made in future years that headcount will reduce.

Pension deficit recovery has been reflected up to 2022 as agreed with OFWAT.

Allocations across price controls Wholesale Waste / Wholesale Water & Business Retail have been determined using individual employee time splits produced as part of the Annual Performance Report.

App23 - Inflation measures

Actual data to March 2018

This has been pre-populated by Ofwat.

Forecast data to March 2020

Inflation forecasts for the 2 years ending March 2020 are calculated as the average of the forecasts received from six different Banks (Barclays, Lloyds, HSBC, NatWest, BNP and DB).

The forecasts were received in April 2018 following publication of the actual March 2018 inflation data.

Forecast for AMP7 and beyond

We have used the long-term inflation assumptions used by Ofwat in their December methodology, which are as follows:

- RPI: 3.0%
- CPIH: 2.0%

App24 - Input proportions

Block A: Wholesale water water resources

Lines 1, 2, 3 and 5 (Opex driven):

The first, second, third and fifth lines are all driven by Opex for the price control.

To populate these lines the following formula has been used:

$$Ip_n(\%) = \frac{(O_c\% \times \sum O_{pc})}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

O_c % = The proportion of total Opex for that price control of the specific cost input line (referred to as n above), this was driven off forecast expenditure splits

$\sum O_{pc}$ = The total opex for the price control

T_{pc} = Totex for the price control

Line 4 (Capex driven):

The fourth line is driven by capex. To populate this line 'Materials, plant and equipment' we have assumed that all capex expenditure falls in this line using the following formula:

$$Ip_n(\%) = \frac{C_{pc}}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

C_{pc} = Capex for the price control

T_{pc} = Totex for the price control

Line 6

Calculated cell a product of first, second, third, fourth and fifth lines and are required to sum to 100%.

To ensure that when numbers are rounded to 2 decimal places there is no variation to 100% on the total, we have made adjustments of no more that 0.01% to make sure the total sums to 100% and there are no validation errors.

Block B: Wholesale water ~ network plus

Lines 7, 8, 9 and 11 (Opex driven):

The first, second, third and fifth lines are all driven by Opex for the price control.

To populate these lines the following formula has been used:

$$Ip_n(\%) = \frac{(O_c\% \times \sum O_{pc})}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

O_c % = The proportion of total Opex for that price control of the specific cost input line (referred to as n above), this was driven off forecast expenditure splits

$\sum O_{pc}$ = The total opex for the price control

T_{pc} = Totex for the price control

Line 10 (Capex driven):

The fourth line is driven by capex. To populate this line 'Materials, plant and equipment' we have assumed that all capex expenditure falls in this line using the following formula:

$$Ip_n(\%) = \frac{C_{pc}}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

C_{pc} = Capex for the price control

T_{pc} = Totex for the price control

Line 12

Calculated cell a product of first, second, third, fourth and fifth lines and are required to sum to 100%.

To ensure that when numbers are rounded to 2 decimal places there is no variation to 100% on the total, we have made adjustments of no more that 0.01% to make sure the total sums to 100% and there are no validation errors.

Block C: Wholesale wastewater ~ network plus

Lines 13, 14, 15 and 17 (Opex driven):

The first, second, third and fifth lines are all driven by Opex for the price control.

To populate these lines the following formula has been used:

$$Ip_n(\%) = \frac{(O_c\% \times \sum O_{pc})}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

O_c % = The proportion of total Opex for that price control of the specific cost input line (referred to as n above), this was driven off forecast expenditure splits

$\sum O_{pc}$ = The total opex for the price control

T_{pc} = Totex for the price control

Line 18 (Capex driven):

The fourth line is driven by capex. To populate this line 'Materials, plant and equipment' we have assumed that all capex expenditure falls in this line using the following formula:

$$Ip_n(\%) = \frac{C_{pc}}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

C_{pc} = Capex for the price control

T_{pc} = Totex for the price control

Line 6

Calculated cell a product of first, second, third, fourth and fifth lines and are required to sum to 100%.

To ensure that when numbers are rounded to 2 decimal places there is no variation to 100% on the total, we have made adjustments of no more that 0.01% to make sure the total sums to 100% and there are no validation errors.

Block D: Wholesale wastewater ~ bioresources

Lines 19, 20, 21 and 23 (Opex driven):

The first, second, third and fifth lines are all driven by Opex for the price control.

To populate these lines the following formula has been used:

$$Ip_n(\%) = \frac{(O_c\% \times \sum O_{pc})}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

O_c % = The proportion of total Opex for that price control of the specific cost input line (referred to as n above), this was driven off forecast expenditure splits

$\sum O_{pc}$ = The total opex for the price control

T_{pc} = Totex for the price control

For line 20 'Energy' we have submitted a negative percentage. The value is negative due to our AMP7 gas to grid initiative and the intercompany recharging for use of energy generated by Bioresource assets generating more cost than is being used in this area.

Line 22 (Capex driven):

The fourth line is driven by capex. To populate this line 'Materials, plant and equipment' we have assumed that all capex expenditure falls in this line using the following formula:

$$Ip_n(\%) = \frac{C_{pc}}{T_{pc}}$$

Where:

Ip_n % = input proportion of line (n) being assessed

C_{pc} = Capex for the price control

T_{pc} = Totex for the price control

Line 24

Calculated cell a product of first, second, third, fourth and fifth lines and are required to sum to 100%.

To ensure that when numbers are rounded to 2 decimal places there is no variation to 100% on the total, we have adjusted no more than 0.01% to make sure the total sums to 100% and there are no validation errors.

Block E: Residential retail

Note that the lines within this Block of the data tables provided do not add up to 100%. This is deliberate and reflects a query response we received from Ofwat with regards to the number of lines we could input into the data tables. A full copy of Block E for APP24 is provided below:

E	Residential retail								
25	Labour	APP240025	%	2	7.08%	7.05%	7.26%	7.37%	7.33%
26	Customer service		%	2	28.38%	27.25%	27.01%	24.39%	23.21%
27	Meter reading		%	2	3.40%	3.39%	3.49%	3.54%	3.52%
28	Bad debt		%	2	35.96%	37.22%	39.81%	41.93%	43.29%
29	IT		%	2	1.06%	1.05%	1.08%	1.10%	1.09%
30	Postage		%	2	1.95%	1.95%	2.00%	2.03%	2.02%
31	Business rates		%	2	1.03%	1.02%	1.05%	1.07%	1.06%
32	Other		%	2	17.49%	17.42%	14.55%	14.77%	14.69%
33	Materials, plant and equipment		%	2	3.65%	3.64%	3.75%	3.80%	3.78%
34	Total proportion ~ residential retail		%	2	100.00%	100.00%	100.00%	100.00%	100.00%

Block F: Business retail

Note that the lines within this Block of the data tables provided do not add up to 100%. This is deliberate and reflects a query response we received from Ofwat with regards to the number of lines we could input into the data tables. A full copy of Block F for APP24 is provided below:

F	Business retail								
30	Labour	APP240030	%	2	2.53%	2.55%	2.58%	2.59%	2.60%
31	Customer service		%	2	36.89%	37.28%	37.65%	37.90%	38.20%
32	Meter reading		%	2	8.66%	8.76%	8.83%	8.87%	8.91%
33	Bad debt		%	2	16.48%	16.67%	16.72%	16.62%	16.48%
34	IT		%	2	5.07%	5.13%	5.15%	5.13%	5.11%
35	Postage		%	2	3.13%	3.07%	3.03%	3.00%	2.98%
36	Business rates		%	2	0.00%	0.00%	0.00%	0.00%	0.00%
37	Other		%	2	24.89%	24.17%	23.53%	23.39%	23.24%
38	Materials, plant and equipment		%	2	2.35%	2.37%	2.51%	2.50%	2.48%
39	Total proportion ~ business retail		%	2	100.00%	100.00%	100.00%	100.00%	100.00%

App24a - Real price effects (RPEs) and efficiency gains

Supporting appendix (Blocks B to G)

To populate these Blocks, we commissioned support from an economic consultancy firm Economic Insight. They have provided a copy of the inflation forecasts and methodologies in Appendix 8O 'Inflation forecasting: Real Price Effects and Input Price Inflation at PR19'. This report should be referred to when understanding these Blocks within APP24a.

Weightings (Blocks B, C, D, E, F, G, H, I, J, K, L, M)

We submitted two queries relating the weightings for the Blocks set out above. The query numbers were 634 and 635. The issue is that the formulas are incorrect and as such the total weightings do not add up to 100% for each Block respectively. The response was that the weightings formulas would be amended on receipt of data tables from companies on 3 September. As such we are submitting tables with this known error in formula.

Block A: CPIH assumptions used for RPE calculations

These are copied cells from APP23 line 26.

Block B to D: Real price effects included in wholesale (water resources, water network plus, wastewater network plus, bioresources)

We have provided real prices effects (RPEs) using the formula provided in the "Delivering Water 2020: Our methodology for the 2019 price review: Final guidance on business plan data tables": "For wholesale services, the RPE of cost category 'c' in year 't' should be calculated as:

RPEc,(%)=(1+ IPIc,t(%))/(1+ CPIHt(%))−1"

For Blocks B-D this formula has been used where the input price inflation (IPI) has been calculated on the following basis:

First line (OPEX)

Weightings for the following table have been developed based on WS1 for water and WWS1 for waste price controls broken down to a more granular level.

Cost category Water resources (OPEX only weighting)	2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_w)	11%	11%	11%	11%	11%
Energy (E_w)	7%	7%	8%	8%	8%
Chemicals (C_w)	0%	0%	0%	0%	0%
Other (O_w)	82%	82%	82%	82%	82%
Total	100%	100%	100%	100%	100%
Cost category Water network plus (OPEX only weighting)	2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_w)	21%	21%	22%	22%	22%
Energy (E_w)	11%	11%	12%	12%	12%
Chemicals (C_w)	6%	6%	6%	6%	6%
Other (O_w)	62%	61%	60%	60%	60%
Total	100%	100%	100%	100%	100%

Cost category wastewater network plus (OPEX only weighting)	2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_w)	26%	25%	26%	23%	23%
Energy (E_w)	19%	19%	19%	17%	17%
Chemicals (C_w)	1%	1%	1%	1%	1%
Other (O_w)	54%	55%	55%	58%	59%
Total	100%	100%	100%	100%	100%
Cost category Bioresources (OPEX only weighting)	2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_w)	42%	42%	44%	44%	44%
Energy (E_w)	-6%	-5%	-6%	-6%	-6%
Chemicals (C_w)	15%	15%	15%	15%	15%
Other (O_w)	49%	49%	47%	47%	47%
Total	100%	100%	100%	100%	100%

These weightings have then been applied to the following forecasts developed by Economic Insight (EI) by price control.

Cost category	Forecast Methodology	Consistent with Central case?	Input price inflation forecast				
			2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_i)	Independent forecasts	No	2.58%	2.82%	3.02%	3.02%	3.02%
Energy (E_i)	High growth scenario	No	3.78%	2.99%	2.70%	2.71%	3.04%
Chemicals (C_i)	Econometrics - percentage changes	Yes	4.90%	5.02%	4.73%	5.00%	5.00%
Other (O_i)	CPI	Yes	1.98%	2.00%	2.00%	2.00%	2.00%

We have departed away from the central case set out in the EI report on some of measures. However as set out in the following paragraph contained in the report it is legitimate to do so:

"We should highlight, however, that for planning purposes it would be credible for Yorkshire to depart from our view of the central case. In particular, the extent to which any one particular method is 'superior' to another is finely balanced. Consequently, it would be entirely legitimate for Yorkshire to reach its own views as to which of our various granular forecasts are most robust and appropriate, in the context of its PR19 Plan. We think it is especially important that Yorkshire applies forecasts that it considers are internally consistent with macroeconomic assumptions underpinning other core elements of its Plan."

We have done this, and that the measures we have used represent levels of inflation that are consistent with our expectations.

The following formula was then applied to develop the OPEX IPI:

$$OP_{ipi,pc} = \frac{(L_w \times L_i) + (E_w \times E_i) + (C_w \times C_i) + (O_w \times O_i)}{(L_w + E_w + C_w + O_w)}$$

Where:

$OP_{ipi,pc}$ = Opex input price pressure (IPI) for price control (PC)

L_w = Labour weighting of total Price control Opex

L_i = Labour inflation as per Economic Insight analysis

E_w = Energy weighting of total Price control Opex

E_i = Energy inflation as per Economic Insight analysis

C_w = Chemicals weighting of total Price control Opex

C_i = Chemicals inflation as per Economic Insight analysis

O_w = Other weighting of total Price control Opex

O_i = Other inflation as per Economic Insight analysis

Second and third line (Capital maintenance):

For generic second and third lines "Maintaining the long-term capability of the assets infrastructure" and "Maintaining the long-term capability of the assets non-infrastructure" the input price index is equal to that developed by Economic Insight for maintenance expenditure.

Cost category	Forecast Methodology	Consistent with Central case?	Input price inflation forecast				
			2020/21	2021/22	2022/23	2023/24	2024/25
Maintenance	Wedge versus CPI	No	3.28%	3.30%	3.30%	3.30%	3.30%

Fourth and fifth line (Capital enhancement):

For generic fourth and fifth lines "Other capital expenditure ~ infra" and "Other capital expenditure ~ non-infra" the input price index is equal to that developed by Economic Insight for capital expenditure.

Cost category	Forecast Methodology	Consistent with Central case?	Input price inflation forecast				
			2020/21	2021/22	2022/23	2023/24	2024/25
Capex	Econometrics - levels	No	2.56%	2.73%	2.90%	2.91%	2.92%

Block F and G: Input price pressures included in residential retail and business retail

Blocks F and G cover the retail price controls and show the input price pressures (IPP) for these areas of the business.

The guidance provided in the "Delivering Water 2020: Our methodology for the 2019 price review: Final guidance on business plan data tables" is:
"For retail services, companies should provide the forecast of IPI (input price inflation) for each cost category rather than the RPE. This is because we do not index the retail control to the CPIH or any other inflation index."

For Blocks F and G this statement has been used where the IPI is assumed to be the IPP and has been calculated on the following basis:

Generic first line (Opex):

Weightings for the following table have been developed based on R1 for Retail (household) and R5 for business retail.

Cost category residential retail (OPEX only weighting)	2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_w)	7%	7%	8%	8%	8%
Customer service (CS_w)	29%	28%	28%	25%	24%
Meter reading (MR_w)	4%	4%	4%	4%	4%
Bad debt (BD_w)	37%	39%	41%	44%	45%
IT (IT_w)	1%	1%	1%	1%	1%
Postage (P_w)	2%	2%	2%	2%	2%
Business rates (BR_w)	1%	1%	1%	1%	1%
Other (O_w)	18%	18%	15%	15%	15%
Total	100%	100%	100%	100%	100%
Cost category business retail (OPEX only weighting)	2020/21	2021/22	2022/23	2023/24	2024/25
Labour (skilled) (L_w)	3%	3%	3%	3%	3%
Customer service (CS_w)	38%	38%	39%	39%	39%
Meter reading (MR_w)	9%	9%	9%	9%	9%
Bad debt (BD_w)	17%	17%	17%	17%	17%
IT (IT_w)	5%	5%	5%	5%	5%
Postage (P_w)	3%	3%	3%	3%	3%
Business rates (BR_w)	0%	0%	0%	0%	0%
Other (O_w)	18%	18%	15%	15%	15%
Total	100%	100%	100%	100%	100%

These weightings have then been applied to the forecasts developed by Economic Insight for each price control.

Cost category	Forecast Methodology	Consistent with Central case?	Input price inflation forecast				
			2020/21	2021/22	2022/23	2023/24	2024/25

Labour (skilled) (L_i)	Independent forecasts	No	2.58%	2.82%	3.02%	3.02%	3.02%
Customer service (CS_i)	Independent forecasts	No	2.58%	2.82%	3.02%	3.02%	3.02%
Meter reading (MR_i)	Wage econometrics - levels	Yes	1.98%	2.18%	2.35%	2.36%	2.38%
Bad debt (BD_i)	Econometrics - national approach	Yes	1.05%	1.58%	1.26%	1.30%	1.38%
IT (IT_i)	Wedge versus CPI	Yes	0.72%	0.73%	0.74%	0.74%	0.74%
Postage (P_i)	Wedge versus CPI	Yes	6.69%	6.71%	6.72%	6.72%	6.72%
Business rates (BR_i)	RPI	Yes	2.92%	2.93%	2.99%	2.99%	2.99%
Other (O_i)	CPI	Yes	1.98%	2.00%	2.00%	2.00%	2.00%

We have departed away from the central case set out in the EI report on some of measures. However as set out in the following paragraph contained in the report it is legitimate to do so:

"We should highlight, however, that for planning purposes it would be credible for Yorkshire to depart from our view of the central case. In particular, the extent to which any one particular method is 'superior' to another is finely balanced. Consequently, it would be entirely legitimate for Yorkshire to reach its own views as to which of our various granular forecasts are most robust and appropriate, in the context of its PR19 Plan. We think it is especially important that Yorkshire applies forecasts that it considers are internally consistent with macroeconomic assumptions underpinning other core elements of its Plan."

The table above shows that for each cost category we applied the same forecast method as EI's central assumption, except for customer service and skilled labour. Our plan assumes reducing headcount in our retail operations, which requires upskilling of staff to ensure no service detriment to our customers. As such, the independent forecasts approach (rather than econometrics based on wages in levels), better reflects our expectations of likely pay awards considering the changes in responsibilities and our commitment to paying the living wage for our employees.

The following formula was then applied to develop the OPEX IPI:

$$OP_{ipi,pc} = \frac{(L_w \times L_i) + (CS_w \times CS_i) + (MR_w \times MR_i) + (BD_w \times BD_i) + (IT_w \times IT_i) + (P_w \times P_i) + (BR_w \times BR_i) + (O_w \times O_i)}{(L_w + CS_w + MR_w + BD_w + IT_w + P_w + BR_w + O_w)}$$

Where:

$OP_{ipi,pc}$ = Opex input price pressure (IPI) for price control (PC)

L_w = Labour weighting of total Price control Opex

L_i = Labour inflation as per Economic Insight analysis

CS_w = Customer service weighting of total Price control Opex

CS_i = Customer service inflation as per Economic Insight analysis

MR_w = Meter reading weighting of total Price control Opex

MR_i = Meter reading as per Economic Insight analysis

BD_w = Bad debt weighting of total Price control Opex

BD_i = Bad debt as per Economic Insight analysis

IT_w = IT weighting of total Price control Opex

IT_i = IT as per Economic Insight analysis

P_w = Postage weighting of total Price control Opex

P_i = Postage as per Economic Insight analysis

BR_w = Business rates weighting of total Price control Opex

BR_i = Business rates as per Economic Insight analysis

O_w = Other weighting of total Price control Opex

O_i = Other inflation as per Economic Insight analysis

Generic second (Capex):

For generic second line "Total capital expenditure" the input price index is equal to that developed by Economic Insight for capital expenditure.

Cost category	Forecast Methodology	Consistent with Central case?	Input price inflation forecast				
			2020/21	2021/22	2022/23	2023/24	2024/25
Capital	Average gross IPP for Opex	Yes	2.56 %	2.72 %	2.76 %	2.77 %	2.78 %

Block H to K: Assumed efficiency gains in wholesale (water resources, water network plus, wastewater network plus, bioresources)

To assess and develop efficiency gains to populate Blocks H to L we have made the following assumptions. These are to fulfil the requirements set out in the guidance and to ensure that we have isolated and eradicated any changes in service that are occurring, and to ensure that the efficiency numbers calculated do not take these into account.

- **Expenditure profile**: we have assumed a smoothed profile of expenditure using the full five-year totex figures and therefore have departed from those observed in tables WS1 and WWS1.
- **Total Efficiencies:** The total efficiencies that have been used in the assessment are those identified based on how much this plan would have cost if delivered on a like for like basis under AMP6 methods. I.e. the efficiencies are those that have been identified through changes in ways of working, innovation, use of markets etc.
- **Removal of RPEs:** The efficiencies have been developed based on a Totex that is unadjusted for any RPEs.
- **Our start pointing:** Is the same as that to develop the efficiencies, I.e. what the plan would cost based on current AMP ways of working.
- **Profile of efficiencies:** We have assumed that of the total efficiencies identified the catch-up requirement as part of the modelling analysis we have included in the plan is delivered in year one of the next AMP. The remaining efficiencies are then profiled across the remain years. We

assumed the following catch-up efficiencies based on econometric modelling undertaken on historic data:
    - Water resources = 6%
    - Water network plus = 0%
    - Wastewater network plus = 3%
    - Bioresources = 23.3%
    - Household retail = 0%

- **Capex efficiencies:** All identified capex efficiencies have been apportioned to the Capex expenditure lines based on the relative expenditure in the plan tables by price control.
- **Negative percentages:** We have expressed the efficiencies as negative percentages against the starting point which is the Totex plan delivered under AMP6 conditions. Where the numbers are negative this is assuming we are getting more efficient i.e. we are delivering more efficiently.
- **Bioresources:** We have assumed for Bioresources that there are no ongoing efficiencies, this is because much of the efficiencies identified in the bioresources strategy are market-based solutions and as such will be priced in to the cost at the start of the period.

For the avoidance of doubt the price controls have been assumed as the following headings from WS1 and WWS1

- Water resources = Water resources
- Water network plus = Raw water distribution, water treatment, treated water distribution
- Waste water network plus = sewage collection, sewage treatment
- Bioresources = Sludge Transport, Sludge treatment and Sludge disposals

Block M: Assumed efficiency gains in business retail

To populate Block M 'business retail' the following has been applied to develop the efficiencies. The total operating expenditure (unadjusted for IPI) (line 1, R5) has been used in the following way:

$$Efficiency(\%) = \left(\frac{\sum O_t}{\sum O_{t-1}}\right) - 1$$

Where:

$\sum O_t$ = Total operating expenditure (unadjusted for IPI) in year t

$\sum O_{t-1}$ = Total operating expenditure (unadjusted for IPI) in the year prior to year t (t-1)

This simplified method can be applied to business retail (NHHR) as there is no significant planned capital expenditure in NHHR, and also no expenditure both Opex or capex, for service improvement in the next AMP. Therefore, Opex and total cost reductions year on year represents efficiencies which we have further assume to be all Opex efficiencies.

App25 - PR14 reconciliation adjustments summary

App25 provides a summary of all the further adjustments arising from the 2010-2015 reconciliation updated for 2014/2015 actual performance and from each of the PR14 reconciliations of performance in the period ending 31 March 2020.

The table copies values entered in the tables for each of the PR14 reconciliation mechanisms.

The following data sources are required to complete the App25 data table.

- Ofwat pre-populated data
- Revenue Adjustments Feeder Model
- RCV Adjustments Feeder Model
- Completed PR14 business data tables
- Ofwat Blind Year – F_Outputs
- Ofwat CIS reconciliation calculations

The App25 data table is part pre-populated by Ofwat and part completed by Yorkshire Water using other PR14 past performance data tables.

Block A is part completed by Ofwat and part completed using the RCV adjustment feeder model and Revenue adjustments feeder model.

Blocks B to H are completed by copying outputs from all completed PR14 past performance data tables.

App25 data has been assured by our external financial assurer Deloitte.

The assurance statements from assurers Deloitte is provided as part of the PR14 reconciliation submission.

App26 - RoRE Scenarios

A detailed explanation and commentary on the RoRE analysis and scenarios is in included in Appendix 13a of our Business Plan.

App27 - PR14 reconciliation - financial outcome delivery incentives summary

App27 does not include any penalties, as Yorkshire Water's are Shareholder funded only, and there is no correct place to populate this in the table, as a result this table does not fully reconcile to Annual Performance Report table 3A and PR19 table App5. We have [previously made Ofwat aware of this through the query process.

We have chosen to input the claimed reward, not the earned reward.

As identified in the App5 and App6 table commentary by performance commitment (PC). The only area we have chosen to input the claimed reward, not the earned reward is for SB4: Length of river improved. The earned reward is higher due to an error in setting the original target which was identified after the Final Determination has been published. The difference is less than £1m.

App28 - Developer services (wholesale)

We have checked Blocks B, F and lines 10, 12, 26 and 28 can confirm these are consistent with the information included in the 2017/2018 Annual Performance Report.

For Blocks C and G, we have provided a reconciliation against the data we previously submitted as part of Annual Performance Report.

For 2015/2016 and 2016/2017, we have inputted the previously submitted Annual Performance Report figures for the 'Other Contributions (Price Control)' line and left the 'Other Contributions (Non-Price Control)' line blank. This is so that the totals for the table still match the previous Annual Performance Report.

This is because the income we have identified for 'Other Contributions (Non-Price Control)' relates to nRASWA diversion schemes. These schemes were previously included in the 'Diversions' lines, which we cannot alter in the table. On this basis we would now state the table as follows:

For 2015/2016, the difference for the wholesale water service is £0.014m which was included in Line 11 Diversions (s185). The difference for the wholesale waste water service is £0.004m which was included in Line 11 Diversions (s185).

C	Grants and contributions received ~ wholesale water service	Units	DPs	Originally Reported	Now Reported	Difference	Comments
7	Connection charges (s45)	£m	3	6.997	6.997	0.000	
8	Infrastructure charge receipts (s146)	£m	3	5.046	5.046	0.000	
9	Requisitioned mains (s43, s55 & s56)	£m	3	2.299	2.299	0.000	
10	Other contributions (price control)	£m	3	1.645	1.645	0.000	
11	Diversions (s185)	£m	3	2.855	2.841	-0.014	6 RASWA schemes moved to other contributions
12	Other contributions (non-price control)	£m	3	0.000	0.014	0.014	6 RASWA schemes moved from diversions to non-price control other
7	Total	£m	3	18.842	18.842	0.000	

G	Grants and contributions received ~ wholesale wastewater service	Units	DPs	Originally Reported	Now Reported	Difference	Comments
24	Infrastructure charge receipts (s146)	£m	3	5.005	5.005	0.000	
25	Requisitioned sewers (s100)	£m	3	2.317	2.317	0.000	
26	Other contributions (price control)	£m	3	0.226	0.226	0.000	

27	Diversions (s185)	£m	3	1.683	1.679	-0.004	1 RASWA scheme moved to other contributions
28	Other contributions (non-price control)			0.000	0.004	0.004	1 RASWA scheme moved from diversions to non-price control other
29	Total	£m	3	9.231	9.231	0.000	

For 2016/2017, the difference for the wholesale water service is £0.299m which was included in Line 11 Diversions (s185). The difference for the wholesale waste water service is £0.508m which was included in Line 11 Diversions (s185).

C	Grants and contributions received ~ wholesale water service	Units	DPs	Originally Reported	Now Reported	Difference	Comments
7	Connection charges (s45)	£m	3	7.283	7.283	0.000	
8	Infrastructure charge receipts (s146)	£m	3	5.682	5.682	0.000	
9	Requisitioned mains (s43, s55 & s56)	£m	3	1.393	1.393	0.000	
10	Other contributions (price control)	£m	3	-0.008	-0.009	-0.001	Rounding differences
11	Diversions (s185)	£m	3	0.066	-0.233	-0.299	5 RASWA schemes moved to other contributions
12	Other contributions (non-price control)	£m	3		0.299	0.299	5 RASWA schemes moved from diversions
7	Total	£m	3	14.416	14.416	0.000	

G	Grants and contributions received ~ wholesale wastewater service	Units	DPs	Originally Reported	Now Reported	Difference	Comments
24	Infrastructure charge receipts (s146)	£m	3	5.619	5.619	0.000	
25	Requisitioned sewers (s100)	£m	3	1.064	1.064	0.000	
26	Other contributions (price control)	£m	3	-0.052	-0.054	-0.002	Rounding differences
27	Diversions (s185)	£m	3	1.598	1.090	-0.508	4 RASWA schemes moved to other contributions
28	Other contributions (non-price control)				0.508	0.508	4 RASWA schemes moved from diversions
29	Total	£m	3	8.229	8.228	0.001	Rounding differences

App29 - Wholesale tax

Block A and Block B

Brought forward capital allowance pools

In line with Ofwat guidance, the opening capital allowance pool balances reflect the actual full value available to the company and have not been adjusted to reflect the impact of any previous disclaimers. The pools have been apportioned between price controls on the basis of RCV split at 31 March 2020.

Block C

New capital expenditure

New capital expenditure for 2020-2025 has been analysed to determine its allocation between the defined categories in Block C. Given the nature of expenditure for 2020-2025 and that it is more weighted toward maintenance/repairs activity, percentages in relation to expenditure on capital that qualifies for a tax deduction based on depreciation is greater than in previous AMPs.

Block D

Disallowable expenditure

The company has very few operating costs that are non-deductible for tax purposes. Furthermore, all P&L expenditure relating to renewals is tax deductible and no changes in general provisions are forecast.

Block E

Allowable expenditure

New capital expenditure for 2020-2025 has been analysed to determine its allocation between the defined categories in Block C. Given the nature of expenditure for 2020-2025 is more weighted toward maintenance/repairs activity, amounts in relation to expenditure on capital that qualifies for a tax deduction based on depreciation is greater than in previous AMPs.

Block F

Other taxable income

Amortisation on grants and contributions reflects the taxable release of deferred income in relation to infrastructure connection charges and requisitioned mains and sewer income.

This is calculated by reference to the income we are expecting to receive being released over a 50-year period for infrastructure connection charges (in line with Yorkshire Water policy) and a 70 year period for requisitioned mains and sewer income (being the average asset life for water mains).

Other adjustments to taxable profits mainly relate to further deductions available for the company as a result of historical refinancing of swaps, as agreed with HMRC.

The adjustment in relation to water network plus for 2021 is positive reflecting that a capital gain will also crystallise in that year. This is a historic capital gain that was held over and is expected to crystallise in 2021.

App30 - Void properties

Line 1

For residential customers the data has been captured in line with the guidance. In addition to traditional methods of capturing occupation details we have introduced successful verification activity with credit reference agencies. Performance is improving and is forecast to reduce the number of voids on record.

Line 2

For business customers we operate a number of activities which include: investigating meter reader feedback; reviewing recorded consumption on Void premises and challenging the status of the void premise with the Retailer who holds the registration for the premise. This approach has resulted in a continued reduction in the number of Void Non-Household properties within the Yorkshire Water supply area.

To further enhance the approach taken to identify void premises, we will be trialling an incentive scheme which aims to reward parties who successfully identify any premises which are incorrectly configured as void within the Yorkshire Water supply area.

App31 - Past performance

Table App31 provides information on actual and forecast performance over the 2015-2020 period. The table provides information on past performance in support of other data tables associated with the PR14 reconciliation submission made to Ofwat in July 2018.

App31 data has been assured by our external assurer Jacobs. The assurance statement from Jacobs is provided in the PR14 Reconciliation Summary in the appendices accompanying the business plan.

We have revised some data in this table from the version of App31 provided to Ofwat in July 2018 as part of the PR14 reconciliation exercise. Revisions have been made where we have more up to date information. None of the data revisions has an impact on the assessment of our PR14 reconciliation revenue or RCV adjustments that would apply to the 2020-25 period.

Block A - Complaints from residential and business customers

The complaints data provided for years 2015/2016 and 2016/2017 is the complaints metrics from household customers, non-household customers received and managed by Yorkshire Water as an integrated wholesaler and retailer.

As a water company that has not exited the non-household retail market we have included data for complaints received from non-household customers that relate to our retailer operations. This data is included from 2017/2018 onwards when the non-household retail market opened. Our non-household retail business, Yorkshire Water Business Services (YWBS), operates on an arms-length basis from our wholesaler and household retailer operations.

Our complaints data also includes for completeness, actual complaints performance for our developer services function. The complaints in this area may be from either developers, self-lay providers or New Appointment and Variations (NAVs).

In line with improvements to customer service year on year, there has been a reduction in written complaints received from residential and business customers. Due to a more proactive approach to issues reported by customers and the drive to get things right first time there has also been a reduction in the complaints that have been escalated.

We have updated the figures in line 3 from our submission of App31 to Ofwat in July following the publication by CCWater of information for 2017/2018 on customer complaints referred to it.

As the App31 data table does not provide the structure to separate out the complaints data between residential and business customers, or developer services customers, below are detailed a line by line description.

Line 1 - Stage 1 complaints received

- Actual performance figures for 2015/2016 and 2016/2017 include all written complaints received into Yorkshire Water whether from residential or business customers, and developer services customers and for wholesaler and retailer activities.
- Actual performance figures for 2017/2018 include the non-household retail complaints from business customers into YWBS. These will offset the drop-in business customer complaints received into Yorkshire Water following the opening of the non-household retail market.
- The forecast for residential customer stage 1 complaints and business customer wholesaler stage 1 complaints received for 2018/2019 shows a 10% drop compared to 2017/2018 levels. This reduction is achieved from delivery of our current service improvement activities, including a transfer of the operational complaints teams from our retail contact centre, to our Service Delivery Centre to unify with the operational teams within Yorkshire

Water. Our forecast improvement in SIM performance aligns with our forecast improvement in residential complaints performance.

- The forecast for residential customer complaints for 2019/2020 assumes the level of stage 1 complaints received remains as at 2018/2019 levels.
- For YWBS business customer retailer stage 1 complaints received, a 15% reduction has been forecast for 2018/2019 against 2017/2018 performance. This improvement is based on the activities currently being rolled out address the complaint levels, including market and supply point data improvements as part of the stabilisation of the processes in the new non-household retail market.
- The forecast for business customer retailer complaints into YWBS for 2019/2020 is as per the 2018/2019 forecast.

Line 2 - Complaints escalated internally to Stage 2

- Actual performance figures for 2015/2016 and 2016/2017 include all stage 1 complaints into Yorkshire Water that have been escalated, whether from residential or business customers, and developer services customers for wholesaler and retailer activities.
- Actual performance figures for 2017/2018 include the non-household retail complaint escalations from business customers in YWBS. These will offset the drop-in business customer complaints escalated into Yorkshire Water following the opening of the non-household retail market.
- The forecast for residential stage 2 complaints and business customer wholesaler stage 2 complaints for 2018/2019 shows a 10% drop compared to 2017/2018.
- Our forecast for 2019/2020 is that stage 2 compliant levels remain flat as per 2018/2019.
- For YWBS stage 2 complaints received, a 15% reduction has been forecast 2018/2019 against 2017/2018. The number of complaints reported as 2019/2020 performance assumes stage 2 levels remain as per the 2018/2019 forecast.

Line 3 - Complaints referred to CCWater

- Actual performance figures for 2015/2016, 2016/2017 and 2017/2018 include all complaints for Yorkshire Water and YWBS referred to CCWater, covering complaints referred from residential and business customers, and developer services customers.
- We have revised the figures in this line from 2017/2018 onwards following the publication of current figures from CCWater, that were not available at the time we prepared our submission of this table in July as part of the PR14 reconciliation exercise.
- Link to CCWater latest report - https://www.ccwater.org.uk/households/company-performance/annualcomplaints/
- For 2018/2019 onwards, our forecasts exclude developer services customers as we have recently been advised by CCWater that its reported numbers will no longer include complaints escalated to it from developer services customers.
- For 2018/2019 Yorkshire Water has forecast a 10% reduction based on previous years improvements. We are aiming for a further 10% improvement for 2019/2020.
- YWBS forecast for 2018/2019 for business customer complaints escalated to CCWater a reduction to 12 as a result of concerted efforts to make improvements in market data, improve CSAT results, and improve resolution of customer issues. 2019/2020 performance levels are forecast to remain as per the 2018/2019 forecast.

Line 4 - Investigations opened by CCWater

- Figures for 2015/2016, 2016/2017, and 2017/2018 are as reported by CCWater.
- There has been one investigation by CCWater in 2015. The complaint related to an odour issue that was not resolved quickly enough. Since then no investigations have been opened by CCWater regarding Yorkshire Water or YWBS
- Our forecasts of zero CCWater investigations for 2018/2019 and 2019/2020 assumes performance remains as previous years, including for YWBS.

Line 5 - Complaints investigated by Ofwat or WATRS

- Figures for 2015/2016 to 2017/2018 are as reported by Yorkshire Water on Ofwat and WATRS (the Water Redress Scheme) complaint investigation cases.
- The relatively low figure for 2015/2016 reflects that the WATRS ADR scheme only commenced part way through that year.
- Figures for complaints upheld by Ofwat and WATRS (subset of data in line 5) are provided in the commentary later in this Block.
- Figures for 2017/2018 and beyond include business customer complaints investigations relating to YWBS.
- Our forecasts for 2018/2019 and 2019/2020 assume performance continues at the same level as 2017/2018, including for YWBS.

Further to data in Line 5 about complaints that were ultimately investigated by Ofwat or WATRS, a summary of the subject of those complaints and the findings is as follows:

- For 2015/2016, 4 of the cases that were investigated by WATRS were upheld in the customers favour (in full or in part). Three of the complaints were in relation to sewer flooding and one related to billing charges.

- For 2016/2017, 4 of the cases investigated by WATRS were upheld in the customers favour (in full or in part). Two of these were in relation to sewer flooding, one related to poor service and one related to a leak on a supply pipe.

- Finally, for 2017/2018, 3 of the cases investigated by WATRS were upheld in the customers favour (in full or in part). One of the three upheld was in relation to the identification of a water leak, one related to the adoption of a private pumping station and one related to sewer flooding. Only one WATRS investigation related to YWBS and involved a large business customer on the wrong tariff band and the period covered by a bill rebate. In this case WATRS upheld the YWBS position.

In line with improvements to customer service year on year, there has been a reduction in written complaints received from residential and business customers. Due to a more proactive approach to issues reported by customers and the drive to get things right first time there has also been a reduction in the complaints that have been escalated.

There has been one investigation by CCWater in 2015. The complaint related to an odour issue that was not resolved quickly enough.

A breakdown of the complaint data provided in App31, Block A, segmented by customer type is detailed below.

Line description		Units	2015-16	2016-17	2017-18	2018-19	2019-20
A1	Complaints from residential and business customers (incl. developer services customers)		Integrated wholesaler/retailer	Integrated wholesaler/retailer	Household retail and wholesale	Household retail and wholesale	Household retail and wholesale
1	Stage 1 complaints received	nr	7562	6434	3982	3584	3584
2	Complaints escalated internally to stage 2	nr	499	306	144	130	130
3	Complaints referred to CCWater	nr	532	496	390	351	316
4	Investigations opened by CCWater	nr	1	0	0	0	0
5	Complaints investigated by Ofwat or WATRS	nr	7	17	9	9	9

Line description		Units	2015-16	2016-17	2017-18	2018-19	2019-20
A2	Retail complaints from business customers				Non-household retail (YWBS)	Non-household retail (YWBS)	Non-household retail (YWBS)
1	Stage 1 complaints received	nr			1371	1165	1165
2	Complaints escalated internally to stage 2	nr			20	17	17
3	Complaints referred to CCWater	nr			44	12	12
4	Investigations opened by CCWater	nr			0	0	0
5	Complaints investigated by Ofwat or WATRS	nr			1	1	1

Line description		Units	2015-16	2016-17	2017-18	2018-19	2019-20
A3	Complaints from developer services customers		Developer services	Developer services	Developer services		
1	Stage 1 complaints received	nr	206	215	198		
2	Complaints escalated internally to stage 2	nr	18	20	17		

Actual complaints figures from developer services customers in table A3 are a subset of the complaints shown in table A1.

Block B - Major incidents

Line 6 - Major incidents

The data for Line 6 covers events defined as a category 1 pollution incident by the Environment Agency (EA) or a major water quality event by the Drinking Water Inspectorate (DWI).

The figures reported are for the calendar year, not financial year.

We work closely with the EA to make sure that our records match and our Escapes Optimisers verify all pollution reports submitted to ensure compliance with the EA's CICS guidance. This information is also assured annually as part of our Annual Performance Report process.

Out of the three major incidents reported in the data table, these are all category 1 pollution events defined by the EA. We have had no major water quality events over the reported period, which is consistent with information published in DWI Chief Inspectors' Report.

Details of the category 1 pollution events are as follows:

2016

Hookstone Road CSO, Harrogate – pollution occurrences on 31/08/2016**,** 01/09/2016 to 02/09/2016 and 10/11/2016 to 11/11/2016

Event summary:

Complete blockage of throttle pipe in CSO, scaffold board found blocking sewer. Investigations revealed telemetry was not working from 17/08/2016 and a large amount of debris was found in the detention tank upstream of the throttle which suggested cyclical cleaning work in place was not sufficient.

Key actions to prevent a reoccurrence:

The telemetry system functioning correctly across our asset base is vitally important to identify incidents early. At Hookstone Road, a fixed line telemetry system was installed following this incident to increase reliability and to allow it to be “polled” at any time to gather asset data rather than waiting for a daily dial in. Adjustments to the number of sensors have also been made so that we can identify partial blockages in the throttle which was not possible prior to this incident.

With regard to cyclical maintenance the visit frequency was changed at this asset from twice to four times a year. The task list for this maintenance was also reviewed.

2017

Dale Road, Drighlington, Bradford – incident occurred on 08/11/2017

Event summary:

Burst on the rising main in an unmapped valve chamber to the rear of the sewage pumping station. Yorkshire Water were first alerted by a farmer at 12:10 on 08/11/2017 and we were on site by 13:15 with the discharge stopped by 14:30 by switching the pumps off and utilising tankers. Subsequent investigations have found that the chamber where the burst occurred was created to facilitate replacement of riser pipework in the SPS. The pipework in the chamber was not properly supported and on completion of the work the chamber was not mapped, and a maintenance plan had not been setup.

Key actions to prevent a reoccurrence:

The lesson learned is the need for a better governance procedure around changes made to assets and to ensure any changes are mapped on the Yorkshire Water system as a matter of course. We are currently rolling out Management of Change processes in operations which will give tighter control around asset changes.

The rising main affected by this burst was due for replacement due to being asset life expired. The outcome of this incident was increased funding to accelerate the programme of capital replacement of rising mains.

Ingbirchworth Water Treatment Works, Barnsley (Clean Water Treatment Works) – incident occurred on 28/11/2017

Event summary:

Yorkshire Water were made aware by the EA at 16:30 of a report of pollution on Scout Dike downstream of the Water Treatment Works. Chlorine residual readings were found in the watercourse and by 20:00 a spill from a clean water backwash had been identified.

Investigations since have found that there was a failure of an inlet valve on the tank on 01/11/2017 which meant it was sticking and not allowing the tank to fill. This was responded to remotely by the Yorkshire Water control room and opened and put in manual to the normal level to allow the tank to fill as normal. Due to a breakdown in communication, the operational team were not aware that the valve had been placed in manual and therefore the tank eventually filled and overflowed into site drainage and into the watercourse starting on the morning of 2/11/2017. The high-level alarm on the tank was set up above the overflow level which meant the overflow went unnoticed.

Key actions to prevent a reoccurrence:

The alarm point has now been reconfigured and tested on the tank so that if the same situation was to occur again a high-level alarm would be received – checks on this have also taken place on other tanks at this site and across the asset base. It was also noted during the investigation that the site drainage was incorrectly mapped, and it has been arranged to correctly map this drainage. Asset Delivery have been instructed to update drainage plans and ensure these are stored in the correct location.

Block C - Compliance with Environment Agency/National Resources Wales statutory requirements

Block C provides data relating to our performance against our statutory environmental requirements.

Definitions for the fields are set out in the EA Environment Performance Assessment methodology.

The data for lines 7 through to 10 are reported for calendar year, not financial year.

Line 7 and 8 - Category 1, 2 and 3 pollution incidents for wastewater only.

Data for Cat 1, 2 and 3 pollution incidents cover wastewater only. The data includes pollution events from transferred sewers for each year, but not transferred /adopted pumping stations and rising mains.

The data reported is by calendar year.

Data provided is consistent with the EA's MD109 Report or End of Year Report for 2017/2018 report year and the EA EPA methodology (Nov 2017). For 2017/2018 we have one additional incident in our reported numbers, included here, compared to the current End of Year report received from the EA. We are aware that EA's NIRS system has been updated and aligns with the figures we are reporting.

It should be noted that the pollution numbers reported in lines 7 and 8 of App31 do not align with the metrics reported in App5 on our PR14 pollution performance commitment. The Yorkshire Water PR14 performance commitment on pollution uses a different definition and excludes pollution incidents related to continuous discharges.

The forecast figures are from our upper quartile plans. These pollution incident figures are also copied into data table WWS18.

It should be noted that when we submitted our pollution data to Ofwat as part of the PR14 reconciliation submission on 13th July we were forecasting 3 category 1 & 2 incidents for 2018/2019 and 1 for 2019/2020. This was based on the information that we had available at that time. Since then we have experienced a number of incidents in July and August that have led us to reforecast our 2018/2019 and 2019/2020 performance. We are now expecting to outturn at 7 incidents this year and forecast 0 incidents for 2019/2020. App31 has been updated to reflect our new forecast. Please see table commentary for WWS18 for more information.

Throughout the 2015-2020 period we have targeted our investment to minimise environmental pollution from our assets. The focus on pollution performance throughout 2017/2018 and this year has been maintained with a Company Risk Management Team meeting three times a week and a dedicated Pollution Escalation Team in place to respond to incidents. We have achieved the greatest improvement during the period in reducing level of category 3 incidents.

Further investment has been allocated to not only meet our PR14 performance commitment service levels, but to target upper quartile performance by the end of the first year of AMP7. Our

investment plans to target upper quartile performance for pollution have been assured by Jacobs to ensure our plans are both affordable and deliverable.

As part of our performance plans we have increased the level of repair and maintenance on our sewer network as well as deploying additional telemetry to our network to allow us to target at risk assets before they impact the environment by spilling and polluting. The additional c£30m of investment has been funded from outperformance in other areas of our wholesale wastewater programme.

Line 9 – Discharge permit compliance (DPC)

Discharge Permit Compliance (DPC) data provided in line 9 complies with the definition as set out in the EA EPA Block 2.3 as required. The data does not align with that published by the EA in its annual report for Yorkshire Water. The historic data in the EA report is not an accurate account of the % compliance, as it has used varied information about the number of STW and WTW assets that have relevant permits. We have reviewed the site assets and related permits, as agreed with the EA at Annual Performance Report 2018 and used this site data to back cast and forecast our DPC positions for each calendar year.

Although the number of relevant permitted sites does not affect or alter the number of compliance failures Yorkshire Water has faced, it impacts the denominator and therefore alters the percentage compliance position calculated around the margins. The data we have provided in line 9 matches that reported in table App1 for the same calendar years.

Our performance on DPC has varied between 4 and 9 failing works, with no overall improving or deteriorating trend. This is in line with our Waste Water Quality Performance Commitment for AMP6 which was to remain stable, and the variation is relatively small compared to the total number of works under assessment which is 314.

The number of failures in 2016 was particularly high and this was impacted by the floods at the end of 2015 and the subsequent strain on our operational and maintenance resources during the recovery period. We saw an improvement in 2017 which is being continued in 2018.

% DPC	**2015-16**	**2016-17**	**2017-18**	**2018-19** (forecast)	**2019-20** (forecast)	**2020-21** (forecast)	**2021-22** (forecast)	**2022-23** (forecast)	**2023-24** (forecast)	**2024-25** (forecast)
	Annual Outturn performance (where available)			*Forecast*		*Annual Forecast*				
DPC sites failure count	4	9	7	6	6	5	5	4	4	4
Reported % compliance from EA Report	99.00%	97.20%	97.80%							
Sites covered by permit compliance STW and WTW	314	314	314	314	314	312	312	312	312	312
Derived % compliance for reporting in WWS18 and App31	98.73%	97.13%	97.77%	98.09%	98.09%	98.40%	98.40%	98.72%	98.72%	98.72%

Line 10 – Satisfactory sludge use / disposal

This line includes the data for satisfactory sludge use and disposal. Our actual performance is 100% to date. We have achieved a 100% compliance position since 2013/14 and forecast to remain at this level for the remainder of the 2015-2020 period.

Details of our sludge compliance is also presented in our Annual Performance Report under table 4E.

Lines 11 – 13 - Prosecutions, enforcement and formal cautions by the EA

Data for these components of App31 Block C have been verified by our Legal Services team.

Block D - Compliance with DWI statutory requirements

Block D provides data relating to our performance against our statutory water quality requirements.

Lines 14 and 15 - Compliance with DWI statutory requirements

We have had no DWI cautions and prosecutions under drinking water quality requirements to report over the period. Lines 14 and 15 are a zero return.

Block E - Compliance with Ofwat regulatory requirements

Block E provides data relating to our performance against regulatory requirements.

Lines 16 and 17 - Compliance with Ofwat regulatory requirements

We have had no completed enforcement actions under WIA91 or competition law over the period. Lines 16 and 17 are a zero return.

App32 - Weighted average cost of capital for the Appointee

The following commentary is also applicable for the weighted average cost of capital tables for each of the wholesale price controls; water resources, water networks, waste water networks and bioresources. (See tables Wr5, Wn5, WWn7, Bio6)

The commentaries for Wr5, Wn5, WWn7 and Bio6 refer the reader back to this commentary.

Appointee WACC

AMP7 notional WACC is in accordance with the WACC provided by Ofwat in their PR19 methodology, December 2017.

AMP7 WACC based on our actual structure includes the following changes from the notional WACC:

- Gearing changed to forecast opening gearing (77%). See notes on App18 for how this has been derived
- Debt beta adjusted to result in same overall level of WACC

As there is currently no evidence to suggest that there will be a significant shift in current economic conditions in the short term, AMP8 WACC is assumed to be the same as AMP7.

Price control wholesale WACC.

WACC is assumed to be consistent across all price controls in accordance with Ofwat guidance.

Wholesale WACC has been matched to Ofwat's PR19 methodology by adjusting the asset beta, which is in accordance with the Ofwat guidance provided within the tables.

As there is currently no evidence to suggest that there will be a significant shift in current economic conditions in the short term, AMP8 WACC is assumed to be the same as AMP7.

App33 - Wholesale operating leases reclassified under IFRS16

This table contains information on operating leases that would become finance leases under International Financial Reporting Standards (specifically IFRS16). Yorkshire Water prepares its' accounts under FRS102 and won't be implementing IFRS16. Following discussions with Ofwat, Yorkshire Water has completed the WS1 And WWS1 'A' tables, and APP33 to allow Ofwat the comparability to compare Yorkshire Water as though the company were under IFRS.

Yorkshire has few operating leases and a current P&L charge of c£1.9m Operating leases are typically fleet leases or office rental leases. This is forecast to increase by £1m next year following as the company car leasing scheme is being renewed after a lengthy negotiation, and further office space is being leased in Leeds. We have assumed that this strategy continues for the AMP.

Water service tables

WS1 - Wholesale water operating and capital expenditure by business unit.

Lines 1-11, lines 22 to 24 and line 43

WS1 operating costs line 1-11 have been prepared on a consistent basis with the Annual Performance Report (Annual Performance Report) 2018, with the first three years 2018-2020 including inflation and the 2020-2025 period stated at 2018 prices as requested. As requested by Ofwat, Yorkshire Water has completed this table assuming that IFR16 was implemented under FRS102 accounting standards, which is not expected to be the case but allows Ofwat to more easily compare the industry.

In 2017/2018, a charge for water sludge disposal has been recognised between Price Controls. A charge has been made by sludge treatment to water treatment. Conversely, there has been a charge of the clean water to waste water for the consumption of clean water on sites. These charges have been made in accordance with RAG 2.07 and continue forwards to 2025.

The operating cost lines include the cost of pension deficit contributions (consistent with the advice given by Ofwat) as the Yorkshire Water defined benefit scheme is accounted for under Accounting Standard FRS102 which applies the same rules as a defined contribution scheme. This is because the historical pension scheme deficit cannot be allocated between group entities. This results in all cash contributions, including pension deficit contributions, being recognised as operating expenditure. This treatment contrasts with most other water and sewerage companies (WaSC's) who have adopted IFRS and are required to follow defined benefit pension scheme accounting, therefore excluding cash contributions in excess of the IAS 18 defined benefit pension cost from their operating expenditure.

A one-off £6.3m rebate from the 2005 rates Cumulo appeal has been included within exceptional costs in Block D of the table to make year on year expenditure comparable.

The large increase in forecast operating costs within WS1 from 2018 to 2019 reflects internal company targets to reduce leakage by 40% whilst making further improvements in supply interruptions. An increased number of mains repairs and costs incurred identifying the leaks make up most of forecast expenditure and are included within other operating costs. The plan is to continue increasing resources further in 2019, achieving a significant reduction in leakage before the start of the next AMP.

Significant efficiencies have been identified during 2020-2025, with operating costs reducing year on year. However, these efficiencies are net of two significant cost increases within IT where an additional £63m Opex has been included next AMP (an average increase annually of £12.6m shared between price controls):

- £24.5m over the AMP relates to cyber security costs relating to the EU and subsequently the UK bringing in to UK law on the 9 May 18 a new 'Security of Network and Information Systems' (NIS) legislation that specifically looks at the security of our technology, people and processes that have an impact on Yorkshire Water's ability to supply clean water to our customers. There is also the new GDPR regulation coming in to effect on the 25 May 18 that looks at the security of personal information. As there has been very little investment for cyber security and data discovery over previous AMPs; this leaves Yorkshire Water exposed to the threats of electronic attack, the loss of sensitive data and the loss of critical services. The AMP 7 investments aims to mitigate these risks and address the technical defence Yorkshire Water needs, in order to proactively defend itself from an electronic attack and unauthorised access. The calculations for Opex have been through various challenge

sessions to reduce the costs as much as possible, with further information contained in 'Business Case for Expenditure', Management & General: Information Security, AMP7 (2020 – 2025).

- The £38.5m Opex in cloud-based solutions, rather than previously capitalised purchased or internally developed software, represents a change in strategy. Our ambition for IT is to embed a truly digital capability across the business that will connect us with each other, our customers, our suppliers, our partners and other key stakeholders. This will create greater collaboration opportunities, improve transparency and deliver a platform for participation. In the future, all of our stakeholders will be able to actively participate in how we plan, design and run our business. We aim to do reduce the size of our technology landscape into fewer core systems and enable the use of cloud-based technology to create further efficiency. This means removing many old internally developed systems and replacing them with a smaller number of more modern integrated solutions. These larger solutions will become the foundation of our technology estate and will not change rapidly in the future. We also aim to be more agile in our response to changing business requirements. The pace of business change demands that the time taken to deliver niche solutions and applications must reduce. Therefore, our delivery capability needs to accelerate in certain areas and utilising modern architectural principles and taking advantage of cloud technology, will enable this to happen in a truly integrated way.

Traffic Management costs are increasing in Yorkshire. 'Lane rental' type schemes have not been included in the PR19 plan, however the expansion across Authorities and their use by Authorities has been included. Currently only one Highway Authority of the 16 controlling the Yorkshire Region is currently operating 100% permit scheme across all roads and streets, with a further 10 operating a limited permitting scheme. We are forecasting the remaining 5 Highways Authorities to be operating permitting schemes during the next AMP, and all 16 moving towards 100% permitting.

Traffic management costs and Local Authority Charges have always existed – 'bagging-off' lights, suspend parking bays, lane closure costs paid directly to the Local Authority and other costs. However, there are additional costs listed below that have a significant impact on average jobs costs to the increase in out of hours working, quicker job turnaround and continuous working where required not just traffic management costs:

- One stipulation of most Permit conditions is that the traffic management on site includes "manned" lights, where a man stands on site with the lights to change the phasing on them if traffic builds up.

- Many Local Authorities dictate how jobs on Permit roads are carried out. For example, jobs must be done out of hours, completed and site cleared within one working day, or work has to be completed on a weekend. The very nature of applying for a Permit gives the Local Authorities the chance to insist on the way the work is carried out to cause the least disruption to traffic users but can result in increases to operating costs.

- Before the Permit scheme was introduced MUS would complete jobs under a Give and Take traffic management system. By again giving the Local Authority the chance to accept or refuse the application for a Permit they may insist on traffic lights (at a significantly greater cost) rather than a standard Give and Take system.

- It is not just the cost of the traffic management that has increased due to the Permit scheme. If Local Authorities insist on out of hours working in the Permit conditions, we can

have to carry out the initial job in a specific time as well as having to backfill and reinstate the highway within a given period. For example, a Local Authority may say that we must carry out a repair on a weekday night and we must be off the highway by the next working day. We would then have to have task, backfill, reinstatement and possible traffic management resource all working out of hours at considerable cost.

- As part of the permit conditions we are instructed by the Local Authority how to complete the job. If the job changes on site due to operational reasons such as a larger excavation, the spoil has to be placed in a different location, different traffic management required etc we would have to alter the Permit conditions. This would again involve an additional charge payable by the company.

- Another cost impact of the Permit scheme is the turnaround of jobs on Permit schemes. The Local Authority, as part of the Permit conditions, expect companies to continually work on Permit roads and streets and to be off site as soon as possible. This again drives additional costs and inefficiency of resource to prioritise these jobs and clear site quicker than would be expected on standard roads.

Significant and stretching operating cost initiatives have been targeted to offset the cost increases above. Two examples of these challenges (which apply savings across price controls) includes end-to-end Water & Waste Customer Process and maintenance:

- £11.7m Opex reductions are within the end-to-end Water & Waste Customer Process: The key initiatives include introducing lean initiatives to identify and eradicate inefficient processes, and a digital transformation to reduce human and manual intervention. The consultant's review found the customer journey convoluted with multiple touch points, drop offs and extended resolution times. Digital tools were not being fully exploited to interact with and track customers. The opportunities to revolutionise customer service by the end of AMP7 included the following strategies:

    - Make Yorkshire Water a customer-centric organisation by fitting into the world of the customer, rather than making the customer adhere to Yorkshire Water's approach
    - Meet Yorkshire Waters's 5 Big Goals, particularly those involving the customer, including understanding customer needs and providing a personalised service
    - Manage the customer, not the performance measure
    - Streamline processes to make the organisation leaner
    - Transform the organisation's use of digital tools to interact with customers
    - Increase resilience with a 24/7 Service Delivery Centre
    - Improve the SIM score which deteriorated at the start of 2018, and act as a bridge to better and more efficient upper-quartile performance when C-MEX is introduced

- £13.8m maintenance savings have been identified, following the clearance of all job backlog clearance before 2020. The principle of this project is that by proactively maintaining assets and adding telemetry we can almost eliminate reactive repair (asset outage). This strategy has been rolled out at Hull STW and is due to be expanded this year to 4 further sites. This policy is designed to support 100% asset availability and at the same time drive a long-term reduction in reactive maintenance spend in exchange for accepted up front planned maintenance costs.

Block B AMP6 Capex

Within AMP6 (2017/2018 - 2019/2020) the only atypical capital expenditure we are reporting/forecasting is consistent with previous years of Annual Performance Report and relates to the Flood recovery programme.

Block B

The WS1 and WS1a tables contain a summary of our expenditure for the Water Resources and Water Network Plus Wholesale Price Controls. The table has been populated based on the outputs of our business planning approach for each asset group based on our performance commitments as well as our growth and quality obligations.

The outputs have been mapped using our Investment Categories to ensure that the expenditure is mapped to the correct line and column for each year. These mappings are consistent with those used in our Annual Performance Report process and in populating the 2017-2020 columns of this table - they have been developed in line with Regulatory Accounting Guidelines.

We have included the transition expenditure set out in table 10 within the appropriate line/columns in 2020/2021.

The numbers populated in both WS1 and WS1a are inclusive of Real Price Effects and have been subject to efficiency challenge as set out in the Cost Efficiency. Block of our plan.

B	Capital Expenditure (excluding Atypical expenditure)	Line Commentary
12	Maintaining the long-term capability of the assets ~ infra	The line contains our base maintenance expenditure on infrastructure assets separated by Accounting Separation Category. It does not include investment associated with non-infra base investment (line 13) or enhancement categories (lines 14-16). This line does not vary between WS1 and WS1a.
13	Maintaining the long-term capability of the assets ~ non-infra	The line contains our base maintenance expenditure on non-infrastructure assets separated by Accounting Separation Category. It does not include investment associated with infra base investment (line 12) or enhancement categories (lines 14-16).
14	Other capital expenditure ~ infra	Lines 14 - 16 contain our enhancement expenditure which is aligned with WS2/2a tables. They do not include any investment associated with base maintenance (lines 12&13). Line 16 shows that we have identified £6.35m of Infrastructure network reinforcement for our Water Wholesale Service - this aligns with Line 6 of App28. This investment has been excluded from lines 14 & 15. Please see the App 28 table commentary for a description of these costs. These lines do not vary between WS1 and WS1a.
15	Other capital expenditure ~ non-infra	
16	Infrastructure network reinforcement	
18	Third party services	We have not identified any expenditure that meets the definition of third party capital expenditure in AMP7.
20	Grants and contributions	We have identified £57.436m of Grants and Contributions for our Water Wholesale service - this aligns with line 13 of App 28.

		Please see the App 28 table commentary for a description of these costs. This line does not vary between WS1 and WS1a.

Block D

We have not identified any atypical expenditure in AMP7 as all known expenditure is included in our plan.

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

Lines 1-11 Block A, lines 22 to 24 Block C and line 43 Block D

This table is a restatement of WS1 and has been completed on the basis that IFRS16 has not been implemented. Given that Yorkshire Water prepares its' accounts under FRS102, this table is the more accurately reflect of forecast. Given the limited amount of current and forecast leasing within Yorkshire Water the variance between WS1 and WS1a is not material. Leases mostly relate to managers vehicles and some office buildings.

See Ws1 commentary for more information.

WS2 - Wholesale water capital and operating enhancement expenditure by purpose

AMP7 Block A

The WS2 and WS2a tables contain a summary of our Enhancement Expenditure for the Water Resources and Water Network Plus Wholesale Price Controls. The table has been populated based on the outputs of our business planning approach for each Enhancement Driver.

The outputs have been mapped using our Investment Categories to ensure that the expenditure is mapped to the correct line and column for each year. With the exception of newly identified drivers these mappings are consistent with those used in our Annual Performance Report process and in populating the 2017-2020 columns of this table. All enhancement expenditure has been identified in line with Regulatory Accounting Guidelines.

We have included the transition expenditure set out in table 10 within the appropriate line/columns in 2020/2021.

The numbers populated in both WS2 and WS2a are inclusive of Real Price Effects and have been subject to an efficiency challenge as set out in the Cost Efficiency. Block of our plan.

A	Enhancement expenditure by purpose ~ capital	Line Commentary
1	WINEP / NEP ~ Making ecological improvements at abstractions (Habitats Directive, SSSI, NERC, BAPs)	We propose £8.125m of Capex expenditure in the Wholesale water price controls to make ecological improvements. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
2	WINEP / NEP ~ Eels Regulations (measures at intakes)	There is no investment proposed for the definition of this line
3	WINEP / NEP ~ Invasive non-native species	We propose £7.651 of investment to address sites with INNS issues as part of the WINEP. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
4	Addressing low pressure	There is no investment proposed for the definition of this line - investment in low pressure is part of our base maintenance programme.
5	Improving taste / odour / colour	We propose £16.821m to address Taste and odour issues in Hull by investing in additional treatment processes at Tophill Low WTW. The cost of this scheme has been mapped to the primary driver of improving taste/odour/colour. The justification and evidence behind these costs are set out in the drinking water quality Block of our Enhancement Cost Appendix and in our Submission to the DWI. This line includes £0.324m under Water Treatment in 2020/2021for the transition expenditure associated with the enhancement element of the DWQ programme.
6	Meeting lead standards	We propose £12.340m to improve our compliance with Lead standards at customer premises. This involves a variety of both reactive and proactive lead pipe replacement, trials and activity. The programme of work, and justification and evidence

		behind these costs are set out in the drinking water quality Block of our Enhancement Cost Appendix and in our Submission to the DWI. This line includes £2.567m of transitional expenditure in 2020/21.
7	Supply side enhancements to the supply/demand balance (dry year critical / peak conditions)	There is no investment proposed for the definition of this line
8	Supply side enhancements to the supply/demand balance (dry year annual average conditions)	We have identified £0.340m for enhancements to, and modelling of our supply demand balance as set out in our water resource management plan.
9	Demand side enhancements to the supply/demand balance (dry year critical / peak conditions)	There is no investment proposed for the definition of this line
10	Demand side enhancements to the supply/demand balance (dry year annual average conditions)	There is no investment proposed for the definition of this line
11	New developments	We have Identified £10.500m of expenditure meeting this line definition. This includes our infrastructure network reinforcement associated with new developments and the mains requisitions element of our New Development programme. Costs associated with this expenditure are described in the Growth Block of our Enhancement Cost Appendix.
12	New connections element of new development (CPs, meters)	We have identified £30.141m of expenditure meeting this line definition which incorporates the New Connections elements of our new development programme. Costs associated with this expenditure are described in the Growth Block of our Enhancement Cost Appendix.
13	Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)	In line with our Drinking Water Quality submission we have identified £60.140m of investment in Water Treatment Works Processes to address raw water deterioration at 5 sites (Chellow Heights WTW, Oldfield WTW, Fixby WTW, Sladen Valley WTW and Embsay WTW). These schemes are primarily to address THM risks. They are part of a twin track approach with investment in our catchments set out in line 18 and line 56 associated with Drinking Water Protected areas as part of the WINEP. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.

		This line includes £13.329m under Water Treatment in 2020/2021for the transition expenditure associated with the enhancement element of the DWQ programme.
14	Resilience	There is no specific investment proposed for the definition of this line. As set out in our Appointee level summary on Resilience, there are a multitude of ways that we are improving resilience in the round. This line only contains a small element of this that is not better placed in other lines of the tables.
15	SEMD	We have identified £0.655m of Water investment in SEMD compliance for AMP7.
16	Non-SEMD related security enhancement	There is no investment proposed for the definition of this line
17	WINEP / NEP ~ Drinking Water Protected Areas (schemes)	We have identified £17.237m of capital investment in Drinking Water Protected Areas as part of the WINEP programme to implement capital investment. This incorporates a variety of catchment schemes associated with Nitrates, Pesticides, Metaldehyde, Colour and Environmental Assessments. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
18	WINEP / NEP ~ Water Framework Directive measures	We propose to invest £9.707m in Water Framework Directive measures set out in WINEP3 primarily associated with Fish Passage, environmental assessments and management schemes. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
19	WINEP / NEP ~ Investigations	There is no investment proposed for the definition of this line
20	Improvements to river flows	There is no investment proposed for the definition of this line
21	Metering (excluding cost of providing metering to new service connections) for meters requested by optants	We have identified £22.997m to implement metering for meter optants. Costs associated with this expenditure are described in the DMO Block of our Enhancement Cost Appendix.
22	Metering (excluding cost of providing metering to new service connections) for meters introduced by companies	There is no investment proposed for the definition of this line
23	Metering (excluding cost of providing metering to new service connections) for businesses	There is no investment proposed for the definition of this line
24	Drought Management Plan	We have identified £1.7m of expenditure to implement our Drought and water resource management plans.
25	Exclusions	There is no investment proposed for the definition of this line

26	Leakage Reduction - UQ	We have identified capital enhancement investment of £131.917m to enable us to drive a step change in performance in Leakage throughout AMP7. Only the costs associated with driving down this performance have been considered enhancement, any other costs. Maintaining previous leakage levels, and maintenance of assets installed as part of our AMP6 drive down, are populated in our maintenance programmes in Years 1-5 of lines 12&13 in WS1. Costs associated with this expenditure are described in the Leakage Block of our Enhancement Cost Appendix.
27	Reduction in Interruptions to Supply - UQ	We have identified enhancement Capital investment of £2.946m to enable us to continue to drive a step change in performance by the end of year 1 of AMP7. We have targeted a continual improvement in this service throughout the AMP to a final target of 2 minutes to ensure that we continue to remain at the frontier. However, the costs associated with this further improvement are included in our plan as base maintenance and are populated in our programme in Years 2-5 of lines 12&13 in WS1. Activity associated with this expenditure are described in the Interruptions to Supply Block of our Enhancement Cost Appendix.
28	Improving Water Quality - UQ	There is no investment proposed for the definition of this line
29	Infrastructure network reinforcement	There is no investment proposed for the definition of this line
30	Accounting Adjustments - IAS16	There is no investment proposed for the definition of this line

AMP7 Block B

B	Enhancement expenditure by purpose ~ operating	Line Commentary
40	WINEP / NEP ~ Making ecological improvements at abstractions (Habitats Directive, SSSI, NERC, BAPs)	We propose 0.152m of enhancement expenditure in the Wholesale water price controls associated with our schemes to make ecological improvements. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
41	WINEP / NEP ~ Eels Regulations (measures at intakes)	There is no proposed enhancement Opex associated with this line
42	WINEP / NEP ~ Invasive non-native species	There is no proposed enhancement Opex associated with this line
43	Addressing low pressure	There is no proposed enhancement Opex associated with this line
44	Improving taste / odour / colour	We have identified an AMP7 enhancement Opex impact of 0.193 associated with our investment to address Taste and odour issues in Hull by investing in additional treatment

		processes at Tophill Low WTW. The cost of this scheme has been mapped to the primary driver of improving taste/odour/colour. The justification and evidence behind these costs are set out in the drinking water quality Block of our Enhancement Cost Appendix and in our Submission to the DWI.
45	Meeting lead standards	There is no proposed enhancement Opex associated with this line
46	Supply side enhancements to the supply/demand balance (dry year critical / peak conditions)	There is no proposed enhancement Opex associated with this line
47	Supply side enhancements to the supply/demand balance (dry year annual average conditions)	There is no proposed enhancement Opex associated with this line
48	Demand side enhancements to the supply/demand balance (dry year critical / peak conditions)	There is no proposed enhancement Opex associated with this line
49	Demand side enhancements to the supply/demand balance (dry year annual average conditions)	There is no proposed enhancement Opex associated with this line
50	New developments	There is no proposed enhancement Opex associated with this line
51	New connections element of new development (CPs, meters)	There is no proposed enhancement Opex associated with this line
52	Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)	We have identified an Enhancement Opex impact of 0.929m based on the investment in our Drinking Water Quality Programme in AMP7. This is the Opex associated with the schemes to address raw water deterioration at 5 sites (Chellow Heights WTW, Oldfield WTW, Fixby WTW, Sladen Valley WTW and Embsay WTW).
53	Resilience	The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
54	SEMD	There is no proposed enhancement Opex associated with this line
55	Non-SEMD related security enhancement	There is no proposed enhancement Opex associated with this line
56	WINEP / NEP ~ Drinking Water Protected Areas (schemes)	There is no proposed enhancement Opex associated with this line

57	WINEP / NEP ~ Water Framework Directive measures	We have identified 6.265m of operational investment in Drinking Water Protected Areas as part of the WINEP programme to implement. This primarily includes catchment management activity to address Metaldehyde issues but also includes elements of Opex associated with catchment management measures associated with Nitrates, Pesticides, colour and Environmental Assessments. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
58	WINEP / NEP ~ Investigations	There is an Enhancement Opex Impact of £0.070m due to Water Framework Directive measures set out in WINEP3 primarily associated with Fish Passage, environmental assessments and management schemes. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
59	Improvements to river flows	There is no proposed enhancement Opex associated with this line
60	Metering (excluding cost of providing metering to new service connections) for meters requested by optants	There is no proposed enhancement Opex associated with this line
61	Metering (excluding cost of providing metering to new service connections) for meters introduced by companies	There is no proposed enhancement Opex associated with this line
62	Metering (excluding cost of providing metering to new service connections) for businesses	There is no proposed enhancement Opex associated with this line
63	Drought Management Plan	There is no proposed enhancement Opex associated with this line
64	Exclusions	There is no proposed enhancement Opex associated with this line
65	Leakage Reduction - UQ	We have identified operational enhancement investment of £116.132m to enable us to drive a step change in performance in Leakage throughout AMP7. NB we have also included £43.72m Opex being spent in Year 4 and year 5 of AMP6 in the 2018/19 2019/20, as this step change is already underway. Costs associated with this expenditure are described in the Leakage Block of our Enhancement Cost Appendix.
66	Reduction in Interruptions to Supply - UQ	We have identified 5.534m of Opex to enable us to continue to drive a step change in performance by the end of year 1 of AMP7.

		We have targeted a continual improvement in this service throughout the AMP to a final target of 2 minutes to ensure that we continue to remain at the frontier. However, the costs associated with this further improvement are included in our plan as base maintenance and are populated in our programme in Years 2-5 of line 7 in WS1. NB, we have also included £11.27M Opex being spent in Year 4 and year 5 of AMP6 in the 2018/19 2019/20, as this step change is already underway. Costs associated with this expenditure are described in the Interruptions to supply Block of our Enhancement Cost Appendix.
67	Improving Water Quality - UQ	There is no proposed enhancement Opex associated with this line
68	Infrastructure network reinforcement	There is no proposed enhancement Opex associated with this line
69	Accounting Adjustments - IAS16	There is no proposed enhancement Opex associated with this line

AMP6 Capex

This table related to tables Ws2 and also Ws2a, WWs2 and WWs2a and shows the additional lines that we have used in our submission, with the relevant line numbers, with an explanation of the reason we have used each line.

Line Name	Description	Reason for Use	Table WS2/2a	Table WWS2/2a
Drought Management Plan	Expenditure on projects that contribute to the delivery of the drought management plan.	This is enhancement data that does not fit the definition of any of the provided lines.	24	-
Exclusions	Expenditure on projects that would be 'Enhancement' spend based on Investment Category, but which do not meet the relevant line definition and so would otherwise be excluded from the Enhancement Expenditure by Purpose tables.	Added as a line to make sure that our total expenditure in the Enhancement tables matches that in lines 14-16 of tables WS1 and WWS1 respectively.	25	36
Leakage Reduction - UQ	Expenditure on Upper Quartile (UQ) projects to reduce leakage.	This is additional enhancement expenditure which was not part of the FD.	26	-
Reduction in Interruptions to Supply - UQ	Expenditure on Upper Quartile (UQ) projects to reduce number/length of interruptions to supply.	This is additional enhancement expenditure which was not part of the FD.	27	-
Improving Water Quality - UQ	Expenditure on Upper Quartile (UQ) projects to improve water quality.	This is additional enhancement expenditure which was not part of the FD.	28	-
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.	Added as a line to match new line added to tables WS1/WWS1.	29	39

Accounting Adjustment - IAS16	Expenditure that is initially funded through the capital programme but then through accounting adjustments is moved to operating expenditure.	Added as a line to make sure that our total expenditure in the Enhancement tables matches that in lines 14-16 of tables WS1 and WWS1 respectively.	30	40
Bathing water ELoS	Expenditure on old AMP5 projects contributing to a step change in performance in bathing water compliance that continued into AMP6.	This is enhancement data that does not fit the definition of any of the provided lines.	-	32
Pollution ELoS	Expenditure on old AMP5 projects contributing to a step change in performance in pollution that continued into AMP6.	This is enhancement data that does not fit the definition of any of the provided lines.	-	33
Connections (if applicable)	Line added for consistency to match the CEPA adjustment version of Cost Assessment tables 9 & 9.1 received in March 2018.	Line added for consistency to match the CEPA adjustment version of Cost Assessment tables 9 & 9.1 received in March 2018.	-	34
Emergency Overflow Appeals	Expenditure to meet statutory requirements set by EA on Emergency Overflows at pumping stations - no specific regulatory outputs are associated with this expenditure. This was identified as part of our response to Ofwat's query in March 2018.	Line added for consistency to match the adjusted version of the Cost Assessment that we submitted in March 22018 following the CEPA adjustment queries we received.	-	35
Pollution - UQ	Expenditure on Upper Quartile (UQ) projects to reduce number of pollution incidents.	This is additional enhancement expenditure which was not part of the FD.	-	37
Internal Flooding - UQ	Expenditure on Upper Quartile (UQ) projects to reduce number of internal flooding incidents.	This is additional enhancement expenditure which was not part of the FD.	-	38

WS2a - Wholesale water cumulative capital enhancement expenditure by purpose

The value of each line in this table is equal to that in WS2. The individual schemes are mapped to exactly the same line in both tables. However, as per the guidance, in order to populate the cumulative capex in WS2a we have included the total expenditure of each scheme in the year of completion only. Lines with multiple schemes may show outputs in multiple years in accordance to their year of completion.

See WS2 commentary for more information.

WS3 - Wholesale water properties and population

2017/2018 actuals are inputs from Annual Performance Report table 4Q - Non-financial data - Properties, population and other - Wholesale water

Lines 1 & 2 - Residential properties billed for measured water (external meter) / (not external meter)

The actual water properties are input up to 2017/2018. The 2018/2019 and 2019/2020 forecasts come from the tariff model which have been used to set out the tariff in those years. Therefore 2019/2020 is the base year for the PR19 forecast.

The new connections and domestic meter optants forecast are taken directly from the Water Resource Management Plan (WRMP). These are both added onto the prior years measured properties.

Regarding the external/not external split, the average actual reported split up until 2017/2018 is assumed to reflect PR19, therefore this is applied to the forecast water household properties.

Line 3 – Business properties billed measured water

The actual non-household water properties are input up to 2017/2018. The new connections assumption is based on a 5-year average which is in line with the WRMP, this is added onto prior year properties.

The non-household reduction assumption includes demolitions as well as movements between non-household and household properties through reclassification. This is subtracted from the prior year properties.

Line 4 – Residential properties billed for unmeasured water

As with the household measured water properties, the actuals are input up to 2017/2018.

The WRMP DMO's are subtracted off prior years to give the forecast.

Line 5 – Business properties billed unmeasured water

Actuals are input up to 2017/2018. Each year the properties are reduced by subtracting the non-household assumed reductions. This assumption is taken directly from the WRMP which assumes a reduction of 200 properties up to 2020, then 100 thereafter.

Line 6 – Total business connected properties at year end

The 2017/2018 figure is taken from the submitted Annual Performance Report. The forecast connected properties are the calculated non-household properties in lines 3 and 5 plus the forecast business void properties which have been forecast via table App30.

It is assumed that the forecast year end and average connected properties are the same.

Line 7 – Total residential connected properties at year end

As with total business connected properties, the actuals for residential are taken from the Annual Performance Report. The forecast connected properties are the calculated household properties in lines 1, 2 and 4 plus the forecast residential void properties which have been forecast via table App30.

It is assumed that the forecast year end and average connected properties are the same.

Line 9 & 10 – Number of residential/business meters renewed (Kelly Lloyd – Billing Solutions)

The meter replacement forecast is based on reactive meter replacements i.e. where the meter is damaged or faulty.

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

This forecast comes directly from the WRMP as it's the domestic meter optants forecast. 2017/2018 actuals come from the Annual Performance Report.

Line 12 – Number of selected meters installed (Chris Daw)

Forecast no change, therefore remains zero.

Line 13 – Total number of new business connections

Actual 2017/2018 comes from the Annual Performance Report, this forecast is based on the 5-year average that is used to build up the non-household measured properties on line 3.

Line 14 – Total number of residential connections

Actual 2017/2018 comes from the Annual Performance Report, this forecast comes directly from the WRMP new connection forecast.

Line 15 – Population served

Actuals 2017/2018 comes from the Annual Performance Report, the forecast years come from the WRMP.

Line 16 – Number of business meters (billed properties)

Historic actual meters taken from the Annual Performance Report table 4Q. Average actual properties to meter count uplift for these years is assumed to continue into PR19. Non-household average uplift is +13.8% based on a historic average.

Line 17 – Number of residential meters (billed properties)

Historic actual meters taken from the Annual Performance Report table 4Q. Average actual properties to meter count uplift for these years is assumed to continue into PR19. Household average uplift is +6.1% based on a historic average.

Line 18 – Company area

Forecast no change from most recent submitted figure.

WS4 - Wholesale water other (explanatory variables)

Line 1

The number of lead communication pipes replaced for water quality, will increase due to our DWI (Drinking Water Institute) Lead Programme: relining or replacing lead material with modern materials to provide better water quality to customers.

Line 2

There is no investment proposed to enhance the supply demand balance in dry year critical / peak conditions.

Line 3

We are applying for an increase to the license at Catterick Bore Hole.

Line 4

There is no investment proposed to enhance the supply demand balance in dry year critical / peak conditions.

Line 5

The increase is a result of the reduction in leakage. Further information on leakage reduction can be found in the Leakage Performance Commitment Appendix.

Lines 6-8

We do not envisage any major changes in Energy consumption.

Line 9

Current Mean Zonal Compliance forecast.

Line 10

Significant Compliance Risk Index reduction in line with water quality Performance Commitment forecast. Please see Water Quality Compliance Performance Commitment Appendix.

Line 11

Stable Events Risk Index performance forecast.

Line 12

In line with our commitment to a 40 % leakage reduction away from Sustainable Economic Level of Leakage (SELL).

WS5 - Other wholesale water expenditure

This table looks at employment costs and FTE numbers for each price control and upstream service. The approach for calculating this has been aligned to the Annual Performance Report, and this was a new table included in the submission for 2017/18. The approach for PR19 has been similar following on from review the business plan for the remainder years of this AMP period and incorporating the savings associated with project 1 and project 2 work that has been done in conjunction with PA consulting. The allocation of FTE's has been derived from the detailed work on the savings and an average price per FTE has been used to determine the FTE's.

There is some year on year variances in comparison to previous cost assessment submissions. This is mainly following on from the enhanced cost allocations which have been done as part of the Annual Performance Report this year (2017/18). The use of Business Intelligence (BI) tool and a detailed review and challenge of manpower allocations leading to individuals allocating their time to specific price controls as oppose to general and support categories.

Whilst we see an increase in Employment costs for the remainder of AMP6 this is mainly associated with treated water distribution to help fund Yorkshire Water's plans to be within the industry's upper quartile performer for leakage supply interruptions. Significantly more manpower has been budgeted to drive leakage reductions to 2020, with efficiencies and innovations such as acoustic logging gradually reducing manpower from 2020 onwards. Indirect employment costs and FTE's see a reduction for the same reasons.

Traffic Management costs are increasing in Yorkshire, although has a reduced impact on waste water networks (as opposed to clean water) given the location of the sewer network. 'Lane rental' type schemes have not been included in the PR19 plan, however the expansion across Authorities and their use by Authorities has been included. Currently only one Highway Authority of the 16 controlling the Yorkshire Region is currently operating 100% permit scheme across all roads and streets, with a further 10 operating a limited permitting scheme. We are forecasting the remaining 5 Highways Authorities to be operating permitting schemes during the next AMP, and all 16 moving towards 100% permitting.

Traffic management costs and Local Authority Charges have always existed – 'bagging-off' lights, suspend parking bays, lane closure costs paid directly to the Local Authority and other costs. However, there are additional costs listed below that have a significant impact on average jobs such as the increasing demand for "manned" lights, out of hours working carried out to cause the least disruption to traffic users, and increased turnaround time.

We can confirm that the sum of lines 6 – 8 agree with "Abstraction Charges/ Discharge Consents" in line 3 of table WS1.

WS7 - Wholesale water local authority rates

This tables analyses the local authority rates for the wholesale water business. The table states 2017/2018 total rates at £34.4m which aligns to the Annual Performance Report (table 4D) and includes a one-off rate refund of £6.4m and is therefore lower than other years. Subsequent years for the current AMP have been included using the annual Uniform Business Rate (UBR) multiplier which is outside the control of the business.

The impact of the national revaluation has been reflected in AMP 7 starting from 2021/2022. Subsequent years from 2021/2022 remain the same for the remainder of the AMP 7 period.

The impact of change in stock will be negligible for wholesale water business because of the basis of valuation for the rates assessment.

An assumption has been made that the valuation methodology for clean water assessments will not change. This is prepared by the Valuation Office and based on previous experience difficult to influence by the industry.

The cost increases year on year from 2018/2019 Year to 2020/2021 Year inclusive in 'nominal' terms before deflation to PR19 Price Base Year is due to forecasted movements in the annual UBR multiplier which is beyond the control of Yorkshire Water as ratepayer. There is no effect of the Transitional Relief/Surcharge government scheme from the 2017 national Revaluation. The increase in cost forecasted from 2021/2022 year is due to the next national Revaluation in 2021 now confirmed by government to take place. The financial year's after 2021/2022 and the Revaluation are forecast to see increases by annual UBR movement. The cost impact from Changes in Asset Stock are negligible for Clean Water because of the basis of valuation for the rates assessment. It is forecast that there will be no effect on the 2021/2022 and subsequent year's cost due to the Transitional Relief/Surcharge scheme that the government may or may not introduce.

For the 2021 Revaluation we have taken a 'realistic conservative' approach in our forecast, reflecting our reasonable expectation that HMRC Valuation Office Agency (responsible for the rating assessment figures on revaluation) will engage and be receptive to our representations in a manner similar to the successful approach to the 2017 Revaluation (this assumption is based on an agreement already with the VOA to meet before end of 2018). However, the final rates cost payable will be directly affected by government decisions on the UBR, plus any Transitional Relief/Surcharge scheme, which are beyond the company and industry control or influence. In addition, one of the fundamental and key inputs to the Water rating assessment is the WACC on Price Review, where a lower WACC or downward movement has the direct impact to increase the rating assessment and so the rates payment liability. Thus, should the Price Determination include a reduction to the WACC or adopt a WACC figure at the lower end of the range indicated in Guidance there will be an increase in rates cost above our forecast. In summary, our assumption on 2021 Revaluation is that the outcome will be reasonable and modest, but there is risk, and most is beyond the company's influence. It is noted that in the 2017 Revaluation the experience between industry companies was mixed, with a third of the Industry experiencing increases of +40% and half of company's seeing a +10% (Yorkshire Water was +8%) where inflation was not applicable to the change movement.

The key risks are identified below, together with our headline Plan to mitigate.

Key risks

- UBR multiplier for Clean (+ also Waste Water) assessment – will be determined by property rental value movements across England & Wales, which is a function of demand for property

and wider economic prosperity (or not), and so is not within control or influence of water industry company's. It is subject to government influence but largely independent determinants at macro-scale like BREXIT.

- Transitional Relief scheme for Clean (+ also Waste Water) assessment – (the mechanism used to phase in the increase and decrease effects from assessment changes in the new Rating List, but for 2017 was experienced as biased to permit the majority of increase to be introduced in year 1, yet downward reductions phased over 5 years) will be determined by overall total cost movements across England & Wales from the Revaluation exercise, and so is not within control or influence of water industry company's. It is subject to government decision.
- Valuation Methodology for Clean Water assessments – Prepared by HMRC Valuation Office Agency, independent to government and difficult to influence by water industry company's. We have a model for 2017, but a new method could emerge. The WACC determination on PR19 Price Review could impact our forecast.

Risk mitigation

We have a dedicated experienced resource of two full-time professionals (RICS & IRRV) in place now in-house to lead our mitigation plan, supported by external specialist consultants. We will mitigate the effect plus impact of the 2021 Revaluation through early engagement and direct involvement (rather than through consultants) with HMRC Valuation Office Agency (VOA) at a national lead level, and active participation in any government sponsored consultations. We had good success through such direct involvement in 2010 and 2017 revaluations. However, the opportunity to mitigate may be found to be limited. The VOA are an independent government body who are not obliged to participate in any engagement and may not take forward company and or industry inputs or proposals made. Furthermore, many of the key factors are either government decided (UBR multiplier + Transitional Relief scheme) or 'market led' (property values + construction costs) that are not capable of being influenced. The revaluation – particularly the Clean Water rates assessment – will affect different water company's in different ways, and there are few issues that can be influenced that are common across all or even the majority of companies. We currently cooperate and share with other companies and will look to do so on common issues for the 2021 Revaluation.

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

This table looks at third party costs for wholesale water and is a disaggregation of line 10 on WS1. These costs are influenced by third parties and the basis for the plan has been using 2017/2018 data as a base line based on what has been submitted in the Annual Performance Report. The costs have been split into the two main categories where most of the costs are allocated. The smaller elements are not material so have been allocated to third party damages.

The forecast for AMP7 is based on actual data for the most recent year which is 2017/2018, as this is influenced by third parties and there is no expectation for costs to be considerably different in future years.

WS10 - Transitional spending in the wholesale water service

We have included a small amount of transition expenditure in the Water Network Plus and Water Resources Price Controls to enable us to efficiently deliver statutory requirements where compliance dates would otherwise make delivery inefficient or impossible. This is set out below.

We have not mapped any costs to lines 41 and 42 other capital expenditure as we believe these costs to be include in the above lines. All enhancement expenditure has been allocated to the primary driver.

Despite the spend occurring in AMP6 we have applied the same efficiency assumptions associated with our AMP7 costs to this transition expenditure. The overall efficiencies applied by price control and by year are set out in App 24a.

Lead Programme

We have identified that to deliver early protection to customers on our Lead risks we would require a transition programme of 20% of the total value. This is a statutory requirement through the Drinking Water Inspectorate and contributes to our Performance Commitment on Drinking Water Quality (CRI).

Drinking Water Quality Programme – Raw Water Deterioration & Taste and Odour at Chellow, Fixby and Tophill Low

We have identified a requirement to complete the investigatory and design work for some of our DWI water quality schemes in the final year of the AMP. This will allow us to implement the scheme as soon as AMP7 starts. Customers will get the benefits earlier and it will give us resource flexibility in staggering the impact on our production throughputs of this programme. These schemes are statutory requirements through the Drinking Water Inspectorate and contribute to our Performance Commitment on Drinking Water Quality (CRI).

3% of the total cost has been allocated to Transition expenditure.

Reservoir Safety Programme

We have identified 15 pieces of work across 10 reservoir sites that we are expecting statutory investment with a completion date early in the next AMP. We have identified 20% of the costs of these schemes to achieve delivery dates and guarantee compliance with the Reservoirs Act. The investment indirectly impacts on a number of our performance commitments, as failure to comply with the act would lead to enforcement and a requirement to draw down Reservoirs deemed unsafe. This would decrease our resilience and impact on Performance Commitments associated with Drinking Water Quality and Water Supply Interruptions amongst others.

Block A

Transitional Capital Expenditure Purposes	Commentary
Line 5: Improving taste / odour / colour	This line has a cost of £0.324m under Water Treatment for the transition expenditure associated with the enhancement element of the DWQ programme - Taste and Odour at Tophill Low.
Line 6: Meeting lead standards	This line has a cost of £2.567m under Treated Water Distribution for the transition expenditure associated with the Lead programme.

Line 13: Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)	This line has a cost of £0.774m under Water Treatment for the transition expenditure associated with the enhancement element of the DWQ programme. Raw Water Deterioration at Chellow and Fixby.
Line 40: Maintaining the long-term capability of the assets ~ non-infra	This line has a cost of £0.624m under Water Treatment for the transition expenditure associated with the enabling base element of the DWQ programme. AND a cost of £2.701m under Water Resources for the transition expenditure associated with the Reservoir Safety Programme.

WS12 - RCV allocation in the wholesale water service

Block A: Water resources net MEAV

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

The gross and net Modern Equivalent Asset Values (MEAV) are taken from the published Regulatory Accounts for 2014/2015, under Note 6 ('Current cost analysis of fixed assets'). These are the values for the Water service. These values were assured as part of the regulatory accounts.

Line 2 – Disposals

Through following our accounting processes when assets are disposed of, they are removed simultaneously from the historical cost and MEAV asset registers. This process is assured as part of our year end statutory audits. This value has been inflated to March 2018 prices.

Line 3 – Reclassification

Following the boundary changes in RAG 4.05, a number of En-route Storage Reservoirs were transferred from Water Networks Plus to Water Resources in 2016/2017. These are:

Site Name	Net MEAV (£m)
Ardsley Enroute Storage Reservoir (ESR)	38.593
Broadstones ESR	26.853
Snow Hill ESR	0.821
Thornton Steward ESR	25.598
Whitley ESR	31.902
TOTAL	123.767

In this submission, the above figure has been inflated to March 2018 prices and the total is now £127.904m.

Line 4 – Inflation

The MEA value of assets existing at 31st March 2015 has been inflated to March 2018 prices using the Retail Prices Index, specifically the following indices:

Year	RPI index change	RPI percentage change
2015/2016	257.1 – 261.1	1.6%
2016/2017	261.1 – 269.3	3.1%
2017/2018	269.3 – 278.3	3.3%

This has been applied to both gross and net MEAVs.

Line 5 – Additions

Since the MEAV asset register was initially populated, any further asset additions have been simultaneously added to both the historical cost asset register used for statutory reporting and the MEAV asset register.

The additions total for each of Water Resources and Water Network Plus comprises the additions reported in the Annual Performance Report for the years 2015/2016 and 2016/2017, and an apportionment of Management & General expenditure using Full-Time Equivalent as a cost driver.

The additions in each of these two years has been inflated to March 2018 prices using the indices listed above.

Line 6 – Depreciation

Depreciation of assets in the MEAV asset register is calculated automatically within our reporting system, using the gross MEAV, estimated useful asset life and the asset installation date for each asset record.

A detailed process of validation of the above data has been undertaken to ensure accurate allocation of asset records to the water resources and network plus price controls, working with operational business colleagues. This has been checked for consistency with the asset analysis undertaken for the Annual Performance Report 2016/2017 where appropriate.

The depreciation in each of these two years has been inflated to March 2018 prices using the indices listed above.

Block B: Roll forward

Lines 9, 11, 13 – Additions

For consistency we have used the capex figures in the PR19 WS1 table, these are allocated to investment drivers which are then mapped to price controls. This enables identification of capital expenditure in relation to either water resources or water networks plus.

The mapping of investment drivers to price controls is consistent with other regulatory reporting, e.g. the Annual Performance Report, and all investment drivers are directly mapped to a specific price control.

In addition, an apportionment of management and general expenditure is made to both water resources and water network plus additions, using Full-Time Equivalent employee numbers as a cost driver.

Adjustment to 2017/2018 prices

As the guidance instructs, additions have been adjusted to March 2018 prices using the March RPI. Once again, we have remained consistent with PR19 and aligned inflation assumptions to table App23.

Timing of asset additions

For the years 2018-20, much of the capital programme has not been allocated to individual capital projects. However, forecast completion dates and expenditure have been used for some specific high-value projects. We have adjusted the in year and forecast expenditure on these projects to the 2017/2018 price base as they were in outturn prices.

Where a project is subject to a regulatory compliance date, this is used to determine which year the asset additions are forecast, and as the start date for depreciation. Where there is no such regulatory compliance date, the current forecast project completion date is used.

In addition, the value of work-in-progress held on capital projects has been included in the year in which that project is forecast to be completed, for the relevant price controls.

Lines 10, 12, 14 – Depreciation

Forecast depreciation of assets existing at 31 March 2017 for the years 2017-20 is taken from the MEAV asset register.

Asset additions are identified as being either infrastructure or non-infrastructure in nature, based on the investment driver. In line with previous regulatory MEAV reporting, infrastructure assets are not depreciated.

Depreciation of non-infrastructure asset additions is calculated using capital expenditure values, the current regulatory compliance date and estimated average asset lives. These asset lives have been estimated using existing MEAV asset data for each investment driver. The resulting weighted average asset life of 25 years is used to depreciate non-infrastructure additions from 2017-20.

Line 15 - Other forecast adjustments 2017-2020

No other forecast adjustments have been identified.

Block C: RCV as at 31 March 2020

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

The proposed allocation is based on Gross MEAV and is set out in our Appendix 16C: 'Water Resources RCV Allocation Submission – Updated 3 September 2018'

Lines 19 - RCV ~ 31 March 2020 (% of total wholesale water)

These are calculated cells.

WS12a - Change in RCV allocation in the wholesale water service

Block A: RCV split 31 March 2020 as submitted in January 2018

Line 1 - Proposed RCV allocation 31 March 2020 (pre-midnight adjustments) [January 2018]

This line has been copied from our Water RCV allocation of January this year.

Line 2

Copied from line 18 table WS12.

Line 3 and 4 – Differences

Calculated cells that unexplained difference of £0.001m is a rounding variation.

Block B: Explanation of changes

Line 5 – Inflation from March 2017 to March 2018 prices

Generally rebasing of prices has a zero effect on the allocation of RCV. This is because the allocation is on a proportion and as such the application of the same inflation number to both price controls, whether that be additions or disposal, is equal in their impact and does not change the proportions or balance between the price controls.

To isolate the effect that inflation has on adjusting the RCV from 2016/17 to 2017/2018we undertook the following analysis. Firstly, we inflated the RCV for water resources from 2016/17 to 2017/18. The RPI numbers used were RPI Financial Year End numbers in APP23 as follows:

Period	Index
2012/2013 (average)	244.7
March 2017	269.3
March 2018	278.3

This means that the total RCV for Water moves from £2,661.085m to £2,750.019m. This is the new total water RCV to be allocated between water resources and water network plus.

To assess the impact of this and quantify this impact in RCV terms, we have applied the RCV split in January to both RCV numbers, i.e. existing and inflated. The below is the output of this:

	Water Resources	Water Network plus	Total
RCV allocation January	20.179%	79.821%	100.000%
RCV - March 2017	£536.975m	£2,124.110m	£2,661.085m
RCV - March 2018	£554.921m	£2,195.098m	£2,750.019m
Inflation impact	-£17.946m	-£70.988m	-£88.934m

Line 6 – Changes in forecast expenditure

This will have a balancing change, in that should expenditure increased in one price control between January and September will impact the proportions to the extent that the RCV will shift from one Price control to another. However, the change will be proportional in that one value will be the negative of the other value based on the direction of shift.

To assess this shift, we have taken the difference between the two percentages for allocation developed in January and in September.

The September RCV (£2,750.019m) is then multiplied by difference as a percentage to develop the impact of forecast expenditure (additions) between the two periods. The output is shown below:

	Water Resources	Water Network plus	Total
January allocation proportions	20.18%	79.82%	100.000%
September allocation proportions	20.07%	79.93%	100.000%
Difference	0.11%	-0.11%	0.000%
Expenditure impact	£3.039m	-£3.039m	£0.000m

Line 7 - Changes in forecast capital maintenance charges

This is no impact on RCV allocation.

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

Table WS13 contains the water service inputs used for populating the PR14 wholesale revenue forecast incentive mechanism (WRFIM) model and the revenue adjustment arising as calculated by the WFRIM model. The WRFIM model calculates in outturn prices and is converted to 2017/2018 prices in the revenue adjustments feeder model.

The inputs to the model are entered on the 'Data' worksheet. The inputs cover customer numbers, revenue collected and adjustments. The data includes results for six customer types and five years from 2015 to 2020.

WS13 data has been assured by our independent financial assurer Deloitte. The assurance statements from Deloitte is provided as part of the PR14 reconciliation submission.

We have submitted our populated WRFIM models with associated explanation.

The submission has been calculated using the model that was provided by Ofwat in line with the PR14 reconciliation rulebook.

Sources of inputs

2015/2016, 2016/2017 and 2017/2018: The total revenue governed by wholesale price control values have been taken from our published Annual Performance Report table 2I.

2018/2019 and 2019/2020: The forecast wholesale revenue recovered from households and non-households has been included in line with the anticipated revenues allowances for these years. Our tariffs for 2018/2019 have been set to recover the revenue allowance and we have used 3.12% November RPI forecast for 2019/2020, this also includes the wholesale revenue element of the WRFIM adjustment from 2017/2018. We have used the forecast values for grants and contributions which are included within PR19 table App28.

These values are shown within Block E of table WS13.

Adjustments to sources of inputs for modelling purposes.

Due to inconsistencies between the categories of revenue and capital contributions within the Annual Performance Report table 2I and PR19 tables (WS13), which we are asked to report by Ofwat, and those which were included within our wholesale revenue price controls at the Final Determination. This means that we must adjust the input information before it is modelled within the WRFIM calculation.

The table below shows the adjustments that we have made for table WS13, this is to remove s45 contributions that were not included within our price control in PR14:

Line description		Item reference	Units	DPs	Price base	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
E	Revenue recovered										
15	Water: Unmeasured ~ household	CR581	£m	3	Outturn (nominal)		182.258	182.767	179.869	181.787	173.827
16	Water: Unmeasured ~ non-household	CR583	£m	3	Outturn (nominal)		1.070	1.131	1.074	1.002	0.991
17	Water: Measured ~ household	CR582	£m	3	Outturn (nominal)		116.394	124.261	131.598	141.686	159.634
18	Water: Measured ~ non-household	CR584	£m	3	Outturn (nominal)		99.835	100.613	101.853	105.700	113.381
19	Water: Third party revenue ~ household	W9008HH	£m	3	Outturn (nominal)		-	-	-	-	-
20	Water: Third party revenue ~ non-household	W9008NHH	£m	3	Outturn (nominal)		-	-	-	-	-
21	Water: Revenue collected from household and non-household	BR589	£m	3	Outturn (nominal)		399.557	408.772	414.395	430.176	447.834
22	Water: Grants and contributions	BC11274	£m	3	Outturn (nominal)		14.342	14.416	15.639	9.898	7.128
23	Water: Revenue recovered	W9014	£m	3	Outturn (nominal)		413.899	423.188	430.034	440.074	454.962
	Less: capital contributions for S45						(6.997)	(7.283)	(7.566)	(6.862)	(6.453)
E	Revenue recovered - adjusted										
15	Water: Unmeasured ~ household	CR581	£m	3	Outturn (nominal)		182.258	182.767	179.869	181.787	173.827
16	Water: Unmeasured ~ non-household	CR583	£m	3	Outturn (nominal)		1.070	1.131	1.074	1.002	0.991
17	Water: Measured ~ household	CR582	£m	3	Outturn (nominal)		116.394	124.261	131.598	141.686	159.634
18	Water: Measured ~ non-household	CR584	£m	3	Outturn (nominal)		99.835	100.613	101.853	105.700	113.381
19	Water: Third party revenue ~ household	W9008HH	£m	3	Outturn (nominal)		-	-	-	-	-
20	Water: Third party revenue ~ non-household	W9008NHH	£m	3	Outturn (nominal)		-	-	-	-	-
21	Water: Revenue collected from household and non-household	BR589	£m	3	Outturn (nominal)		399.557	408.772	414.395	430.176	447.834
22	Water: Grants and contributions	BC11274	£m	3	Outturn (nominal)		7.345	7.133	8.073	3.036	0.675
23	Water: Revenue recovered	W9014	£m	3	Outturn (nominal)		406.902	415.905	422.468	433.212	448.509

These adjusted inputs have been used within our published WRFIM model, they can be seen on the inputs tab, lines 36 and 37.

WRFIM modelling is calculated using the Ofwat published model, which can be found using the following link:

https://www.ofwat.gov.uk/publication/wrifm-pr14-reconciliation-spreadsheet-2/

Our reported performance for 2015/2016, 2016/2017 and 2017/2018 have been included within our commentary for table 2I within our published Annual Performance Report.

Water		2015/2016	2016/2017	2017/2018
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	6.220	4.204	2.988
% 2dp	% (under) / over recovered versus adjusted allowed revenue	1.55%	1.02%	0.71%

Waste		2015/2016	2016/2017	2017/2018
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	1.182	1.971	(4.584)
% 2dp	% (under) / over recovered versus adjusted allowed revenue	0.24%	0.39%	(0.88%)

The modelling shows the following anticipated performance for 2018/2019 and 2019/2020 .

Water		2018/2019	2019/2020
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	(8.750)	(12.402)
% 2dp	% (under) / over recovered versus adjusted allowed revenue	(1.98%)	(2.69%)

Waste		2018/2019	2019/2020
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	7.175	(2.112)

% 2dp	% (under) / over recovered versus adjusted allowed revenue	1.32%	(0.37%)

The underperformance within the Water WFRIM for 2018/2019 and 2019/2020 calculations is due to the anticipated reduction in capital grants and contributions, the model indicates that there should be a £21.5m reward that should be included within the PR19 table WS13.

PR19 adjustment for WFRIM

As stated above the modelling output from the WRFIM model shows an anticipated reward of £21.5m for wholesale water and a penalty of £5.6m for wastewater. This is based on our current forecast for 2018/2019 and 2019/2020. These rewards and penalties are due to the forecast grants and contributions for 2018/2019 and 2019/2020. They are not due to any anticipated under or over recovery on wholesale revenue from household and non-household revenue, which we have forecast to be in line with allowed wholesale revenues.

As changes in grants and contributions are offset by changes within capital expenditure, we have amended the reward and penalty values to zero in WS13. When the model is updated with actual values for 2018/2019, we will assess any impact due to actual wholesale revenue from households and non-household's values and adjust this to only reflect this element.

Therefore, the values of the adjustments for PR19 shown within Block G of table WS13 only relate to the legacy correction from PR09 RCM and are shown as (£8.4m) for water and (£14.3m) for wastewater.

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

This table contains the water service inputs used for populating the totex menu model and the total outperformance / (underperformance) adjustments arising as calculated by the totex menu model. The totex menu model calculates in 2012/2013 prices and the adjustments are converted to 2017/2018 prices in the revenue adjustments feeder model and the RCV adjustments feeder model.

The submission has been calculated using the model that was provided by Ofwat in line with the PR14 reconciliation rulebook.

Sources of inputs

- 2014/2015, 2015/2016, 2016/2017 and 2017/2018: The actual totex and adjustments to totex values have been taken from our published Annual Performance Report table 4B.
- 2018/2019 and 2019/2020: The actual totex forecast for these two years have been sourced from PR19 tables WS1(a) and WWS1(a), these are inclusive of the atypical expenditure in Block D.
- The adjustments to totex are all contained within the total of table WS1(a) and WWS1(a).

Adjustments to sources of inputs for modelling purposes

The actual totex numbers that were reported within table 4B of the Annual Performance Report for 2015/2016 and 2016/2017 included expenditure that was incurred in relation to the major floods that our region suffered on the 26 December 2016, however we were unable to report the insurance payment that we received in 2015/2016 and 2016/2017 within the totex tables.

This insurance payment was paid in two instalments, £10m in 2015/2016and £46m in 2016/2017, we have included these two payments within the disallowable line within the sewerage inputs for 2015/2016 and 2016/2017.

Line description		Item reference	Units	DPs	Price base	2014-15	2015-16	2016-17
14	Sewerage: Disallowables	WWS15014	£m	3	Outturn (nominal)		10.000	46.000

Totex modelling is calculated using the Ofwat published model, which can be found using the following link:

'Totex-Menu-2016-05-17-change-log-removed'.

The forecast outperformance that we have calculated from the model is shown below:

PR19 adjustment for Totex**:** The underperformance in wholesale water results in the following PR19 adjustment:

Totex menu adjustments					
Water: revenue adjustment from totex menu model	WS15024	£m	3	2012-13 FYA (RPI)	3.338
Water: RCV adjustment from totex menu model	WS15025	£m	3	2012-13 FYA (RPI)	32.771
Water: Totex menu revenue adjustment at 2017-18 FYA CPIH deflated price base	WS15026	£m	3	2017-18 FYA (CPIH deflated)	3.822
Water: Totex menu RCV adjustment at 2017-18 FYA CPIH deflated price base	WS15027	£m	3	2017-18 FYA (CPIH deflated)	37.519

WS17 - PR14 water trading incentive reconciliation

Our focus in water resources at PR19 has been on reducing leakage to secure our supply demand balance into the future. As a result, we do not have any new appointee to appointee trades to report, and hence a “nil return” for Table WS17 which contains the inputs used to populate the water trading incentive reconciliation model.

This table contains the water service inputs used for populating the water trading incentive reconciliation model and the incentive payments arising as calculated by the water trading incentive reconciliation model. The water trading incentive reconciliation model calculates in 2012/2013 prices and is converted to 2017/2018 prices in the revenue adjustments feeder model.

WS17 is a retrospective view of any new trades that we have put in place during AMP6. During the period, Yorkshire Water did not put any new trades in place and our resources position and forecast does not require any new WR trades. No neighbouring companies are requesting new trades and therefore, there is strong WR justification for not planning any new trades at this stage.

WS18 - Explaining the 2019 Final Determination for the water service

The table provides specific information on what the PR19 final determination will deliver for water customers.

WS18 table data has been assured by our external assurer Jacobs.

Block A – Customer service

Line 1 – Residential customers metered – units: %

Data provided for 2015/2016 and 2016/2017 only. Remainder of data for Line 1 populated by a calculation from data from Lines 1, 2 and 4 of table WS3.

We sourced data on customer numbers from the relevant Annual Performance Report table 2F. The calculation is the numbers of measured properties billed for water divided by the total of measured and unmeasured properties billed for water.

Source data from Annual Performance Report table 2F	2015/16	2016/17
Household metered customers billed (water) – 000s	997.710	1044.264
Total household unmeasured and metered customers billed (water) – 000s	2017.779	2039.147
% of metered to total	49.45%	51.21%

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

Data provided is the measure of the number of customer contacts we receive per 10,000 population relating to the colour, taste or smell of the water we supply. Data aligned to that presented in table App1 and is consistent with the normalised reporting method for Discover Water.

This performance commitment relates to the quality of the water we supply to our customers, measuring the

- This data is reported by calendar year.
- Data on actual performance matches that published by Discover Water.
- Data on forecast performance aligns with data we have provided for our bespoke PR19 performance commitment in Line 26 of table App1.

Our customer research has shown us that customers continue to highly value the quality attributes of the drinking water we provide. We have been improving our performance on this important measure across AMP6 and plan to make further progress in this area in ahead of AMP7 to reach a new target of receiving no more than 11.3 contacts per 10,000 population served. This is a significant improvement when compared with the 14.2 contacts per 10,000 population served, which we experienced in 2017/2018.

Drinking water quality customer contacts (actuals)	2015 (CY)	2016 (CY)	2017 (CY)
Contacts for taste and odour	2285	2,152	1,994
Contacts for discolouration	7345	7,002	5476

Total contacts	9630	9154	7470
Population	4,694,225	4,979,631	5,247,169
Measure	21	18	14

Block B - Resilience

Line 3 - Number of catchment management schemes

We have populated Line 3 with two broad groups of schemes that meet the Ofwat definition.

The first group are land based management schemes greater than 5 hectares (ha) each and the second group are aquatic-based schemes where activity restores, protects, alters or mimics natural processes that influence at a Water Framework Directive water body scale and above.

The land-based schemes prime drivers are drinking water protected area schemes (nitrate, colour, and pesticides), natural flood management, conservation and biodiversity schemes (international and national conservation designations of Special Protection Areas, Special Areas of Conservation, Sites of Special Scientific Interest, wider biodiversity protection and enhancement schemes, natural capital, tackling invasive species) and management tourism, recreation and historic and cultural heritage schemes).

The aquatic schemes prime drivers are water resource plan sustainability schemes, Heavily Modified Water Body Schemes to achieve Water Framework Directive Good Ecological Potential status for our reservoirs and schemes to achieve Water Framework Directive Good Ecological Status. Solutions include fish passes, amendments to flows for brown trout recruitment, river morphological enhancements and restoration and managing sediments.

By their nature catchment schemes are mid to long term solutions to give sufficient time for natural processes to recover and develop and the ability to work in seasonal annual windows but also because the majority are delivered in partnership. Partnerships take an investment of time to form the relationships and forge shared planning and timescales. For this reason, most catchments schemes are at least three years and so count in each active year within table WS18 line 3. A small number of the schemes continue to operate from AMP6 into AMP7.

Typically, catchments schemes deliver multiple benefits. The types of schemes described above list the prime driver of activity and not the wider benefits which we can express in natural capital terms.

The scale of schemes varies in area managed and cost. Most of the schemes we have included in populating Line 3 for AMP7 are WINEP3 schemes where the allocation of and Environment Agency WINEP code describes a discrete scheme. A similar approach was taken for AMP6 based on NEP5. Further catchment schemes from the AMP6 and AMP7 base plans have been included and schemes identified based upon on their internal management and considered as one discrete scheme if they are under one regional plan and/or separate capital schemes.

- The data is based upon the count of schemes that have run, or are yet to run in AMP6, and the count AMP7 schemes – schemes that have been agreed to be included in the PR19 business plan.
- If a scheme runs over two or more years, it has been counted in every year that activity is undertaken under that scheme.
- The cell Q10 that totals the contents of Line 3 therefore does not represent the count of our discrete catchment management schemes, it is more a total number of scheme years.

For AMP7 we have a more ambitious and extensive catchment management programme covering wider environmental parameters over a greater geographical area.

Block C - Affordability

Line 4 - Number of people receiving help paying their water bill

Data provided is the total number of residential customers we have helped and plan to help through financial support with a social tariff or WaterSure scheme. Across the AMP7 period we plan to provide help to around 50,000 customers each year.

To populate this line, we have factored the number of customers receiving help by the average split of customers who receive water and sewerage services. 96% of our total residential customers receive water services and 96% receive sewerage services. This approach assumes the current and future customers who receive such support via our schemes are representative in terms of services billed of our total residential customer base, and that this ratio is broadly maintained. We have validated that to date this ratio has been consistent in past years.

We forecast by the first year of AMP7 we will be assisting around 90% more of our customers to pay their water bill than we do today (around 23,000 more customers helped).

This will be achieved by a significant increase in funding to our basket of schemes that help customers. We will also improve our promotion and targeting of the schemes to those who most require our support.

We have confirmed we have customer support for the greater expenditure planned to provide financial respite to customers who may struggle to pay their water bills. We presented to our customer challenge group (the Yorkshire Forum for Water Customers) with a detailed breakdown of our proposed schemes and the increased value of support provided for the remainder of AMP6 and all AMP7. For example, we plan to provide support under our WaterSupport social tariff scheme to an additional 12,000 customers in AMP7.

Over the 2020-2025 period we will provide support of around £60m in value to help customers pay their water and wastewater bills. Approximately £5m of this will be funded by Yorkshire Water and not offset against customer revenues.

Block D - Markets

Line 5 - Number of direct procurement water service schemes

Following the detailed assessment of candidate schemes against the criteria for direct procurement for customers (DPC) solutions, Yorkshire Water do not plan to have any DPC schemes in the PR19 plan. The line is therefore populated with a zero entry for the period.

We support the principle and methodology of DPC. Despite taking the broadest possible interpretation of the PR19 methodology, we have concluded that at the moment we do not have qualifying schemes, however we have developed a robust assessment methodology and intend to use this to search for future qualifying opportunities.

Further details of our assessment of schemes for DPC are provided in this commentary for the data table App21, and in chapter 11 of the PR19 plan document.

Line 6 - The volume of water traded

The data provided in Ml/d is the aggregate volume of our sizeable raw water import and our small treated water export which have traded for each year.

For our forecast we have taken a 6-year historic average volume traded from 2012/2013 to 2017/2018 at 52.16 Ml/d and rolled this forward. We do not currently envisage any of our existing water trades ceasing during the reported period, nor new material water trades commencing during the reported period.

Our historic volumes exclude water volumes provided as bulk supplies to licensees providing retail services to the 50Ml market before the full opening of the non-household retail market.

It is important to note that we have not used import/export data from our draft WRMP for this line. The dWRMP presents volumes traded based on dry years, so is not indicative of typical traded volumes over this reporting period.

Block E - Environmental

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

The data provided aligns with data in table App1 Line 4 (when combined with length of rivers improved as a result of WINEP water quality schemes, as detailed in WWS18 line 7).

The length of rivers improved (LRI) method includes an end of AMP target and this is not profiled by each year. It is not possible to provide data for 2015/2016, as each length relies on multiple schemes to achieve the improvement. It is not possible to claim a length as improved until the environment is in receipt of the improvements from all works associated to it. All obligations which deliver AMP6 LRI have March 2020 regulatory dates.

Our method to calculate LRI uses modelled length of river improved to 0.02 mg/l improvement in in-river concentration. This applies the same boundaries to assess improvement from each identified investment, and account where more than one investment contributes to a length of river improved. This is different to the Agency method and is why our figures differ with WINEP3.

The EA calculate from point of mixing to the end of the waterbody. This approach may under measure LRI in some locations and over measure LRI in other locations and may not account for additional lengths improved in the next waterbody. Our approach is to use the agreed models to calculate the predicted improvement in the environment. Our approach is consistent with our PR14 approach.

Line 8 - Greenhouse gas emissions from water operations

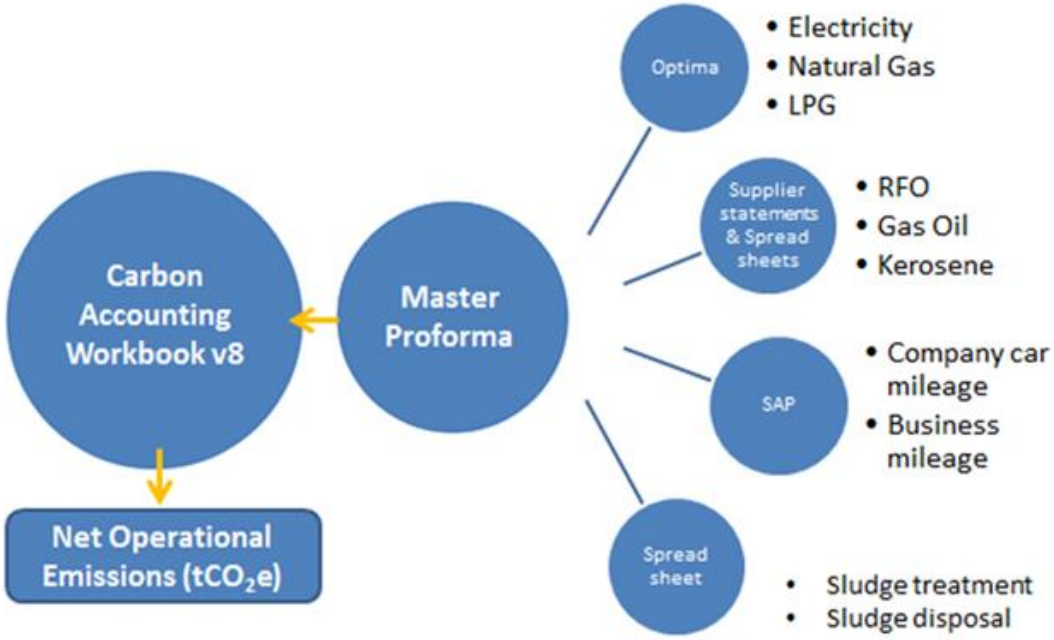
All data provided is and will be tracked in the Carbon Accounting work book (CAW). This is an industry standard tool used for carbon reporting. All data sets are provided by the relevant business area, and use accurate sources such as electricity metered data, fuel reports, etc.

For the data in this line we have made the following greenhouse gas emissions assumptions:

- The split of emissions between water and wastewater will remain the same throughout the forecast period. This is based on the Ofwat energy used split for 2017/2018 (42% water and 58% wastewater).
- The emission factor change will track government predictions.
- We will carry out all AMP7 schemes and the operational variation will be accurate – i.e. if some schemes do not proceed new ones may alter the emissions.

- ‘Other’ emissions that cover everything apart from electricity will remain static over the period covered (approximately 70% of our emissions are from electricity).
- Sequestration and leakage will track the predictions of the DMF and previous reports that have been carried out.
- We have included all NEP schemes.

The process flow diagram below for the data provision into the CAW.



The future GHG emissions targets in this line are not readily comparable to the Operational Carbon PC in table App1 (line 6), which is under a different definition and is an end of AMP7 target.

Block F – Bill impacts

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

We have used the Ofwat bill change model to calculate the bill change across the AMP7 period. We then applied the split of retail tariffs between water and wastewater to determine final % change over the period.

The % split of retail charges across the two services has been consistent for a number of years, and we assume the retail ratio continues to be stable for the whole of AMP7. We have made an allocation of 44% tariffs to the water bill value and 56% to the wastewater bill value (which is used for table WWS18).

As context we are proposing that the average residential customers’ combined bill will be £393 by 2025, which equates to a £14 increase over the 2020-2025 period (or c£2.77 each year).

Block G – Total expenditure (real prices ~ 2017/2018 FYA CPIH deflated)

Line 10 - Water totex including cash items and atypical expenditure

We have provided data for years 2015/2016and 2016/2017 only as required. The remainder of the line is populated automatically from a calculation of data from tables WS1 and App23 and copied from WS1 for the AMP7 period.

We have totex sourced data from table 2B (Totex analysis) line 21 of the Annual Performance Report split by water and wastewater.

The totex outputs are then adjusted to price base 2017/2018 FYA CPIH deflated using App23 (Inflation measures) generating a ratio of CPIH financial year average indices for 2017/2018divided by the relevant year. This data is from App23 Box D line 29 (cell M40 and relevant year cell).

For 2015/2016this results in:

- For 2015/2016 £279.795m being inflated to £291.108m (at 2017/2018 price base)
- For 2016/2017 £328.923m* being inflated to £337.588m (at 2017/2018 price base)

Lines 11 - Total number of residential and business customers who receive a water bill

We have provided data for years 2015/2016 and 2016/2017 only as required. The remainder of the line is populated from data in table WS3.

Data is sourced from information provided for Annual Performance Report table 2F (Household revenues by customer type) and 2G (Non-household water revenues by customer type).

Line 12 - Amount of planned water investment per customer billed

This line is calculated from data from table WS18. No data input requirement from the company.

Box H - Customer engagement

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

This is a single entry but covers engagement with residential customers on PR19 through 2015 to 2018 ahead of submission of the PR19 plan.

We have operated a customer engagement tracker over the period. The tracker collates information about the number of customer engaged through various channels, including dedicated PR19 customer research, customer surveys, and communications to our YorWater online community (c1000 customers). The tracker also covers social media activity with PR19 related content.

We have removed any communications and engagements from the data that relate to business customers and other non-domestic stakeholders (e.g. developer services customers, NGOs, MP's local authorities).

Although our customers who are members of the YorWater online community have been engaged with repeatedly and deeply as part of the development of our PR19 plan, we have recorded them only once in the figure provided.

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

This line is not applicable to Yorkshire Water.

Wr1 - Wholesale water resources (explanatory variables)

Lines 1-7

The future forecast change is a result of the forecast leakage reduction and its impact. By using leakage forecast data we have attributed when and where the reduction in demand will occur.

Line 8

Increase as a result of WTW recycling schemes and final effluent reuse as per water recycling Performance Commitment. For further detail please see the Performance Commitment Appendix for Water Recycling and Data Table App1.

Lines 9-16

There are no planned changes in the number of water resources used.

Line 17

This number reflects the proposed number of water recycling schemes proposed in the 2020-2025 period. For further detail please see the Performance Commitment Appendix for Water Recycling and Data Table App1.

Line 18

The decrease is a result of the decommissioning of three reservoirs.

Line 19

The volume decreases a result of the decommissioning of three reservoirs.

Lines 20, 21, 22

No commentary due to no change.

Line 23

There are no known changes to this measure so a three year rolling average has been used to forecast future pumping head.

Line 24

Severn Trent abstraction to Rivelin WTW.

Line 25

This is typically 53 Ml/d however this varies with reservoir levels so can increase slightly or decrease significantly.

Lines 26 & 27

There are no 3rd party exports from the Yorkshire Water system

Wr2 - Wholesale water resources Opex

This table is a further disaggregation of water resources in table WS1. The table reviews Wholesale Water Resources Opex, and is the same table reported in the Annual Performance Report under table 4V. Whilst for 2017/2018 this table does not reconcile to the Annual Performance Report, it aligns to the total costs for water resources excluding any atypical costs. The basis for the future years allocation has been done on the same proportion of costs in each subjective for each of the treatment categories within water resources. The small increase in costs year on year water resources in AMP6 are inflationary increases. The increases in AMP7 are associated with water resources are marginal.

Historical cost depreciation reviews the capital plan and determines the level of depreciation in total using APP16. The increases seen year on year to the end of AMP7 is reflective of the increase in capital expenditure which would translate into assets.

Wr3 - Wholesale revenue projections for the water resources price control

Sources of inputs

Block A - Wholesale water resources revenue requirement aggregated by building blocks

Line 2 - Pension deficit repair contributions ~ wholesale water resources

The value for the pension deficit repair contribution is included within the operating cost on WS1 and not separately identified in Block C, therefore the pension deficit is included within the PAYG value in line 1 and not separately identified on line 2.

Line 3 – 11

These values are sourced from the Ofwat financial model. The numbers are transferred using the Ofwat Data input tool.

'[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx]BPT Extracts'H121:L129

Line 12 – Total wholesale water resources revenue requirement for 2019/2020

The methodology used was to take the 19-20 price control and to notionally allocate this between the water resources and the water network price control using data from the Annual Performance Report 2018 and the RCV allocation shown on PR19 data table WS12.

Description of building blocks	Units	2019/2020	Allocation driver	WR	WN+
PAYG	£m	188.3	APR 2018	21.2	167.1
Pension Deficit Repair Allowance	£m	4.5	APR 2018	0.5	4.0
Totex menu additional income	£m	2.0	APR 2018	0.2	1.8
Other Income (inc 3rd party income)	£m	(7.0)	APR 2018	(0.8)	(6.2)
Return on Capital	£m	86.8	RCV - MEAV	17.4	69.4
Depreciation	£m	87.6	RCV - MEAV	17.6	70.0
Tax	£m	6.3	Sum of above	1.0	5.3
2010 to 2015 performance - RCM	£m	10.2	Sum of above	1.6	8.6
2010 to 2015 performance - OIA	£m	-	APR 2018	-	-
2010 to 2015 performance - CIS	£m	-	APR 2018	-	-
Wholesale Water	£m	378.7		58.7	320.0

This allocation was used to then split the forecast revenue of £447.834m (as stated in WS13) between the two price controls.

Block B - Wholesale water resources ~ other price control income

Line 13 - Third party revenue ~ wholesale water resources

We have forecast no values for this line.

Block C - Wholesale water resources ~ non-price control income (third party services)

Line 14 – 18

The inputs are from the 2017/2018 Annual Performance Report PR tables 2A and 2I.

The assumption used is that the values will inflate by RPI to 2020 and then will be linked to CPIH within the next price control.

Block D - Wholesale water resources ~ non-price control income (principal services)

Line 19

This has been linked to table WS1 to line 10, to the relevant price control columns.

Block E - Wholesale water resources charges

This Block has been calculated using the following components of data:

- Consumption/rateable value
- Volumetric and standing charges
- Number of properties

Measured household

- Consumption

The consumption forecast is taken directly from the Water Resource Management Plan (WRMP).

- Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

- Number of properties

The actual water properties are input up to 2017/2018. The 2018/2019 and 2019/2020 forecasts come from the tariff model which has been used to set out the tariffs in those years, these are also inputs on data table R9 (Block C). Therefore 2019/2020 is the base year for the PR19 forecast.

The new connections and domestic meter optants forecast are taken directly from the Water Resource Management Plan (WRMP). These are both added onto the prior years measured properties.

The average rateable value and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast to get to a forecast revenue.

Unmeasured household

- Average rateable value

The starting point is the actual average RV up to the most recent year. The actual historic average annual movement is assumed to continue going forwards to forecast future years average RV.

To get to the RV forecast, the anticipated average RV is multiplied by the number of DMO's for water. To work out the opening RV each year, the DMO RV is subtracted from the total RV for the previous year, it is this logic that is rolled forward across future years.

- Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

- Number of properties

As with the household measured water properties, the actuals are input up to 2017/2018. The WRMP DMO's are subtracted off prior years to give the forecast.

Measured non-household

- Consumption

The total measured non-household water consumption comes directly from the WRMP.

This needs to be broken down into the relevant consumption bandings i.e. 0-50ml, 50-250ml, 250+ml. This is done by reviewing the actual splits over recent years, these were consistent each year therefore assumed to continue into PR19. These percentage splits are applied to the WRMP consumption forecast. The annual consumption trend is compared to that of the property forecast to ensure it is in line.

- Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

- Number of properties

The actual non-household water properties are input up to 2017/2018. The new connections assumption is based on a 5-year average, which is in line with the WRMP, this is added onto prior year properties.

The non-household reduction assumption includes demolitions as well as movements between non-household and household properties through reclassification. This is subtracted from the prior year properties. The average rateable value and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast.

Unmeasured non-household

- Average rateable value

For non-household, the actual average RV per property is assumed to continue into PR19, therefore moves in line with forecast property growth.

- Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

- Number of properties

Actuals are input up to 2017/2018. Each year the properties are reduced by subtracting the non-household assumed reductions, this assumption is taken directly from the WRMP.

Revenue percentage breakdown

The percentage breakdown is established by dividing the individual components (measured/unmeasured household & measured/unmeasured non-household) by the total forecast revenue number.

Block F - Grants & contributions

This has been tied to App28, however there are none identified for Water Resources.

Block G - Revenue control total ~ wholesale water resources

This is a calculated Block.

Adjustments to sources of inputs for modelling purposes

There have been no adjustments to the sources of inputs

Wr4 - Cost recovery for water resources

The following commentary is applicable to the Cost recovery for all wholesale price controls; water resources, water networks, waste water networks and bioresources. (See tables Wr4, Wn4, WWn6, Bio5)

The commentaries for Wn4, WWn6 and Bio5 refer the reader back to this commentary.

Run-off rates

Natural rate

The natural run-off rate of 3.80% has been calculated based on an average asset life of 26.3 years.

The asset life of 26.3 years has been calculated based on data contained within our Annual Performance Report for the last 2 years and the average of the asset life (total depreciation / total fixed assets) calculated in the annual accounts across the last eight years (AMP5 and AMP6 to date)

- Run-off rates have been apportioned across the price controls based on the weighted average allocation over the last two years, as extracted from the Annual Performance Report
- Run-off rates are assumed to be consistent for both existing and new assets

Further details can be found in Appendix 13i of our Business Plan – Wholesale cost recovery rates

CPIH transition

No adjustment has been made to the run-off rate in relation to the transition to CPIH.

Other adjustments to natural rate

No other adjustments are assumed to be made to the natural rate.

AMP8

As there is currently no evidence to suggest that run-off rates will alter materially across the next five years, we have assumed that run-off rates in AMP8 will be the same as included in AMP7.

PAYG rates

Natural rate

The natural PAYG rate has been calculated as the total of the Opex and IRE (base maintenance) costs. The costs have been extracted from the data contained within tables WS1 and WWS1.

Pension deficit costs have been included within the Opex lines and not separately disclosed in WS1 and WWS1, therefore pension deficit costs have been included within Opex when determining natural rates.

This methodology is consistent with PR14 and the prior CCD/IRC methodology of previous price controls.

CPIH transition

No adjustment has been made to the PAYG rate in relation to the transition to CPIH.

Other adjustments to natural rate

IRE (base maintenance) expenditure has been smoothed across the five-year period based on the average cost across the five years for each of the price controls.

This is consistent with the old IRC methodology which averaged IRE costs.

This helps to smooth bills which is consistent with our customer's preferences.

A further smoothing of PAYG rates within AMP has been made to ensure a smooth linear increase in customer bills across the period. This adjustment has been made in accordance with our customer's preferences.

The adjustments above only smooth revenues within the 2020-2025 period. We have not speeded up or slowed down revenues into future periods.

Further details can be found in Appendix 13i of our Business Plan – Cost recovery rates

AMP8

As there is currently no evidence to suggest that totex will be materially different next AMP, we have assumed that PAYG rates in AMP8 will be the same as included in AMP7.

Wr5 - Weighted average cost of capital for the water resources control

Please refer to the commentary within App 32 for further information on this table.

Wr6 - Water resources capacity forecasts

This table shows the Water Resource Capacity measure as defined by OFWAT, including losses due to climate change over the planning period. Our capacity increases by 2Ml/d in 2021 and a further 6Ml/d in 2023 as new resilience schemes are implemented (see WR7 commentary).

Wr7 - New water resources capacity ~ forecast cost of options beginning in 2020-25

Table WR7 presents the costs of water resource options which will begin (i.e. costs will be incurred) during 2020-2025 and will increase water resources capacity. We have included two options in this table, which were included in our WRMP. Both options will be implemented in our Grid SWZ to improve resilience. Option R9 Catterick Borehole is an increase to an existing borehole that will increase resource capacity in 2022/2023. The second option, R13 Brayton Borehole is a relocation of an existing borehole that requires a new licence application. Although costs will be incurred in AMP7, the borehole will not be brought into supply until 2025/2026.

Wr8 - Wholesale water resources special cost factors

Nil return – no cost adjustment claims/ special cost factors to submit in Wholesale water resources.

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

Lines 1-3

There was minimal movement year on year and no known schemes significantly impacting this measure.

Line 4

There is one import from Severn Trent.

Line 5

This is typically 53 Ml/d however this varies with reservoir levels so can increase slightly or decrease significantly.

Lines 6 & 7

There are no 3rd party exports from the Yorkshire Water system.

Line 8

There are no raw and pre-treated (non-potable) water transport mains for supplying customers.

Line 9-24

There is a notable reduction in our overall production value which is a result of the water saving initiatives primarily through leakage reduction. The distribution between water treatment works (WTW) classification bands changes are due to the change in status of individual WTWs as a result of the delivery of raw water deterioration schemes.

Lines 25 & 26

No commentary due to no change.

Line 27

The number of SW3 works has reduced as Chellow Heights WTW, Sladen Valley WTW, Oldfield WTW and Langsett WTW classification change due to increased treatment complexity to manage raw water deterioration. For a detailed explanation of these changes, please refer to the DWI Submission Appended.

Lines 33-34

Catterick WTW classification change from GW2 to GW3 due to installation of UV treatment.

Line 28

Increase due to change of status or Langsett WTW from a SW3 to SW4 works

Line 29

The number of SW5 works has increased as Chellow Heights WTW, Sladen Valley WTW and Oldfield WTW will all become SW5 works due to increased treatment complexity to manage raw water deterioration. For a detailed explanation of these changes, please refer to the DWI Submission Appended.

Line 35

Irton WTW change of status from a GW3 to a GW4 following installation GACs.

Line 37

No commentary due to no change.

Line

There are currently 15 treatment works requiring remedial action because of raw water deterioration. All these sites have been programmed to be completed within the next seven years.

Line 39

There are no additional site or population zones receiving water treated with orthophosphate. The increase in population is as a result of forecast population growth.

Line 40

No commentary due to no change.

Lines 41-48

The size band has been calculated based upon the WTW maximum production capacity. This will not change through the course of AMP7.

Lines 49-56

The Distribution Input across bands has changed due to a forecast reduction in demand as a result of water saving initiatives such as leakage reduction. Demand reduction has localised impacts hence the change in the proportion of Distribution Input across different bands. Further information on leakage reduction can be found in the Leakage Performance Commitment Appendix.

Lines 57-60

No third-party imports or exports to third parties.

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

Lines 1 – 4

Minimal change – applied anticipated growth and modelled output figures for relining and renewal, which increases total mains lengths.

Line 9

The total power capacity of booster stations has been averaged (by the existing number of booster stations), then the anticipated increase of one booster station pro-rated to increase the total number of Kilowatts.

Lines 10 & 11

The capacity of service reservoirs and water towers has changed based on our Reservoir Engineer's recommendations and expert opinion along with modelled outputs. Where tanks will be abandoned or removed from service, the capacity has been removed from the total and where new tanks will be constructed or returned to service, the capacity has been increased, leaving a net capacity.

Line 28

The number of lead communication pipes will reduce due to our Lead Programme, relining or replacing lead material with modern materials to provide better water quality to customers.

Line 30

We have used 3rd party analysis from Edge Analytics to forecast population growth and the likely increase in properties. The material used for new Communication pipes will not be lead or galvanised iron, so will fall into the 'Number of other communication pipes' category. Therefore, we expect this number to increase due to population growth and the activity to replace lead communication pipes with modern materials.

Wn3 - Wholesale revenue projections for the water network plus price control

Block A - Wholesale water network revenue requirement aggregated by building blocks

Line 2 - Pension deficit repair contributions ~ wholesale water network

The value for the pension deficit repair contribution is included within the operating cost on WS1 and not separately identified in Block C, therefore the pension deficit is included within the PAYG value in line 1 and not separately identified on line 2.

Lines 3 – 11

These values are sourced from the Ofwat financial model. The numbers are transferred using the Ofwat Data input tool.

'[BPT-FM-Mapping-tool-v7.1 (2) inc.xlsx]BPT Extracts'H137:L145

Line 12 – Total wholesale water network revenue requirement for 2019/2020

The methodology used was to take the 2019/2020 price control and to notionally allocate this between the water resources and the water network price control using data from the Annual Performance Report 2018 and the RCV allocation shown on PR19 data table WS12.

Description of building blocks	Units	2019/2020	Allocation driver	WR	WN+
PAYG	£m	188.3	APR 2018	21.2	167.1
Pension Deficit Repair Allowance	£m	4.5	APR 2018	0.5	4.0
Totex menu additional income	£m	2.0	APR 2018	0.2	1.8
Other Income (inc 3rd party income)	£m	(7.0)	APR 2018	(0.8)	(6.2)
Return on Capital	£m	86.8	RCV - MEAV	17.4	69.4
Depreciation	£m	87.6	RCV - MEAV	17.6	70.0
Tax	£m	6.3	Sum of above	1.0	5.3
2010 to 2015 performance - RCM	£m	10.2	Sum of above	1.6	8.6
2010 to 2015 performance - OIA	£m	-	APR 2018	-	-
2010 to 2015 performance - CIS	£m	-	APR 2018	-	-
Wholesale Water	£m	378.7		58.7	320.0

This allocation was used to then split the forecast revenue of £447.834m (as stated in WS13) between the two price controls.

Block B - Wholesale water network ~ other price control income

Line 13 - Third party revenue ~ wholesale water network

We have forecast no values for this line.

Block C - Wholesale water network ~ non-price control income (third party services)

Lines 14 – 18

The inputs are from the 2017/2018 Annual Performance Report tables 2A and 2I.

The assumption used is that the values will inflate by RPI to 2020 and then will be linked to CPIH within the next price control.

Block D - Wholesale water network ~ non-price control income (principal services)

Line 19

This has been linked to table WS1 to line 10, to the relevant price control columns.

Block E - Wholesale water network charges

This Block has been calculated using the following components of data:

- Consumption/rateable value
- Volumetric and standing charges
- Number of properties

Measured household

1. Consumption

The consumption forecast is taken directly from the Water Resource Management Plan (WRMP).

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

The actual water properties are input up to 2017/2018. The 2018/2019 and 2019/2020 forecasts come from the tariff model which has been used to set out the tariffs in those years, these are also inputs on data table R9 (Block C). Therefore 2019/2020 is the base year for the PR19 forecast.

The new connections and domestic meter optants forecast are taken directly from the Water Resource Management Plan (WRMP). These are both added onto the prior years measured properties.

The average rateable value and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast to get to a forecast revenue.

Unmeasured household

1. Average rateable value

The starting point is the actual average RV up to the most recent year. The actual historic average annual movement is assumed to continue going forwards to forecast future years average RV.

To get to the RV forecast, the anticipated average RV is multiplied by the number of DMO's for water. To work out the opening RV each year, the DMO RV is subtracted from the total RV for the previous year, it is this logic that is rolled forward across future years.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

As with the household measured water properties, the actuals are input up to 2017/2018. The WRMP DMO's are subtracted off prior years to give the forecast.

Measured non-household

1. Consumption

The total measured non-household water consumption comes directly from the WRMP.

This needs to be broken down into the relevant consumption bandings i.e. 0-50ml, 50-250ml, 250+ml. This is done by reviewing the actual splits over recent years, these were consistent each year therefore assumed to continue into PR19. These percentage splits are applied to the WRMP consumption forecast. The annual consumption trend is compared to that of the property forecast to ensure it is in line.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

The actual non-household water properties are input up to 2017/2018. The new connections assumption is based on a 5-year average, which is in line with the WRMP, this is added onto prior year properties.

The non-household reduction assumption includes demolitions as well as movements between non-household and household properties through reclassification. This is subtracted from the prior year properties. The average rateable value and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast.

Unmeasured non-household

1. Average rateable value

For non-household, the actual average RV per property is assumed to continue into PR19, therefore moves in line with forecast property growth.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

Actuals are input up to 2017/2018. Each year the properties are reduced by subtracting the non-household assumed reductions, this assumption is taken directly from the WRMP.

Revenue percentage breakdown

The percentage breakdown is established by dividing the individual components (measured/unmeasured household & measured/unmeasured non-household) by the total forecast revenue number.

Block F - Grants & contributions

Line 25 Water network grants and contributions (price control)

For 2019/2020 – this information has been sourced from table App 28 lines 8-10 – in line with WS13 methodology for the 2015-20 price control period.

For 2020-2025 - this information has been sourced from table App28 lines 7-10.

Line 26 Water network grants and contributions (non-price control)

For 2019/2020 – this information has been sourced from table App 28 lines 7, 11, 12 – in line with WS13 methodology for the 2015-2020 price control period.

For 2020-2025 - this information has been sourced from table App28 lines 11, 12.

The sum of both Lines 25 and 26 has been checked back to line 20 on table WS1, under the relevant price control.

Block G - Revenue control total ~ wholesale water network

This is a calculated Block.

Adjustments to sources of inputs for modelling purposes

There have been no adjustments to the sources of inputs.

Wn4 - Cost recovery for water network plus

Please refer to the commentary within Wr4 for further information on this table.

Wn5 - Weighted average cost of capital for the water network plus control

No differences for 2020-2025 to 2025-2030.

Please refer to the commentary within App 32 for further information on this table.

Wn6 - Wholesale water network plus special cost factors

Nil return – no cost adjustment claims/ special cost factors to submit in wholesale water network plus.

Wastewater service tables

WWS1 - Wholesale wastewater operating and capital expenditure by business unit

Block A

WWS1 operating costs line 1-11 have been prepared on a consistent basis with the Annual Performance Report 2018, with the first three years 2018-2020 including inflation and the 2020-25 period stated at 2018 prices as requested. As requested by Ofwat, Yorkshire Water has completed this table assuming that IFRS16 was implemented under FRS102 accounting standards, which is not expected to be the case but allows Ofwat to more easily compare the industry.

In 2017/2018, a charge for water sludge disposal has been recognised between Price Controls. A charge has been made by sludge treatment to water treatment. Conversely, there has been a charge of the clean water to waste water for the consumption of clean water on sites. These charges have been made in accordance with RAG 2.07 and continue forwards to 2025. Exceptional costs of £8.1m have been incurred during 2017/2018 and have been included in Block D of the table. These are associated with operational mitigation for assets damaged in the 2015 flood for which insurance payments were received in 2016/2017.

The operating cost lines include the cost of pension deficit contributions (consistent with the advice given by Ofwat) as the Yorkshire Water defined benefit scheme is accounted for under Accounting Standard FRS102 which applies the same rules as a defined contribution scheme. This is because the historical pension scheme deficit cannot be allocated between group entities. This results in all cash contributions, including pension deficit contributions, being recognised as operating expenditure. This treatment contrasts with most other WASC's who have adopted IFRS and are required to follow defined benefit pension scheme accounting, therefore excluding cash contributions in excess of the IAS 18 defined benefit pension cost from their operating expenditure.

£59m of waste water enhancement Opex has been included in the next AMP, of which £42.6m relates to increased Opex as a result of capital investment. This mostly relates to the WINEP programme and increases the Opex significantly during 2023-25, as shown in more detail in WWS2.

The increase in forecast operating costs within WWS1 from 2018 to 2019 reflects internal company targets to improve internal sewer flooding performance and pollution, along with a £2m forecast increase in Environment Agency permitting. Significant efficiencies have been identified during 2020-2025, with operating costs reducing year on year. However, these efficiencies are net of two significant cost increases within IT where an additional £63m Opex has been included next AMP (an average increase annually of £12.6m shared between price controls on the same allocation bases as the Annual Performance Report):

- £24.5m over the AMP relates to cyber security costs relating to the EU and subsequently the UK bringing in to UK law on the 9 May 18 a new 'Security of Network and Information Systems' (NIS) legislation that specifically looks at the security of our technology, people and processes that have an impact on Yorkshire Water's ability to supply clean water to our customers. There is also the new GDPR regulation coming in to effect on the 25 May 18 that looks at the security of personal information. As there has been very little investment for cyber security and data discovery over previous AMPs; this leaves Yorkshire Water exposed to the threats of electronic attack, the loss of sensitive data and the loss of critical services. The AMP 7 investments aims to mitigate these risks and address the technical defence Yorkshire Water needs, in order to proactively defend itself from an electronic attack and unauthorised access. The calculations for Opex have been through various challenge sessions to reduce the costs as much as possible, with further information contained in

'Business Case for Expenditure', Management & General: Information Security, AMP7 (2020–2025).

- The £38.5m Opex in cloud-based solutions, rather than previously capitalised purchased or internally developed software, represents a change in strategy. Our ambition for IT is to embed a truly digital capability across the business that will connect us with each other, our customers, our suppliers, our partners and other key stakeholders. This will create greater collaboration opportunities, improve transparency and deliver a platform for participation. In the future, all of our stakeholders will be able to actively participate in how we plan, design and run our business. We aim to do reduce the size of our technology landscape into fewer core systems and enable the use of cloud-based technology to create further efficiency. This means removing many old internally developed systems and replacing them with a smaller number of more modern integrated solutions. These larger solutions will become the foundation of our technology estate and will not change rapidly in the future. We also aim to be more agile in our response to changing business requirements. The pace of business change demands that the time taken to deliver niche solutions and applications must reduce. Therefore, our delivery capability needs to accelerate in certain areas and utilising modern architectural principles and taking advantage of cloud technology, will enable this to happen in a truly integrated way.

Significant and stretching operating cost initiatives have been targeted to offset the cost increases above. Two examples of these challenges (which apply savings across price controls) includes end-to-end Water & Waste Customer Process and maintenance:

- £11.7m Opex reductions are within the end-to-end Water & Waste Customer Process: The key initiatives include introducing lean initiatives to identify and eradicate inefficient processes, and a digital transformation to reduce human and manual intervention. The consultant's review found the customer journey convoluted with multiple touch points, drop offs and extended resolution times. Digital tools were not being fully exploited to interact with and track customers. The opportunities to revolutionise customer service by the end of AMP7 included the following strategies:
    - Make Yorkshire Water a customer-centric organisation by fitting into the world of the customer, rather than making the customer adhere to Yorkshire Water's approach
    - Meet Yorkshire Water's 5 Big Goals, particularly those involving the customer, including understanding customer needs and providing a personalised service
    - Manage the customer, not the performance measure
    - Streamline processes to make the organisation leaner
    - Transform the organisation's use of digital tools to interact with customers
    - Increase resilience with a 24/7 Service Delivery Centre
    - Improve the SIM score which deteriorated at the start of 2018, and act as a bridge to better and more efficient upper-quartile performance when C-MEX is introduced

- £13.8m maintenance savings have been identified, following the clearance of all job backlog clearance before 2020. The principle of this project is that by proactively maintaining assets and adding telemetry we can almost eliminate reactive repair (asset outage). This strategy has been rolled out at Hull STW and is due to be expanded this year to 4 further sites. This policy is designed to support 100% asset availability and at the same time drive a long-term

reduction in reactive maintenance spend in exchange for accepted up front planned maintenance costs.

AMP6 Capx

Within AMP6 (2017/2018-2019/2020) the only atypical capital expenditure we are reporting/forecasting is consistent with previous years of Annual Performance Report reporting and relates to the Flood recovery programme.

Block B

The WWS1 and WWS1a tables contain a summary of our expenditure for the Wastewater Network Plus and Bioresources Wholesale Price Controls. The table has been populated based on the outputs of our business planning approach for each asset group based on our performance commitments as well as our growth and quality obligations.

The outputs have been mapped using our Investment Categories to ensure that the expenditure is mapped to the correct line and column for each year. These mappings are consistent with those used in our Annual Performance Report process and in populating the 2017-2020 columns of this table - they have been developed in line with Regulatory Accounting Guidelines.

We have included the transition expenditure set out in table 10 within the appropriate line/columns in 2020/2021.

The numbers populated in both WWS1 and WWS1a are inclusive of Real Price Effects and have been subject efficiency challenge as set out in the Cost Efficiency section of our plan.

B	Capital Expenditure (excluding Atypical expenditure)	Line Commentary
12	Maintaining the long-term capability of the assets ~ infra	The Line contains our base maintenance expenditure on infrastructure assets separated by Accounting Separation Category. It does not include investment associated with non-infra base investment (line 13) or enhancement categories (lines 14-16). This Line does not vary between WWS1 and WWS1a.
13	Maintaining the long-term capability of the assets ~ non-infra	The Line contains our base maintenance expenditure on non-infrastructure assets separated by Accounting Separation Category. It does not include investment associated with infra base investment (line 12) or enhancement categories (lines 14-16). This Line varies between WWS1 and WWS1a. WWS1 includes the capitalisation of operating leases.
14	Other capital expenditure ~ infra	Lines 14-16 contain our enhancement expenditure which is aligned with WWS2/2a tables. They do not include any investment associated with base maintenance (lines 12&13). We have identified £29.5m of Infrastructure network reinforcement for our Wastewater Wholesale Service - this aligns with Line 23 of App28. This investment has been excluded from lines 14 & 15. Please see the App 28 table commentary for a description of these costs.
15	Other capital expenditure ~ non-infra	
16	Infrastructure network reinforcement	

		These Lines do not vary between WWS1 and WWS1a.
18	Third party services	We have not identified any expenditure that meets the definition of third party capital expenditure in AMP7.
20	Grants and contributions	We have identified £56.897m of Grants and Contributions for our Wastewater Wholesale service - this aligns with line 29 of App 28. Please see the App 28 table commentary for a description of these costs. This Line does not vary between WWS1 and WWS1a.

Block D

We have not identified any atypical expenditure in AMP7 as all known expenditure is included in our plan.

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

This table is a restatement of WS1 and has been completed on the basis that IFRS16 has not been implemented. Given that Yorkshire Water prepares its' accounts under FRS102, this table is the more accurately reflect of forecast. Given the limited amount of current and forecast leasing within Yorkshire Water the variance between WS1 and WS1a is not material. Leases mostly relate to managers vehicles and some office buildings.

See WS1 commentary for more information.

WWS2 - Wholesale wastewater capital and operating expenditure by purpose

AMP7 Block A

The WWS2 and WWS2a tables contain a summary of our Enhancement Expenditure for the Wastewater Network Plus and Bioresources Wholesale Price Controls. The table has been populated based on the outputs of our business planning approach for each Enhancement Driver.

The outputs have been mapped using our Investment Categories to ensure that the expenditure is mapped to the correct line and column for each year. With the exception of newly identified drivers these mappings are consistent with those used in our Annual Performance Report process and in populating the 2017 to 2020 columns of this table. All enhancement expenditure has been identified in line with Regulatory Accounting Guidelines.

We have included the transition expenditure set out in table 10 within the appropriate line/columns in 2020/2021.

The numbers populated in both WWS2 and WWS2a are inclusive of Real Price Effects and have been subject to efficiency challenge as set out in the Cost Efficiency section of our plan.

A	Enhancement expenditure by purpose ~ capital	Line Commentary
1	First time sewerage (s101A)	We propose to invest £0.968m on first time sewerage during AMP6 as part of the enhancement programme. This level of investment has been reached by assessing the volume and costs recent applications in AMP5 and 6.
2	Sludge enhancement (quality)	We propose £66.011m of investment in Sludge Quality primarily to increase the capacity of Knostrop sewage treatment works to treat the sludge impact of our significant WINEP programme. The line also includes circa £5.7m of enhancement investment to secure MCPD compliance at our CHP sites. The justification and evidence behind these costs are set out in technical appendices for WINEP and Bioresources as well as in our Enhancement Cost Appendix. A large proportion of this spend is included in our cost adjustment claim for Bioresources enhancement.
3	Sludge enhancement (growth)	There is no investment proposed for the definition of this line
4	WINEP / NEP ~ Conservation drivers	There is no investment proposed for the definition of this line
5	WINEP / NEP ~ Eels Regulations (measures at outfalls)	There is no investment proposed for the definition of this line
6	WINEP / NEP ~ Event Duration Monitoring at intermittent discharges	There is no investment proposed for the definition of this line
7	WINEP / NEP ~ Flow monitoring at sewage treatment works	This line contains 2 programmes of work at a total of £19.707m addressing flow monitoring drivers as part of the WINEP programme. This investment addresses the WINEP3 drivers of UMON3 and UMON4. The justification and evidence behind

		these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
8	NEP ~ Monitoring of pass forward flows at CSOs	There is no investment proposed for the definition of this line
9	WINEP / NEP ~ Schemes to increase flow to full treatment	We propose to invest £6.095m in 2 schemes with population drivers in AMP7 (Linton on Ouse and Melton College). The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
10	WINEP / NEP ~ Storage schemes at STWs to increase storm tank capacity	We propose to spend £81.731m in AMP7 on addressing and monitoring storm tank capacity as part of UIMP5 (6 sites) and UIMP6 drivers set out in the WINEP programme. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
11	WINEP / NEP ~ Storage schemes in the network to reduce spill frequency at CSOs, etc	We propose to spend £60.901m in AMP7 to improve the quality of 6 river reaches by reducing CSO spills. This is primarily by implementing storage schemes in the network but also includes pumping and diversion of outfalls to address this driver. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. There is expenditure in WWS2a in Yr4 but no Yr4 output in WWS4 because the diversion and pumping solutions have no additional storage.
12	WINEP / NEP ~ Chemicals removal schemes	We propose to invest 12.24m in a WINEP scheme to address heavy metals within our trade effluent. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
13	WINEP / NEP ~ Chemicals monitoring / investigations / options appraisals	We propose investment of £2.256m to address a variety of chemical investigation drivers set out in the WINEP3 (CIP1,CIP2,CIP3). The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. This line has a cost of £1.616m under Sewage Treatment in 2020/2021for the transition expenditure associated with the Chemicals Investigations obligations
14	NEP ~ National phosphorus removal technology investigations	There is no investment proposed for the definition of this line
15	WINEP / NEP ~ Groundwater schemes	We have identified £0.264m to address a CIP3 driver for groundwater as part of WINEP3. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. It should be noted that in WWS2a there is expenditure in Year 1 relating to investigations, but this has no corresponding output in WWn4. This causes a validation error in the WWS2a table.

16	WINEP / NEP ~ Investigations	We propose 8.018m to complete investigations into WINEP3 drivers for WFD/UPM as well as U-INV2. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. This line has a cost of £3.789m under Sewerage Investigations in 2020/2021for the transition expenditure associated with the WFD Investigations and modelling (UPM)
17	WINEP / NEP ~ Nutrients (N removal)	There is no investment proposed for the definition of this line
18	WINEP / NEP ~ Nutrients (P removal at activated sludge STWs)	We propose a significant investment of £347.385m at 40 activated sludge sewage treatment sites to address Phosphorus drivers associated with the WFD and UWWTD identified in WINEP3. This investment also has an impact on our base maintenance in sewage treatment works, bringing forward £158m of capital maintenance into the AMP (for all P schemes). This investment includes circa £2.141m of transitional expenditure set out in WWS10. This is to complete sampling activity to enable efficient design and programme delivery and the early start of an ASP scheme with an early AMP7 compliance date. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. It should be noted that in WWS2a there is expenditure in Year 1 relating to a sampling programme to enable this work, but this has no corresponding output in WWn4. This causes a validation error in the WWS2a table.
19	WINEP / NEP ~ Nutrients (P removal at filter bed STWs)	We propose a significant investment of £128.894m at 37 filter bed sewage treatment sites to address phosphorus drivers associated with the WFD and UWWTD identified in WINEP3. This investment also has an impact on our base maintenance in sewage treatment works, bringing forward £158 capital maintenance into the AMP (for all P schemes). This investment includes circa 1.968m of transitional expenditure set out in WWS10. This is to complete sampling activity to enable efficient design and programme delivery and the early start of 3 schemes with early AMP7 compliance dates. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. It should be noted that in WWS2a there is expenditure in Year 1 relating to a sampling programme to enable this work, but this has no corresponding output in WWn4. This causes a validation error in the WWS2a table.
20	WINEP / NEP ~ Reduction of sanitary parameters	We are proposing £3.951m of investment at two sites to enable a reduction of sanitary parameters. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.

		Note: This line shows a validation error in WWS2a because the cumulative spend doesn't match the outputs included in WWn4 Block I Line 23. This is because we have also included the PE associated with No Deterioration in Sanitary Determinands (in new line 42 of WWS2 and 2a) in the WWn4 line.
21	WINEP / NEP ~ UV disinfection (or similar)	There is no investment proposed for the definition of this line
22	NEP ~ Discharge relocation	We have identified £5.685m of investment at 3 sites to relocate their discharges to other WWTWs in order to meet WINEP3 Phosphorus drivers. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
23	NEP ~ Flow 1 schemes	There is no investment proposed for the definition of this line
24	Odour	There is no investment proposed for the definition of this line
25	New development and growth	We propose £38.716 of investment in the sewer network assets to address growth. This investment includes investment in sewer requisitions as well as specific investment in Network reinforcement to address specific network growth. An element of this is included in our cost adjustment claim for wastewater growth (circa 17m) associated with growth at York and Catterick. We have considered that schemes in this programme expenditure would contribute to £29.5m of infrastructure network reinforcement set out in WWS1 and App 28. Costs associated with this expenditure are described in the Growth Block of our Enhancement Cost Appendix and our cost adjustment claim for Wastewater Growth.
26	Growth at sewage treatment works (excluding sludge treatment)	We propose £67.335m of investment to address growth at STW. This includes the WWTW element of our cost adjustment claim of atypically large investment at 4 new sites (York, Catterick, Parlington and Green Hammerton) as well as incremental growth investment at other existing works. Costs associated with this expenditure are described in the Growth Block of our Enhancement Cost Appendix and our cost adjustment claim for Wastewater Growth.
27	Resilience	We have identified £28.729m of specific resilience enhancement investment associated with the unique hydraulic flood inundation risk at Hull. This investment is to drive significant partnership working and blue-green infrastructure and is described in detail in the Hull enhancement appendix.
28	SEMD	We have identified £0.285m of Wastewater investment in SEMD compliance for AMP7.
29	Non-SEMD related security enhancement	There is no investment proposed for the definition of this line
30	Reduce flooding risk for properties	We have identified £41.440m of enhancement expenditure to address hydraulic flooding issues that are predicted to materialise in AMP7. Costs associated with this expenditure are described in the Network Escapes Block of our Enhancement Cost Appendix and our cost adjustment claim for Internal sewer flooding for cellars.

31	Transferred private sewers and pumping stations	There is no investment proposed for the definition of this line
32	Bathing water ELoS	There is no investment proposed for the definition of this line
33	Pollution ELoS	There is no investment proposed for the definition of this line
34	Connections (if applicable)	There is no investment proposed for the definition of this line
35	Emergency Overflow Appeals	There is no investment proposed for the definition of this line
36	Exclusions	There is no investment proposed for the definition of this line
37	Pollution - UQ	We have identified enhancement investment of £23.399m to enable us to drive a step change in performance to achieve upper quartile status in Pollution incidents in AMP7. We have included all of the spend associated with improving our Pollution performance as enhancement. Our spend reflects the diminishing return that can be expected in reducing the number of incidents, as the number becomes lower and lower. We believe we have set ourselves an extremely challenging target, which we revised downwards at a late stage in our planning following the Annual Performance Report 2018 industry data share. This also reflects a response to our quality regulator's (the Environment Agency) expectation of a long-term drive towards zero pollution incidents. Costs associated with this expenditure are described in the Network Escapes Block of our Enhancement Cost Appendix.
38	Internal Flooding - UQ	We have identified enhancement investment of £10.326m to enable us to drive a step change in performance to achieve upper quartile status in Internal Flooding Events by the end of year 1 of AMP7. There is a continual improvement in this service throughout the AMP to ensure that we continue to remain upper quartile. The costs associated with this further improvement level of performance are included in our plan as base maintenance but have not been added as enhancement and are populated in our programme in Years 2-5 of lines 12 & 13 in WWS1, NB, we have included the Opex being spent in Year 4 and year 5 of AMP6 in the 2018/19 2019/20, as this step change is already underway. Costs associated with this expenditure are described in the Network Escapes Block of our Enhancement Cost Appendix and our cost adjustment claim for internal sewer flooding in cellars.
39	Infrastructure network reinforcement	There is no investment proposed for the definition of this line. Our infrastructure network reinforcement is included in our Line 29.
40	Accounting Adjustment - IAS16	There is no investment proposed for the definition of this line
41	WINEP / NEP ~ No Deterioration in Sanitary Parameters	We have created a new line for AMP7 to categorise the 'No deterioration' driver set out in WINEP3. Definition:

		Definition: Capital / operating expenditure on the primary cost driver at quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to ensure no deterioration in the water course of sanitary parameters namely Biological Oxygen Demand and Ammonia. We propose £4.590m of investment at 3 sites to ensure no deterioration in sanitary parameters. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix. Note: The Population equivalent associated with this spend is included in WWn4 Block I Line 23 hence causing the validation error associated with Line 20 of this table.
42	UWWTD Investigations	We have identified a new line for AMP7 to categorise the required UWWTD investigations set out in the WINEP3 on Frequently Spilling Storm Overflows. This is £35.899m Definition: *Capital / operating expenditure on the primary cost driver at quality enhancement schemes listed in the NEP (or WINEP) for AMP5, AMP6 or AMP7 where the objective of the primary cost driver is to meet the requirements of the UWWTD for storm water outfalls, which has inferences on frequency of operation as determined by EU infraction proceedings, and as further clarified in Environment Agency guidance on the subject*. We have a significant programme of investigation, sampling and modelling to complete and propose £35.899m of investment to complete this. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.

AMP7 Block B

B	Enhancement expenditure by purpose ~ operating	Line Commentary
48	First time sewerage (s101A)	There is no proposed enhancement Opex associated with this line
49	Sludge enhancement (quality)	We have identified a small amount of enhancement Opex in Sludge Quality associated with our MCPD compliance. We have not identified any additional Enhancement Opex associated with our WINEP growth schemes - the Opex associated with Bioresources has been included solely in WWS1.
50	Sludge enhancement (growth)	There is no proposed enhancement Opex associated with this line

51	WINEP / NEP ~ Conservation drivers	There is no proposed enhancement Opex associated with this line
52	WINEP / NEP ~ Eels Regulations (measures at outfalls)	There is no proposed enhancement Opex associated with this line
53	WINEP / NEP ~ Event Duration Monitoring at intermittent discharges	There is no proposed enhancement Opex associated with this line
54	WINEP / NEP ~ Flow monitoring at sewage treatment works	There is no proposed enhancement Opex associated with this line
55	NEP ~ Monitoring of pass forward flows at CSOs	There is no proposed enhancement Opex associated with this line
56	WINEP / NEP ~ Schemes to increase flow to full treatment	There is no proposed enhancement Opex associated with this line
57	WINEP / NEP ~ Storage schemes at STWs to increase storm tank capacity	We have identified £0.182m of enhancement operating expenditure in AMP7 associated with our capital programme of addressing and monitoring storm tank capacity as part of UIMP5 (6 sites) and UIMP6 drivers set out in the WINEP programme. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
58	WINEP / NEP ~ Storage schemes in the network to reduce spill frequency at CSOs, etc	We have identified £0.103m of enhancement operating expenditure in AMP7 associated with our capital programme to improve the quality of 6 river reaches by reducing CSO spills. This is primarily by implementing storage schemes in the network but also includes pumping and diversion of outfalls to address this driver. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
59	WINEP / NEP ~ Chemicals removal schemes	There is no proposed enhancement Opex associated with this line
60	WINEP / NEP ~ Chemicals monitoring / investigations / options appraisals	There is no proposed enhancement Opex associated with this line
61	NEP ~ National phosphorus removal technology investigations	There is no proposed enhancement Opex associated with this line
62	WINEP / NEP ~ Groundwater schemes	There is no proposed enhancement Opex associated with this line
63	WINEP / NEP ~ Investigations	There is no proposed enhancement Opex associated with this line
64	WINEP / NEP ~ Nutrients (N removal)	There is no proposed enhancement Opex associated with this line

65	WINEP / NEP ~ Nutrients (P removal at activated sludge STWs)	We have identified and additional enhancement Opex AMP7 impact of £12.060m associated with the schemes at activated sludge sewage treatment sites to address Phosphorus drivers associated with the WFD and UWWTD identified in WINEP3. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
66	WINEP / NEP ~ Nutrients (P removal at filter bed STWs)	We have identified and additional enhancement Opex AMP7 impact of £22.926m associated with the schemes at filter bed sewage treatment sites to address phosphorus drivers associated with the WFD and UWWTD identified in WINEP3. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
67	WINEP / NEP ~ Reduction of sanitary parameters	We have identified and additional enhancement Opex AMP7 impact of £0.830m following schemes at two sites to enable a reduction of sanitary parameters. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
68	WINEP / NEP ~ UV disinfection (or similar)	There is no proposed enhancement Opex associated with this line
69	NEP ~ Discharge relocation	We have identified £0.049m of additional enhancement Opex at following the relocation of 3 site discharges to other WWTWs in order to meet WINEP3 Phosphorus drivers. The justification and evidence behind these costs are set out in our technical appendix for the WINEP and in our Enhancement Cost Appendix.
70	NEP ~ Flow 1 schemes	There is no proposed enhancement Opex associated with this line
71	Odour	There is no proposed enhancement Opex associated with this line
72	New development and growth	There is an additional Opex cost of 0.101m associated with the network elements of growth associated with our new developments at York and Catterick. This has not been included in our cost adjustment claim.
73	Growth at sewage treatment works (excluding sludge treatment)	There is an additional Opex cost of £0.303m associated with the treatment works elements of growth associated with our new developments at York, Parlington, Green Hammerton and Catterick. This has not been included in our cost adjustment claim.
74	Resilience	There is no proposed enhancement Opex associated with this line
75	SEMD	There is no proposed enhancement Opex associated with this line
76	Non-SEMD related security enhancement	There is no proposed enhancement Opex associated with this line
77	Reduce flooding risk for properties	There is no proposed enhancement Opex associated with this line

78	Transferred private sewers and pumping stations	There is no proposed enhancement Opex associated with this line
79	Bathing water ELoS	There is no proposed enhancement Opex associated with this line
80	Pollution ELoS	There is no proposed enhancement Opex associated with this line
81	Connections (if applicable)	There is no proposed enhancement Opex associated with this line
82	Emergency Overflow Appeals	There is no proposed enhancement Opex associated with this line
83	Exclusions	There is no proposed enhancement Opex associated with this line
84	Pollution - UQ	In order to complete our step change to an estimated upper quartile performance in Pollution we have identified £18.161m of Opex expenditure in enhancement. We have included all of the spend associated with improving our Pollution performance as enhancement. Our spend reflects the diminishing return that can be expected in reducing the number of incidents, as the number becomes lower and lower. We believe we have set ourselves an extremely challenging target, which we revised downwards at a late stage in our planning following the Annual Performance Report 2018 industry data share. This also reflects a response to our quality regulator's (the Environment Agency) expectation of a long-term drive towards zero pollution incidents. NB, we have also included £8.280M Opex being spent in Year 4 and year 5 of AMP6 in the 2018/19 2019/20, as this step change is already underway. Costs associated with this expenditure are described in the Network Escapes Block of our Enhancement Cost Appendix.
85	Internal Flooding - UQ	We have identified £4.383m of Opex in AMP7 for internal sewer flooding as enhancement to enable us to drive a step change in performance to achieve upper quartile status in Internal Flooding Events by the end of year 1 of AMP7. There is a continual improvement in this service throughout the AMP to ensure that we continue to remain upper quartile. The costs associated with this further improvement level of performance are included in our plan as base maintenance but have not been added as enhancement and are populated in our programme in Years 2-5 of line 7 of WWS1. NB. we have also included £9.060M Opex being spent in Year 4 and year 5 of AMP6 in the 2018/19 2019/20, as this step change is already underway. Costs associated with this expenditure are described in the Network Escapes Block of our Enhancement Cost Appendix.
86	Infrastructure network reinforcement	There is no proposed enhancement Opex associated with this line
87	Accounting Adjustment - IAS16	There is no proposed enhancement Opex associated with this line

88	WINEP / NEP ~ No Deterioration in Sanitary Parameters	There is no proposed enhancement Opex associated with this line
89	UWWTD Investigations	There is no proposed enhancement Opex associated with this line

See WS2 commentary for more information.

WWS2a - Wholesale wastewater cumulative capital enhancement expenditure by purpose

The value of each line in this table is equal to that in WWS2. The individual schemes are mapped to exactly the same line in both tables. However, as per the guidance, in order to populate the cumulative capex in WWS2a we have included the total expenditure of each scheme in the year of completion only. Lines with multiple schemes may show outputs in multiple years in accordance to their year of completion.

During the PR19 process we identified some improvements to our expenditure data relating to our regulatory outputs. As a result of this we have reported some different expenditure numbers in this table for 2017/2018 than those reported in Annual Performance Report table 4M. The changes only affect the cumulative expenditure, not the in-year.

The first change relates to expenditure on Line 6 WINEP / NEP ~ Event duration monitoring at intermittent discharges. We previously reported no expenditure for 2017/2018 for this line but have since identified that we delivered 174 outputs (seen in table WWS4, line 7) at a cost of £0.905m.

The second change relates to expenditure on Line 17 WINEP / NEP ~ Nutrients (N removal). We previously reported expenditure of £0.308k for 2017/2018 for this line but have since identified that the two projects this expenditure related to, although they did relate to Nitrogen Removal, were investigations that did not produce a physical output. Therefore, to be consistent with output table WWN4, line 22, we have moved this expenditure to line 16 WINEP / NEP ~ Investigations.

See WWS2 and WS2 commentary for more information.

WWS3 - Wholesale wastewater properties and population

2017/2018 actuals are inputs from Annual Performance Report table 4U - Non-financial data - Properties, population and other - Wholesale wastewater

Line 1 - Residential properties connected during the year

This is based on the household water new connections that comes directly from the WRMP. To translate into wastewater new connections an assumed percentage is applied, in this case it's 96.2%.

This percentage is based on the actual new connections over previous years and how wastewater connections have compared to water, this is an average and assumed to continue into PR19.

Line 2 - Business properties connected during the year

As with the water new connections, the wastewater figure is a 5-year average in line with the WRMP time period.

Line 3 – Residential properties billed unmeasured sewage

The actual wastewater properties are input up to 2017/2018. The 2018/2019 and 2019/2020 forecasts come from the internal tariff model which have been used to set out the tariffs in those years, these numbers reconcile to table R9, Block C. Therefore 2019/2020 is the base year for the PR19 forecast.

The forecast sewerage properties are based on 2019/2020 properties, minus the DMO's, which are calculated by applying an assumed wastewater percentage to the WRMP DMO forecast, the percentage assumption is based on historic actual properties.

The annual movements in measured properties is assumed to be customers opting for a meter installation, therefore this is looked at for water only and for total properties. The difference between these two movements is relating to waste water properties, the average water only DMO percentage is 3.58%, therefore the wastewater assumption is 96.42%.

This gives a total sewerage property forecast. The previously forecast water and sewerage properties are taken off this to leave sewerage only properties. The measured/unmeasured split is based on historic actual swings, so for household sewerage the average swing in 1.9%, therefore the split moves by +/-1.9% each year.

This is added to the water and sewerage to give total unmeasured sewerage.

Line 4 – Residential properties billed measured sewage

Similar to line 3 unmeasured sewerage household, actuals are input to 2017/2018 with the 2018/2019 and 2019/2020 forecasts come from the tariff model.

The forecast new connections and DMO's (DMO's explained above) are added to the 2019/2020 forecast. The new connections come from line 1 above.

Line 6 – Business properties billed unmeasured sewage

There are actuals up to 2017/2018, this is the base for the forecast. For unmeasured properties, the unmeasured non-household reduction assumption that comes directly from the WRMP is subtracted from the prior year properties. This is the same figure that is included in the non-household water forecast.

Line 7 – Business properties billed measured sewage

The new connections are a 5-year average in line with the WRMP, this is added to the 2017/2018 base. The measured sewerage reduction assumption is similar to the water reduction assumption i.e. it's based on a historic average looking at the movement between annual properties with new connections stripped out each year, this is subtracted from prior year properties.

Line 9 – Void properties

This information comes from PR19 table App30 and is a combination of waste only and water and wastewater for both household and non-household properties.

Line 10 – Resident population

The growth built into the 2017/2018 Annual Performance Report figure (+0.63%) is assumed to continue into PR19.

Line 11 – Non-resident population

It is forecast that there is a net nil impact to the non-resident population into PR19.

WWS4 - Wholesale wastewater other (explanatory variables)

Lines 1 – 3

This is the data as reported in the Annual Performance Report table 4O. Initially, our energy consumption is expected to improve as our maintenance programme replaces aging inefficient assets. Later in AMP7 we are expecting to use more energy as new processes required to meet stricter WINEP standards are commissioned.

Line 4

This is the population as reported in the Annual Performance Report table 4U. Historically, the population in national parks, Sites of Special Scientific Interest (SSSI) and Areas of Outstanding Natural Beauty (AONB) has been stable. We are not forecasting any deviation from this historic trend, so the number remains the same.

Line 5

This is the area as reported in the Annual Performance Report table 4U. This is the catchment area of our network, historically this has been stable, and we are not expecting any changes to this during AMP7.

Line 6

We currently have 19 environment agency designated beaches, we are not forecasting that any will be de-designated or reinstated.

Line 7

These are the numbers in AMP6 to finish the event duration monitoring programme of the NEP. We will have 100% coverage of Combined Sewer Overflow (CSO) assets by the end of AMP6, therefore no activity is required during AMP7.

Line 9

Forecast number of odour contacts is based on historic averages with the assumption that 10% annual increase is based upon a continuous improvement initiative where we expect to see continuous improvement through service initiatives delivering a year on year 5% improvement both in terms of operational performance and service delivery.

Lines 8, 10 & 12

Forecast number of monitors and volume tanks required to meet stricter WINEP standards. The locations have all been agreed with the environment agency and are detailed within the WINEP appendix

Line 11 & Line 13

This is the new network storage volume to be provided to meet the stricter WINEP standards. The locations have all been agreed with the environment agency and are detailed within the WINEP appendix. These tanks will ensure the Little Don & Pudsey Beck river reaches comply with WFD good ecological status.

Line 14

This is the forecast volume of the network, with growth in volume forecast from newly laid sewers, adoptions of developer assets and line 11.

WWS5 - Other wholesale wastewater expenditure

This table looks at employment costs and FTE numbers for each price control and upstream service. The approach for calculating this has been aligned to the Annual Performance Report, and this was a new table included in the submission for 2017/2018. The approach for PR19 has been similar following on from review of the business plan for the remainder years of this AMP period and incorporating the savings associated with project 1 and project 2 work that has been done in conjunction with PA consulting. The allocation of FTE's has been derived from the detailed work on the savings and an average price per FTE has been used to determine the FTE's.

In comparison to previous cost assessment submissions we will see some year on year variances. This is mainly following on from the enhanced cost allocations which have been done as part of the Annual Performance Report this year (2017/2018). The use of Business Intelligence (BI) tool and a detailed review and challenge of manpower allocations leading to individuals allocating their time to specific price controls as oppose to general and support categories.

Whilst we see a slight increase in employment costs for the remainder of AMP6 this is mainly associated with inflationary increases. We can then see a reduction in the years of AMP7 for some efficiencies in this area through insourcing elements of the Waste Network plus business. The indirect employment costs and FTE's would see a reduction for the same reasons, in addition to this project 2 would further help with reducing costs and FTEs.

Traffic Management costs are increasing in Yorkshire, although has a reduced impact on waste water networks (as opposed to clean water) given the location of the sewer network. 'Lane rental' type schemes have not been included in the PR19 plan, however the expansion across Authorities and their use by Authorities has been included. Currently only one Highway Authority of the 16 controlling the Yorkshire Region is currently operating 100% permit scheme across all roads and streets, with a further 10 operating a limited permitting scheme. We are forecasting the remaining 5 Highways Authorities to be operating permitting schemes during the next AMP, and all 16 moving towards 100% permitting.

Traffic management costs and Local Authority Charges have always existed – 'bagging-off' lights, suspend parking bays, lane closure costs paid directly to the Local Authority and other costs. However, there are additional costs listed below that have a significant impact on average jobs such as the increasing demand for "manned" lights, out of hours working carried out to cause the least disruption to traffic users, and increased turnaround time.

WWS7 - Wholesale wastewater local authority rates

This tables analyses the local authority rates for the wholesale waste water business. This table aligns to the rates line in table WWS1 and table 4E for 2017/2018 Annual Performance Report. Subsequent years for the current AMP have been included using the annual Uniform Business Rates (UBR) multiplier which is outside the control of the business.

The impact of the national revaluation has been included in AMP7 starting from 2021/2022which is when the next revaluation has now been confirmed. Subsequent from 2021/2022 there are no material increases in forecast which have been reflected.

The change is stock is expected to be negligible, as new assets will be replacing existing assets with the liability of historic assets no longer required.

An assumption has been made that the valuation methodology for waste water assessments will not change, which is prepared by the Valuation Office and based on previous experience difficult to influence by the industry.

The cost increases year on year from 2018/2019 Year to 2020/2021 Year inclusive in 'nominal' terms before deflation to PR19 Price Base Year is due to (1) forecasted movements in the annual UBR multiplier which is beyond the control of Yorkshire Water as ratepayer, and (2) in the year's 2018/2019 and 2019/2020 the Transitional Relief/Surcharge government scheme from the 2017 national Revaluation that restricts the downward reduction of the Charge Bills for some properties. The effect for these years has been estimated, but should reduce going forward, to become zero in 2020/2021 year. The increase in cost forecasted from 2021/2022 year is due to the next national Revaluation in 2021 now confirmed by government to take place. The forecast and expectation is that there will be a significant 'step' increase in cost liability after 1st April 2021 due to the revaluation event; this increase being from the rating valuation where the key inputs will be construction cost increases over recent years since the last revaluation. For the financial year's 2022/2023 to 2024/2025 the forecast is increases by annual UBR movement. The cost impact from Changes in Asset Stock are excluded in this Table and are accounted for in the Investment programme. It is forecast that there will be no effect on the 2021/2022 and subsequent year's cost due to the Transitional Relief/Surcharge scheme that the government may or may not introduce.

For the 2021 Revaluation we have taken a 'realistic conservative' approach in our forecast. The scenario is neither 'worst case' or 'best case'. However, the final rates cost payable will be directly affected by government decisions on the UBR, plus any Transitional Relief/Surcharge scheme, which are beyond the company and industry control or influence. One of the fundamental and key inputs to the Waste Water rating assessment is construction cost price movements over the valuation period, which is market evidenced and beyond the control or influence of the company and water industry. The second key input to the valuation is the Decapitalisation rate which is set by government, and whilst we have assumed no change as the realistic scenario any different decision by the government would have a direct impact on the resultant rating assessment and so payment liability.

The key risks are identified below, together with our headline Plan to mitigate.

Key risks

- UBR multiplier for Waste Water (+ also Clean Water) assessment – will be determined by property rental value movements across England & Wales, which is a function of demand for property and wider economic prosperity (or not), and so is not within control or influence of

water industry company's. It is subject to government influence but largely independent determinants at macro-scale like BREXIT.

- Transitional Relief scheme for Waste Water (+ also Clean Water) assessment – (the mechanism used to phase in the increase and decrease effects from assessment changes in the new Rating List, but for 2017 was experienced as biased to permit the majority of increase to be introduced in year 1, yet downward reductions phased over 5 years) will be determined by overall total cost movements across England & Wales from the Revaluation exercise, and so is not within control or influence of water industry company's. It is considered likely that if a Scheme was introduced it would be very similar to that for the 2017 Revaluation, and if so the increases forecast would not be mitigated. It is subject to government decision.
- Valuation basis for Waste Water assessments – Two key determinants: (i) Decapitalisation rate set by government on advice from HMRC Valuation Office Agency after open consultation, but ultimately decided by government, and (ii) construction costs that are determined by market prices of materials and labour, that will be affected by external economic and government policy e.g. BREXIT. Both are beyond the control of water industry company's.

Risk mitigation

We have a dedicated experienced resource of two full-time professionals (RICS & IRRV) in place now in-house to lead our mitigation plan, supported by external specialist consultants. We will mitigate the effect plus impact of the 2021 Revaluation through early engagement and direct involvement (rather than through consultants) with HMRC Valuation Office Agency (VOA) at a national lead level, and active participation in any government sponsored consultations. We had good success through such direct involvement in 2010 and 2017 revaluations. However, the opportunity to mitigate may be found to be limited. The VOA are an independent government body who are not obliged to participate in any engagement and may not take forward company and or industry inputs or proposals made. Furthermore, many of the key factors are either government decided (UBR multiplier + Transitional Relief scheme) or 'market led' (property values + construction costs) that are not capable of being influenced. We currently cooperate and share with other companies and will look to do so on common issues for the 2021 Revaluation.

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

This table looks at third party costs for wholesale waste water and is a disaggregation of line 10 on WWS1. There are no costs to report this year and hence this is a nil return.

WWS10 - Transitional spending in the wholesale wastewater service

We have included a small amount of transition expenditure in the Waste Water Network Plus Price Controls to enable us to efficiently deliver statutory requirements where compliance dates would otherwise make delivery inefficient or impossible. This is set out below.

Note: We have not mapped any costs to lines 49 and 50 'other capital expenditure' as we believe these costs to be include in the above lines. All enhancement expenditure has been allocated to the primary driver.

Despite the spend occurring in AMP6 we have applied the same efficiency assumptions associated with our AMP7 costs to this transition expenditure. The overall efficiencies applied by price control and by year are set out in App 24a.

WFD Investigations (10 sites)

The current regulatory dates of Sep 2021 do not allow us sufficient time to undertake full investigations designated in this part of the WINEP in AMP7 which will take around 2.5 years. To achieve these dates sampling needs to start earlier and hence the need to complete much of this investigation in Yr. 5 of AMP6. These investigations are statutory requirements through the Environment Agency and will contribute to our Performance Commitment on River Length Improved.

WFD Investigations Chemistry (38 sites)

As part of WINEP3 a variety of chemistry drivers have been identified with a 2021/2022 compliance date. In order to complete sufficient activity to achieve this 7% of Chemistry Investigations have been identified as early start. In order to achieve regulatory compliance date. These investigations are statutory requirements through the Environment Agency and will contribute to our Performance Commitment on River Length Improved.

Phosphorus Sampling Schemes

Early start sampling is needed to understand waste water characterisation on the 76 Phosphorous sites. The inlet loading profiles have shown to be significantly different by season in the AMP6 sites, meaning that larger or smaller dosing sets may be required (pumps, storage tanks etc) compared to desktop design.

Sampling also defines the need for caustic dosing. For the 20 proposed BNR sites, a full year of intensive sampling is required to ensure the success of the process (as proved by the problems other water companies have had with BNR and insufficient waste water characterisation). Early start is required due to the tight timescales of delivery of such a large programme in AMP7. These enable us to meet our statutory requirements through the Environment Agency and will contribute to our Performance Commitment on River Length Improved.

WINEP3 P Removal at Sheriff Hutton, Stillington, Oxenhope and Sutton on the Forest STWs

We have 4 wastewater treatment works that the EA have identified December 2021 compliance dates with newly designated Phosphorus standards. We have identified £1.55m of transitional expenditure in order to deliver these by the designated compliance date. These schemes are statutory requirements through the Environment Agency and will contribute to our Performance Commitment on River Length Improved.

Block A

Transitional Capital Expenditure Purposes	Commentary
Line 13: WINEP / NEP ~ Chemicals monitoring / investigations / options appraisals	This line has a cost of £0.170m under Sewage Treatment for the transition expenditure associated with the Chemicals Investigations obligations.
Line 16: WINEP / NEP ~ Investigations	This line has a cost of £3.789m under Sewerage Investigations for the transition expenditure associated with the WFD Investigations and modelling (UPM).
Line 18: WINEP / NEP ~ Nutrients (P removal at activated sludge STWs)	This line has a cost of £2.141m under Sewage Treatment. It includes: - the transition expenditure associated with P removal sampling associated with the ASP sites. - AND an apportion for one of the P removal schemes (Stillington WWTW) at which we require early start to achieve a 2021 compliance date.
Line 19: WINEP / NEP ~ Nutrients (P removal at filter bed STWs)	This line has a cost of £1.968m under Sewage Treatment. It includes: - transition expenditure associated with P removal sampling for non-ASP (filter bed) sites where we are expecting chemical dosing solutions. - AND an apportion of the costs of 3 of the 4 schemes (Oxenhope, Sutton on the Forest and Sheriff Hutton) at which we require early start to achieve a 2021 compliance date.
Line 48: Maintaining the long-term capability of the assets ~ non-infra	This line has a cost of £0.362m under Sewage Treatment for the transition expenditure associated with the enabling base element of the WINEP Programme at the 4 sites with 2021 compliance dates.

WWS12 - RCV allocation in the wholesale wastewater service

Background to update on RCV allocation

On 29 September 2017 Yorkshire Water submitted their initial calculation for the economic assessment of the RCV which should be allocated to the newly separated bioresources price control on the 1 April 2020.

Feedback on the submission was provided by Ofwat and Yorkshire Water met with the Ofwat team to discuss proposals to amend the original submission.

Amendments to Ofwat RCV bioresources model

In order to reconcile the movements between the original RCV allocation submission value and the updated proposed value table WWS12 requires the movements to be explained within Block B and Block E, these include high level categories within which the movements should occur.

Block B

B	Changes to proposed final net MEAV
4	Inflation from March 2017 to March 2018 prices
5	Changes to the allocation of assets between business units
6	Changes to sludge assets in existence
7	Changes to the gross cost of hypothetical new assets (excluding land)
8	Changes to differences in revenue and costs between hypothetical and actual assets
9	Changes to the adjustment for the remaining economic life of existing processes
10	Changes to land valuation

Block E

E	Movement from Gross MEAV to Net MEAV at 31 March 2020
30	Gross MEAV of assets at 31 March 2020 excluding shared assets
31	Adjustment for remaining economic life
32	Adjustment for gross operating costs on bioresource treatment sites
33	Adjustment for capital maintenance costs on bioresource treatment sites
34	Adjustment for non-treatment site costs.
35	Adjustment for income from electricity and gas produced.
36	Adjustment for income received from renewable obligation certificates (ROCs)
37	Adjustment for the income received from other incentives
38	Adjustment for other income including income from sale of biosolids
39	Other adjustment
40	Net MEAV of assets at 31 March 2020 excluding shared assets
41	Proportional allocation of the net value of shared assets
42	Net MEAV of assets at 31 March 2020 including shared assets

To ensure that the same calculation methodology was used within the 3 September 2018 submission and the 29 September 2017 submission the original Ofwat working model was used.

The following process was followed:

Step 1 – the 29 September model was updated from March 2017 RPI values to March 2018 RPI values.

The impact of this update was logged.

Step 2 – Block E requires that the movement from gross MEAV to net MEAV lists the impact of operating costs, capital maintenance, income from electricity, renewables obligation certificates, income from other incentives and the income from the sale of biosolids be separated out – therefore the model had to be amended to include separate lines to capture this.

Block L and O on the '6. Site inputs' tab were expanded.

L	Further adjustments for differences between hypothetical and existing processes / assets
149	NPV of estimated differences in future revenues - Rocs
	NPV of estimated differences in future revenues - other incentives
150	NPV of estimated differences in future Opex
	NPV of estimated differences in future Capex
	NPV of estimated differences in future revenues/costs from energy genera
151	NPV of estimated differences in future revenues - biosolids

O	Other information and adjustments reported for cross checks
163	Allocation of gross book value (for statutory accounting purposes) of appo
164	Allocation of net book value (for statutory accounting purposes) of appoint
165	Opex - hypothetical
	Capex - hypothetical
166	Annual revenue received from ROCS - hypothetical
	Annual revenue received from other incentives - hypothetical
167	Annual revenue received from power generation from hypothitical
168	Annual revenue received from biosolids sales from hypothetical asset
169	Opex - actual
	Capex - actual
170	Annual revenue received from ROCS - current
	Annual revenue received from other incentives - current
171	Annual revenue received from power generation from current
172	Annual revenue received from biosolids sales from actual asset

The NPV impact of Opex and capex costs were targeted against the main asset life of the assets, primary anaerobic digestion (H105), the ROCs were taken against the remaining life of the ROC contract at the sites, the energy generation and the other incentives were measured against the life of the energy generation assets (H106)

Step 3 – Block B

The net impact of the updates was included within this Block and were measured as the difference between the adjustment made in 29 Sept 2017 and the adjustment that is seen within the current analysis.

Link between Ofwat model and WWS12

Table WWS12 was linked to the amended Ofwat model, see Block 2, and all of the movements were listed on the table in Blocks B and E.

Block C and D were linked to the existing outputs in the Ofwat model.

Below we provide a line by line description relevant to the data provide in table WWS12.A

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

Line 1 - Net MEAV submitted in September 2017.

Line 2 - Proposed RCV allocation in September 2017 (prior to midnight adjustments).

Line 3 - RCV (% of total wastewater wholesale).

Block B- Changes to proposed final net MEAV

Line 4 - Inflation from March 2017 to March 2018 prices.

The hypothetical costs have been inflated from March 2017 to March 2018. The impact of this movement is shown.

Line 5 - Changes to the allocation of assets between business units.

There have been no changes in allocation from the September 2017 submission.

Line 6 - Changes to sludge assets in existence

There have been no changes in allocation from the September 2017 submission.

Line 7 - Changes to the gross cost of hypothetical new assets (excluding land)

Since the submission of the bioresources RCV submission in September 2017, we have carried out a substantial market testing exercise around the bioresources capital requirements. This covered over 80% of the expected assets and reached out to over 90 companies.

The results of the market testing were that we received a range of potential solutions which identified approximately £100m of capital cost efficiency compared with our original costed solutions based on our current cost base. This efficiency also includes the benefits of establishing an autonomous capital delivery model for Bioresource.

This £100m converts to a 41% efficiency on the forward-looking cost base. This is reflected in App24a and the Bioresources Totex within the WWS1 PR19 data tables.

This efficiency has been translated into our RCV calculation, to reflect the efficient cost base that we will incur.

Line 8 - Changes to differences in revenue and costs between hypothetical and actual assets.

We have not changed our methodology and continue to assume that the costs for current assets and hypothetical assets remain the same as we have not fundamentally changed the asset base, we are procuring the provision of the assets more efficiently.

We have used the Opex and capex forecasts that are included within table WWS1 for 2019/2020.

We have updated our ROC income on our current assets to reflect the forecast within table WWS1 for 2019/2020.

We have continued to assume that the hypothetical assets will not attract any RHI income.

Line 9 - Changes to the adjustment for the remaining economic life of existing processes

We have not amended our asset lives on hypothetical or current assets, therefore this adjustment is due to the change in the hypothetical costs that we have included.

Line 10 - Changes to land valuation

We have assumed no change to the cost of land

Line 11 - Changes to Scrap, resale or option value of actual capacity in excess of capacity assumed on new-build basis

Block C - RCV split 31 March 2020

Line 18 - Net MEAV

This figure is the adjusted RCV allocation figure that we have calculated.

Line 19 - RCV (prior to midnight adjustments)

We have updated the 2019-20 RCV value to reflect the March 2018 RPI value, and have used the net MEAV figure from above

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

Line 30 - Gross MEAV of assets at 31 March 2020 excluding shared assets

This value has been updated by the inflation to March 2018 RPI from March 2017, and reflects the efficiency challenge of 41%

Line 31 - Adjustment for remaining economic life

We have not changed the methodology from the September 2017 submission, therefore this is calculated form the new hypothetical costs. We have not updated any assets lives form our previous submission.

Line 32 - Adjustment for gross operating costs on bioresource treatment sites

We have not changed the methodology from the September 2017 submission, therefore our current assets and hypothetical assets have the same operating costs and therefore no NPV adjustment.

Line 33 - Adjustment for capital maintenance costs on bioresource treatment sites

We have not changed the methodology from the September 2017 submission, therefore our current assets and hypothetical assets have the same capital maintenance costs and therefore no NPV adjustment.

Line 34 - Adjustment for non-treatment site costs.

We have assumed a nil return.

Line 35 - Adjustment for income from electricity and gas produced

We have not changed the methodology from the September 2017 submission, therefore our current assets and hypothetical assets have the same operating costs and therefore no NPV adjustment.

Line 36 - Adjustment for income received from renewable obligation certificates (ROCs)

We have not changed the methodology from the September 2017 submission, and have updated our 2019-20 forecast to reflect the WWS1 forecast for 2019-20

Line 37 - Adjustment for the income received from other incentives

We have not changed the methodology from the September 2017 submission, and therefore assume our hypothetical assets attract no incentives.

Line 38 - Adjustment for other income including income from sale of biosolids

We have not changed the methodology from the September 2017 submission, and therefore assume no income form biosolids.

Line 41 - Proportional allocation of the net value of shared assets

We have included all a proportional allocation of shared assets within the hypothetical gross costs, including buildings, welfare facilities and other general facilities.

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

This table contains the wastewater service inputs used for populating the PR14 WRFIM model and the revenue adjustment arising as calculated by the WFRIM model. The WRFIM model calculates in outturn prices and is converted to 2017/2018 prices in the revenue adjustments feeder model.

The submission has been calculated using the model that was provided by Ofwat in line with the PR14 reconciliation rulebook.

Sources of inputs

- 2015/2016, 2016/2017 and 2017/2018: The total revenue governed by wholesale price control values have been taken from our published Annual Performance Report table 2I.
- 2018/2019 and 2019/2020: The forecast wholesale revenue recovered from households and non-households has been included in line with the anticipated revenues allowances for these years. Our tariffs for 2018/2019 have been set to recover the revenue allowance and we have used 3.12% November RPI forecast for 2019/2020, this also includes the wholesale revenue element of the WRFIM adjustment from 2017/2018. We have used the forecast values for grants and contributions which are included within PR19 table App28.

These values are shown within Block E of table WWS13.

Adjustments to sources of inputs for modelling purposes.

Adjustments have been made due to inconsistencies between the categories of revenue and capital contributions within the Annual Performance Report table 2I and PR19 tables (WWS13), which we are asked to report by Ofwat, and those which were included within our wholesale revenue price controls at the Final Determination.

This means that we must adjust the input information before it is modelled within the WRFIM calculation.

The table below shows the adjustments that we have made for table WWS13, this is to remove the s104 third party revenue that was not included within our price control at PR14:

Line description		Item reference	Units	DPs	Price base	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
E	Revenue recovered										
15	Wastewater: Unmeasured ~ household	CR881	£m	3	Outturn (nominal)		224.557	219.924	219.099	216.581	213.220
16	Wastewater: Unmeasured ~ non-household	CR883	£m	3	Outturn (nominal)		2.095	2.084	2.390	2.435	2.390
17	Wastewater: Measured ~ household	CR882	£m	3	Outturn (nominal)		151.394	163.965	174.000	193.549	217.583
18	Wastewater: Measured ~ non-household	CR884	£m	3	Outturn (nominal)		110.517	113.406	111.287	123.192	131.671
19	Wastewater: Third party revenue ~ household	S9008HH	£m	3	Outturn (nominal)		-	-	-	-	-
20	Wastewater: Third party revenue ~ non-household	S9008NHH	£m	3	Outturn (nominal)		-	-	1.798	-	-
21	Wastewater: Revenue collected from household and non-houseł	BR689	£m	3	Outturn (nominal)		488.563	499.379	508.575	535.757	564.863
22	Wastewater: Grants and contributions	BC11374	£m	3	Outturn (nominal)		7.322	8.229	8.104	14.369	5.781
23	Wastewater: Revenue recovered	S9014	£m	3	Outturn (nominal)		495.885	507.608	516.679	550.126	570.644
	Less: third party revenue - non household (s104)						-	-	(1.798)	-	-

Line description		Item reference	Units	DPs	Price base	2014-15	2015-16	2016-17	2017-18	2018-19	2019-20
E	Revenue recovered										
15	Wastewater: Unmeasured ~ household	CR881	£m	3	Outturn (nominal)		224.557	219.924	219.099	216.581	213.220
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20	Wastewater: Third party revenue ~ non-household	S9008NHH	£m	3	Outturn (nominal)		-	-	-	-	-
21	Wastewater: Revenue collected from household and non-houseł	BR689	£m	3	Outturn (nominal)		488.563	499.379	506.777	535.757	564.863
22	Wastewater: Grants and contributions	BC11374	£m	3	Outturn (nominal)		7.322	8.229	8.104	14.369	5.781
23	Wastewater: Revenue recovered	S9014	£m	3	Outturn (nominal)		495.885	507.608	514.881	550.126	570.644

These adjusted inputs have been used within our published WRFIM model, they can be seen on the inputs tab, lines 36 and 37.

WRFIM modelling is calculated using the Ofwat published model, which can be found using the following link:

https://www.ofwat.gov.uk/publication/wrifm-pr14-reconciliation-spreadsheet-2/

Our reported performance for 2015/2016, 2016/2017 and 2017/2018 have been included within our commentary for table 2I within our published Annual Performance Report.

Water		2015/2016	2016/2017	2017/2018
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	6.220	4.204	2.988
% 2dp	% (under) / over recovered versus adjusted allowed revenue	1.55%	1.02%	0.71%

Waste		2015/2016	2016/2017	2017/2018
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	1.182	1.971	(4.584)
% 2dp	% (under) / over recovered versus adjusted allowed revenue	0.24%	0.39%	(0.88%)

The modelling shows the following anticipated performance for 2018/2019 and 2019/2020 .

Water		2018/2019	2019/2020
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	(8.750)	(12.402)
% 2dp	% (under) / over recovered versus adjusted allowed revenue	(1.98%)	(2.69%)

Waste		2018/2019	2019/2020
£m 3dp	Over (+) / Under (-) recovery versus adjusted allowed revenue	7.175	(2.112)
% 2dp	% (under) / over recovered versus adjusted allowed revenue	1.32%	(0.37%)

The overperformance in 2018/2019 and underperformance in 2019/2020 within the Waste WFRIM calculations is due to the level of anticipated grants and contributions, the model indicates that there should be a £5.6m penalty that should be included within the PR19 table WWS13.

PR19 adjustment for WFRIM

As stated above the modelling output from the WRFIM model shows an anticipated reward of £21.5m for wholesale water and a penalty of £5.6m for wastewater. This is based on our current forecast for 2018/2019 and 2019/2020. These rewards and penalties are due to the forecast grants and contributions for 2018/2019 and 2019/2020. They are not due to any anticipated under or over recovery on wholesale revenue from household and non-household revenue, which we have forecast to be in line with allowed wholesale revenues.

As changes in grants and contributions are offset by changes within capital expenditure, we have amended the reward and penalty values to zero in WWS13. When the model is updated with actual values for 2018/2019, we will assess any impact due to actual wholesale revenue from households and non-household's values and adjust this to only reflect this element.

Therefore, the values of the adjustments for PR19 shown within Block G of table WWS13 only relate to the legacy correction from PR09 RCM and are shown as (£8.4m) for water and (£14.3m) for wastewater.

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

This table contains the wastewater service inputs used for populating the totex menu model and the total outperformance / (underperformance) adjustments arising as calculated by the totex menu model. The totex menu model calculates in 2012/2013 prices and the adjustments are converted to 2017/2018 prices in the revenue adjustments feeder model and the RCV adjustments feeder model.

The submission has been calculated using the model that was provided by Ofwat in line with the PR14 reconciliation rulebook.

WS15 and WWS15 - sources of inputs

- 2014/2015, 2015/2016, 2016/2017 and 2017/2018: The actual totex and adjustments to totex values have been taken from our published Annual Performance Report table 4B.
- 2018/2019 and 2019/2020: The actual totex forecast for these two years have been sourced from PR19 tables WS1(a) and WWS1(a), these are inclusive of the atypical expenditure in Block D.

The adjustments to totex are all contained within the total of table WS1(a) and WWS1(a).

Adjustments to sources of inputs for modelling purposes

The actual totex numbers that were reported within table 4B of the Annual Performance Report for 2015/2016 and 2016/2017 included expenditure that was incurred in relation to the major floods that our region suffered on the 26 December 2016, however we were unable to report the insurance payment that we received in 2015/2016 and 2016/2017 within the totex tables.

This insurance payment was paid in two instalments, £10m in 2015/2016 and £46m in 2016/2017, we have included these two payments within the disallowable line within the sewerage inputs for 2015/2016 and 2016/2017.

Line description		Item reference	Units	DPs	Price base	2014-15	2015-16	2016-17
14	Sewerage: Disallowables	WWS15014	£m	3	Outturn (nominal)		10.000	46.000

Totex modelling is calculated using the Ofwat published model, which can be found using the following link:

Totex-Menu-2016-05-17-change-log-removed

The forecast outperformance that we have calculated from the model is shown below:

PR19 adjustment for Totex

The over performance in wholesale Wastewater results in the following PR19 adjustment:

Totex menu adjustments					
Wastewater: revenue adjustment from totex menu model	WWS15019	£m	3	2012-13 FYA (RPI)	-5.599
Wastewater: RCV adjustment from totex menu model	WWS15020	£m	3	2012-13 FYA (RPI)	-57.505
Wastewater: Totex menu revenue adjustment at 2017-18 FYA CPIH deflated price base	WWS15021	£m	3	2017-18 FYA (CPIH deflated)	-6.410
Wastewater: Totex menu RCV adjustment at 2017-18 FYA CPIH deflated price base	WWS15022	£m	3	2017-18 FYA (CPIH deflated)	-65.837

WWS18 - Explaining the 2019 Final Determination for the wastewater service

The table provides specific information on what the PR19 final determination will deliver for wastewater customers.

The data populated in table WWS18 has been assured by our external assurer Jacobs.

Block A – Customer service

Line 1 – Number of external sewer flooding incidents

Data provided for this line is in accordance with the converged data definition of external sewer flooding as published on UKWIR's website and referenced in the PR19 methodology.

The exception is the data entry for 2015/2016, which is in accordance with the pre-converged definition used for our PR14 performance commitment on external sewer and is consistent performance reported in that year's Annual Performance Report.

- For 2016/2017 onwards (actuals and forecast) the data aligns with that provided table App1 for our External Sewer Flooding performance commitment (Line 35).
- The actuals for 2016/2017 and 2017/2018 do not align to our PR14 PC definition for External Sewer Flooding (SA2) as reported in the Annual Performance Report. Similarly, the forecast numbers provided for the remainder of the AMP6 period will not align to the data provided in table App5 for the PC.

For the 2015-20 period investment was allocated in the FD14 to address known and cost beneficial external sewer flooding issues. We prioritised resolution of issues that had the potential to impact our customers the most or caused them most concern.

For the remainder of AMP6 we forecast our external sewer flooding performance to be stable and remain within our current PR14 performance commitment targets

For AMP7 we will make significant improvements in performance, lowering incidents by over 15% compared to 2017/2018 outturn. External sewer flooding is one of a range of indicators of network capacity issues and we plan to make investments in sewer rehabilitation which will deliver improved outcomes for internal and external sewer flooding performance.

Line 2 - Number of serious pollution incidents (category 1 and 2)

- The data for years 2015/2016 to 2019/2020 is copied through from line 7 in table App31.
- Serious pollution incidents cover wastewater assets only.
- Data is for calendar year.
- The data is provided in accordance with the EA EPA methodology (Nov 2017).
- We plan to have no category 1 or 2 pollution incidents for 2019/2020 onwards in accordance with our upper quartile plan target.

The actual and forecast numbers for AMP6 period do not align to our PR14 PC definition for Pollution (SA3a), as reported in the Annual Performance Report and in table App5. The PR14 PC definition for pollution incidents excludes impacts from continuous discharges from wastewater assets.

We have achieved an overall reducing trend in all pollution incidents since 2010, which we will greatly accelerate from the end of AMP6 into AMP7. For 2018 we have seen an increase in the number of Category 1 and 2 pollution incidents in comparison to previous years. These have

occurred across all wastewater asset types. Up to four incidents occurred during July alone, when the extremely dry weather and low watercourse levels increased the severity of the environmental impact.

We have a number of initiatives in place to improve pollution performance across all categories ahead of the AMP7 period. These include:

- Action plan development on our top risk sewage pumping stations and STW assets.
- Optimisation of our proactive programme of sewer network flushing and defect resolution.
- Development of additional lead measure indicators to address deteriorating asset trends.
- Process improvements to ensure swift incident response and resolution to minimise repeat incidents.
- Deployment this financial year of an additional 1000 sewer network monitoring locations, selected from our pollution risk and feasibility work. We will deploy additional rising main and sewage treatment monitoring and have an increased capability to reset sewerage pumps remotely.
- Detailed investigation of sewage pumping stations and rising mains to determine actions plans to reduce rising main burst frequency.
- Recruit additional technical resources to focus on reducing pollution incidents.
- Rollout targeted customer communications campaigns. As an example, we delivered around 14,000 leaflets in hotspot areas in Leeds and are developing a campaign called 'Environmental Ambassadors'

Across AMP7 we will make significant capital investments in sewer rehabilitation, pumping station refurbishment and rising main replacement.

Line 3 - Number of pollution incidents (category 3)

The data for years 2015/2016 to 2019/2020 is copied through from line 8 in table App31.

- Pollution incidents cover wastewater assets only.
- Data is for calendar year.
- The data is provided in accordance with the EA EPA methodology (Nov 2017).
- We plan to have no category 1 or 2 pollution incidents for 2019/2020 onwards in accordance with our upper quartile plan target.

The data provided for 2020/2021 onwards is consistent with the data provided in table App1 (line 30). We forecast a step change in performance at the start of the AMP7 period, with a steady improvement year on year across the period. Across AMP7 we will make significant capital investments in sewer rehabilitation, pumping station refurbishment and rising main replacement.

The actual and forecast numbers for AMP6 period do not align to our PR14 PC definition for Pollution (SA3b), as reported in the Annual Performance Report and in table App5. The PR14 PC definition for pollution incidents excludes impacts from continuous discharges from wastewater assets.

Block B - Resilience

Line 4 – Asset Health ~ total number of sewer blockages

The data for years 2017/2018 to 2024-25 is copied through from line 5 in table WWn3.

The data submitted for 2015/2016 and 2016/2017 includes sewer blockages for all transferred assets from 2011. This represents a different measure definition compared to our sewer blockages sub-measure in Sewer Network Stability and Reliability PC for PR14.

The data is as contained in our Cost Assessment report, table 13 for years 2015/2016 and 2016/2017. For 2017/2018 this metric is now reported in the Annual Performance Report under table 4R.

We forecast to improve the number of sewer blockages on our network through the number of key initiatives that address flooding, pollution and blockages in the round.

- Enhanced network rehabilitation programme
- Proactive Find and Fix (sewer network defect rectification)
- CCTV (an enabler for proactive sewer cleansing and sewer network defect rectification
- Greatly increased engagement with customers to change behaviours
- Our proactive blockage predictor tool
- Proactive sewer cleansing

Block C - Affordability

Line 5 - Number of people receiving help paying their wastewater bill

Data provided is the total number of residential wastewater customers we have helped and plan to help through financial support with a social tariff or WaterSure scheme. Throughout the AMP7 period we plan to provide help to around 50,000 residential customers each year.

To populate this line, we have factored the number of residential customers receiving help by the average split of customers who receive water and sewerage services. 96% of our total residential customers receive water services and 96% receive sewerage services. This approach assumes the current and future customers who receive such support via our schemes are representative in terms of services billed of our total residential customer base, and that this ratio is broadly maintained. We have validated that to date this ratio has been consistent in past years.

We forecast by the first year of AMP7 we will be assisting around 90% more of our customers to pay their wastewater bill than we do today (around 23,000 more customers helped).

This will be achieved by a significant increase in funding to our basket of schemes that help customers. We will also improve our promotion and targeting of the schemes to those who most require our support.

We have confirmed we have customer support for the greater expenditure planned to provide financial respite to customers who may struggle to pay their wastewater bills. We presented to our customer challenge group (the Yorkshire Forum for Water Customers) with a detailed breakdown of our proposed schemes and the increased value of support provided for the remainder of AMP6 and all AMP7. For example, we plan to provide support under our WaterSupport social tariff scheme to an additional 12,000 customers in AMP7.

Over the 2020-2025 period we will provide support of around £60m in value to help customers pay their water and wastewater bills. Approximately £5m of this will be funded by Yorkshire Water and not offset against customer revenues.

Block D - Markets

Line 6 - Number of direct procurement wastewater service schemes

Following the detailed assessment of candidate schemes against the criteria for direct procurement for customers (DPC) solutions, Yorkshire Water do not plan to have any DPC schemes in the PR19 plan. The line is therefore populated with zero entries for the period.

We support the principle and methodology of DPC. Despite taking the broadest possible interpretation of the PR19 methodology, we have concluded that at the moment we do not have qualifying schemes, however we have developed a robust assessment methodology and intend to use this to search for future qualifying opportunities.

Further details of our assessment of schemes for DPC are provided in this commentary for the data table App21, and in chapter 11 of the PR19 plan document.

Block E - Environmental

Line 7 - Length of rivers improved as a result of WINEP Water Quality schemes

The data provided aligns with data in table App1 Line 4 (when combined with length of rivers improved as a result of WINEP water quality schemes, as detailed in WS18 line 7).

The length of rivers improved (LRI) method includes an end of AMP target and this is not profiled by each year. It is not possible to provide data for 2015/2016, as each length relies on multiple schemes to achieve the improvement. It is not possible to claim a length as improved until the environment is in receipt of the improvements from all works associated to it. All obligations which deliver AMP6 LRI have March 2020 regulatory dates.

Our method to calculate LRI uses modelled length of river improved to 0.02 mg/l improvement in in-river concentration. This applies the same boundaries to assess improvement from each identified investment, and account where more than one investment contributes to a length of river improved. This is different to the Agency method and is why our figures differ with WINEP3.

The EA calculate from point of mixing to the end of the waterbody. This approach may under measure LRI in some locations and over measure LRI in other locations and may not account for additional lengths improved in the next waterbody. Our approach is to use the agreed models to calculate the predicted improvement in the environment. Our approach is consistent with our PR14 approach.

Line 8 - Greenhouse gas emissions from wastewater operations

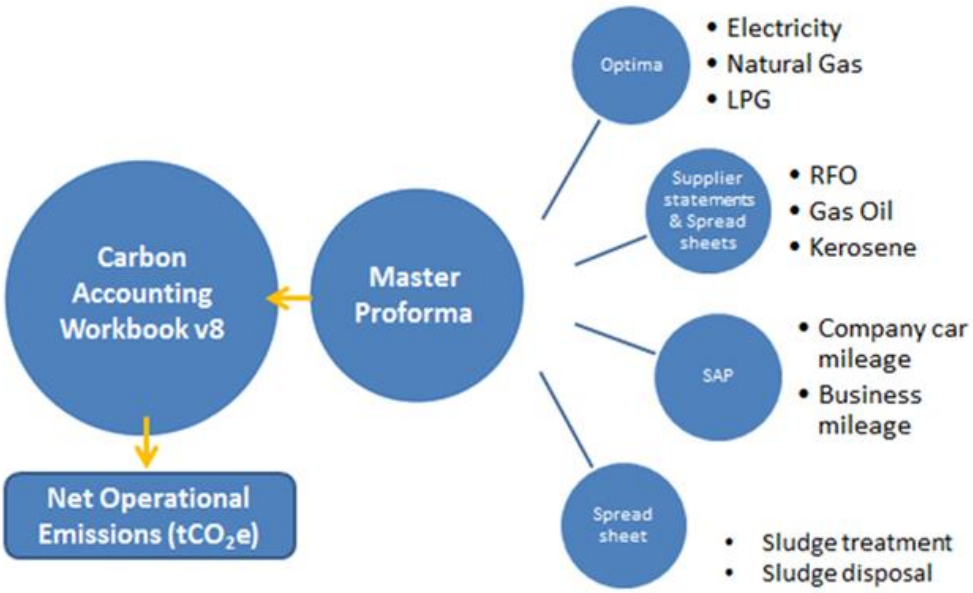
All data provided is and will be tracked in the Carbon Accounting work book (CAW). This is an industry standard tool used for carbon reporting. All data sets are provided by the relevant business area, and use accurate sources such as electricity metered data, fuel reports, etc.

For the data in this line we have made the following greenhouse gas emissions assumptions:

- The split of emissions between water and wastewater will remain the same throughout the forecast period. This is based on the Ofwat energy used split for 2017/2018 (42% water and 58% wastewater).
- The emission factor change will track government predictions.
- We will carry out all AMP7 schemes and the operational variation will be accurate – i.e. if some schemes do not proceed new ones may alter the emissions.
- 'Other' emissions that cover everything apart from electricity will remain static over the period covered (approximately 70% of our emissions are from electricity).

- Sequestration and leakage will track the predictions of the DMF and previous reports that have been carried out.
- We have included all NEP schemes.

The process flow diagram below for the data provision into the CAW.



The future GHG emissions targets in this line are not readily comparable to the Operational Carbon PC in table App1 (line 6), which is under a different definition and is an end of AMP7 target.

Line 9 – Number of designated bathing waters passing EU standards

Yorkshire Water has 19 designated coastal bathing waters. The minimum required standard to avoid any beach designated under the EU Bathing Waters Directive is 'Sufficient' and is measured using a 4-year average.

The threshold of 'passing' EU standards - i.e. achieving a classification of 'Sufficient' or better. This is a lower threshold than our PR14 PC which is based on exceeding the required quality standard threshold. The PC therefore only reports bathing waters that achieve 'Good' and 'Exceptional' classifications. The reported bathing water classification actuals are as confirmed by the EA, as detailed in the table below.

BEACH	2015	2016	2017
BRIDLINGTON NORTH	Good	Good	Good
BRIDLINGTON SOUTH	Good	Good	Good
CAYTON BAY	Excellent	Excellent	Excellent
DANES DYKE	Excellent	Excellent	Excellent
FILEY	Good	Good	Good
FLAMBOROUGH SOUTH LANDING	Excellent	Excellent	Good
FRAISTHORPE	Good	Good	Good
HORNSEA	Excellent	Excellent	Good
REIGHTON	Good	Sufficient	Good
ROBIN HOODS BAY	Excellent	Excellent	Good
RUNSWICK BAY	Excellent	Excellent	Excellent
SANDSEND	Good	Excellent	Good
SCARBOROUGH NORTH BAY	Excellent	Excellent	Good
SCARBOROUGH SOUTH BAY	Sufficient	Poor	Poor
SKIPSEA	Good	Good	Good
TUNSTALL	Excellent	Excellent	Excellent
WHITBY	Excellent	Excellent	Excellent
WILSTHORPE	Good	Good	Good
WITHERNSEA	Excellent	Excellent	Good
Notes; results announced by EA in October each year proceeding the bathing season and reported financial year (Just before Bathing Season starts)			
Poor	0	1	1
Passing EU standard	**19**	**18**	**18**
Sufficient	1	1	0
Exceed EU standard	18	17	18

Forecast bathing water performance assumes we maintain current performance for remainder of AMP6 due to the improvements at Scarborough South Bay taking time to deliver an improved classification. AMP7 performance drives forecasts for all 19 bathing waters being at the required standard of sufficient or better.

Line 10 – Percentage discharge permit compliance (STW and WTW discharges complaint with numeric permits)

Discharge Permit Compliance (DPC) data provided in line 10 complies with the definition as set out in the EA EPA section 2.3 as required. The data does not align with that published by the EA in its annual report for Yorkshire Water. The historic data in the EA report is not an accurate account of the % compliance, as it has used varied information about the number of STW and WTW assets that have relevant permits. We have reviewed the site assets and related permits, as agreed with the EA

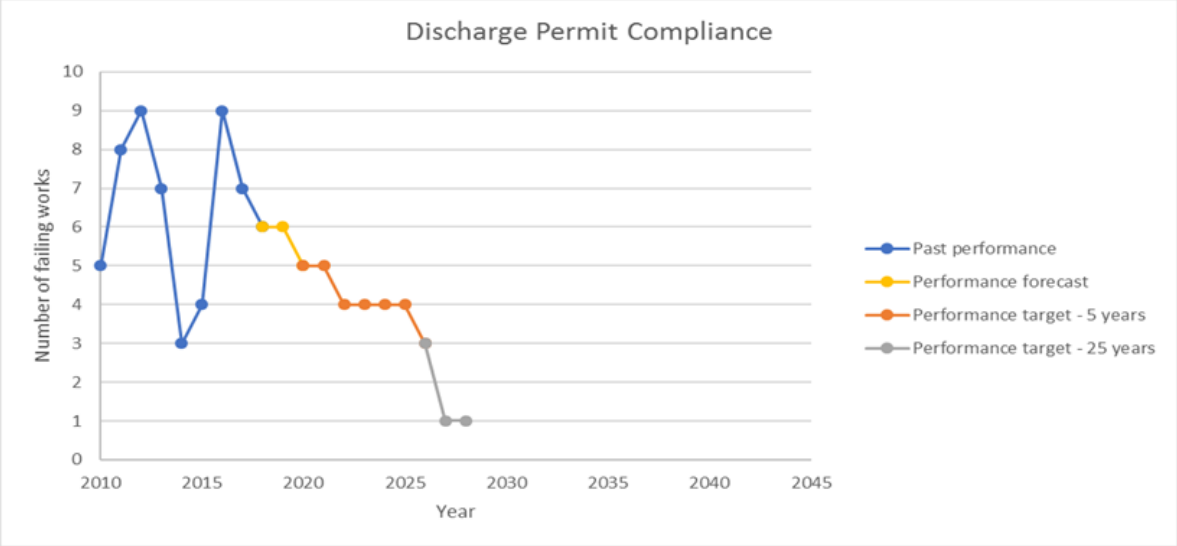
at Annual Performance Report 2018 and used this site data to back cast and forecast our DPC positions for each calendar year.

The data provided aligns with that reported for our PR19 PC for DPC in table App1 (Line 32), with the % compliance evaluated based on STW and WTW assets forecasts for given years.

Our underlying performance on DPC has varied between 4 and 9 failing works, with no overall improving or deteriorating trend. This is in line with our Waste Water Quality Performance Commitment for AMP6 which was to remain stable, and the variation is relatively small compared to the total number of works under assessment which is 314.

The number of failures in 2016 was particularly high and this was impacted by the floods at the end of 2015 and the subsequent strain on our operational and maintenance resources during the recovery period. We saw an improvement in 2017 which is being continued in 2018.

For AMP7 we will maintain the level of failing works at around 4 per annum to deliver a DPC of 98.72% as a PC target.



Block F – Bill impacts

Line 11 - Change in the average residential customer wastewater bill over the period

We have used the Ofwat bill change model to calculate the bill change across the AMP7 period. We then applied the split of retail tariffs between water and wastewater to determine final % change over the period.

The % split of retail charges across the two services has been consistent for a number of years, and we assume the retail ratio continues to be stable for the whole of AMP7. We have made an allocation of 56% of the retail tariff to the wastewater bill value and 44% to the water bill value (which is used for table WS18).

As context we are proposing that the average residential customers' combined bill will be £393 by 2025, which equates to a £14 increase over the 2020-2025 period (or c£2.77 each year).

Block G – Total expenditure (real prices ~ 2017-18 FYA CPIH deflated)

Line 12 - Wastewater totex including cash items and atypical expenditure

We have provided data for years 2015-2016 and 2016-2017 only as required. The remainder of the line is populated automatically from a calculation of data from tables WWS1 and App23 and copied from WWS1 for the AMP7 period.

We have totex sourced data from table 2B (Totex analysis) line 21 of the APRs split by water and wastewater.

The totex outputs are then adjusted to price base 2017-2018 FYA CPIH deflated using App23 (Inflation measures) generating a ratio of CPIH financial year average indices for 2017/2018 divided by the relevant year. This data is from App23 Box D line 29 (cell M40 and relevant year cell).

For 2015/2016 this results in:

- For 2015/2016 £320.918m being inflated to £333.894m (at 2017-18 price base)
- For 2016/2017 £417.546m being inflated to £428.546m (at 2017-18 price base)

Wastewater totex increases significantly in AMP7 compared to the current level of expenditure as our PR19 plan includes major investments in sewer rehabilitation, additional spend to drive performance in pollution and internal sewer flooding and the base impact on the wastewater controls of the WINEP programme. The Wastewater Network+ price control is also allocated the investment in our new CRM system solution.

Lines 13 - Total number of residential and business customers who receive a wastewater bill

We have provided data for years 2015/2016 and 2016/2017 only as required. The remainder of the line is populated from data in table WWS3.

Data is sourced from information provided for Annual Performance Report table 2F (Household revenues by customer type) and 2G (Non-household water revenues by customer type).

Line 14 - Amount of planned wastewater investment per customer billed

This line is calculated from data from table WWS18. No data input requirement from the company.

WWn1 - Wholesale wastewater sewage treatment operating expenditure

This table aligns to table 4N in the Annual Performance Report, which allocates Sewage treatment functional expenditure amongst varying sizes into bands. The Annual Performance Report allocation basis was improved and changed in 2017/2018 following an Ofwat cost assessment meeting, and the PR19 submission is consistent with the new basis. New forecasts will show variances with prior cost assessment submissions but are much more aligned with industry.

Functional expenditure in total is linked to sewage treatment and we can see an increase in the current AMP period to 2020 which is reflective of permitting charges and improvements in internal targets for serviceability. The costs increases are reflected mainly on band 6 (in proportion to the other bands), which is expected as the larger sewage treatment works have in proportion more charges than the smaller works and furthermore require more focus in terms of maintenance and operational teams.

At the beginning of AMP7 Yorkshire Water is forecasting a reduction in costs in totality and this is due to the level of efficiency targeted (as explained in WWS1) across the wholesale business. These cost efficiencies are proportional across bands. Operating cost increases resulting from capital expenditure are forecast for sewage treatment from 2023/2024 onwards due to the WINEP programme and the proposals for phosphorous removal at sewage treatment works. These operating cost increases are forecast to be costlier at larger sewage treatment works.

WWn2 - Wholesale wastewater large sewage treatment works explanatory variables and operating expenditure

Block A

See commentary for associated Annual Performance Report table for WWN2. This Block of the table is a replica of that table.

Block B

This tables looks at functional expenditure for wholesale wastewater large sewage treatment works. This table is identical to table 4O in the Annual Performance Report and only considers costs for 2017/2018. The table follows on from table WWN1, and the costs for the band 6 works are separately costed within Yorkshire Water's accounting systems. Line 13 of this table reconciles to lines 7 and 8 of table WWN1 for 2017/2018.

WWn3 - Wholesale wastewater network (explanatory variables)

Lines 1 and 2

New s101A schemes are unpredictable as these are progressed as and when a customer applies to be connected to our network. We reviewed historic applications and we have estimated there will be 25 connections in AMP7. As we don't know when these may occur we have pro rata'd these across the AMP.

Lines 3 and 4

As part of our PR19 programme we are expecting four new network pumping stations to be built for the sewer flooding, UPM and new development programmes. These are expected to be built at Mill Fold, Ripponden; Bentley Mill; Boroughbridge; and Little Don.

Lines 5 - 6

These numbers are the predictions using the PR19 methodology from our DMF system, based on the investment level in table wws1.

Lines 8 and 9

We are not planning to change the number of outfalls on our network, so this number is unchanged.

Line 11

This number is based on the methodology established for the Annual Performance Report tables and adds on the predicted network activity from our DMF system.

Lines 14 and 15

These numbers are the predictions of network activity from our DMF system.

Lines 16 - 20

These figures are based on the methodology established for our Annual Performance Report tables and adds on the predicted network activity from our DMF system and predicted new developments to populate values in AMP7.

Line 22

An allowance has been made for AMP7 that incorporates additional expected length of rising main associated with a number of new privately-owned Sewage Pumping Stations that are transferred to us during AMP7.

WWn4 - Wholesale wastewater sewage treatment (potential explanatory variables)

General

We believe there is an error in table WWN4, Column AK which generates a validation error "Please complete all cells in row" where this is not required to be done so we have not addressed this.

Blocks A to H Load received at sewage treatment works

Lines 1 – 8

This is based on our growth figures used for our PR19 business plan submission. The growth figures do not include any growth for Trade Effluent customers and therefore it has been assumed for this exercise that the trade effluent Load remains constant through the reporting period.

Blocks A1 to H1 Number of sewage treatment works

Lines 9 – 15

These lines include the addition of new, decommissioned or a change in classification of STW's and is based on growth and quality schemes. The forecast delivery date of these schemes is used to identify changes to works banding. There are 610 STW's processed in this table, which reduces to 606 by 2025. This includes Parlington STW, a new works required to service a major new development in the Leeds area and then the reduction of 5 works including Bagby and Hillam STW discharges which are being transferred downstream in AMP6 and Bishop Wilton, Ingbirchworth and Kirk Smeaton STW discharges which will be transferred in AMP7.

There are 11 STW's which change classification in the final year of expenditure and therefore changes will not be reflected in this table until the first year of AMP 8.

Block I Population Equivalent

Line 16 – 25

The outputs associated with the AMP7 WINEP quality programme are used to populate this table. There are 84 new treatment consents in the WINEP programme, 80 of which are associated with obligations under UWWTD and WFD phosphorous removal. Full details of this programme can be found in the WINEP appendix.

These lines include the addition of new or change in classification of STW's and is based on growth and quality schemes. The forecast delivery date of these schemes is used to identify changes to works banding and consent values in the input tables (lines 17 to 25).

It should be noted that for the current population equivalent served by STW we use the actual number of connected properties in our Annual Performance Report (APR) whereas our forward-looking projections are based on local planning authority information we source from Edge Analytics

It should be noted that Line 25, the PE treatment capacity enhancement, includes growth elements from growth and quality schemes. The quality schemes allow for a growth design element adequate to 2035.

Line 23 includes the addition of outputs from table WWS2, Line 20 and Line 41 which are the Reduction of Sanitary Parameters and No Deterioration of Sanitary Parameters respectively.

We have identified the changes in Population Equivalent associated with each of the WINEP drivers and these reflected in this table. The WWS2/2a table guidance requires us to map expenditure to the primary driver. As such, there may be PE changes to drivers which do not align with the

expenditure within the corresponding lines in table WWS2/2a. This leads to the validation error associated with Line 23 described below.

Line 16 shows a validation error due to the inconsistency between the line definition and the validation calculation

The line definition, which we have used to calculate the populated figures, references population equivalent of residents (excluding holiday population) connected to STW's; whereas the line validation then adds on trade effluent loads. As such we believe our approach to populating this line, consistent with our Annual Performance Report, will always generate a validation error.

Line 23 shows a validation check associated with this line – linked to the line 20 validation error in WWS2a. There are two reasons that this validation check is showing.

1. As mentioned above, we have included the outputs of both the "Reduction in Sanitary Parameters driver" as well as the "No Deterioration in Sanitary Parameters driver in this table however we have split these drivers across lines 20 and 41 within our WWS2a table.
2. This line includes a change in PE associates with sanitary parameters at Oxenhope and Draughton STW in 2021/2022 however as per the WWS2 guidance we have mapped investment to the primary driver associated with these schemes which is Phosphorus and hence they have been mapped to Line 19 of table WWS2a.

WWn5 - Wholesale revenue projections for the wastewater network plus price control

Block A - Wholesale wastewater network revenue requirement aggregated by building blocks

Line 2 - Pension deficit repair contributions ~ wholesale wastewater network

The value for the pension deficit repair contribution is included within the operating cost on WWS1 and not separately identified in Block C, therefore the pension deficit is included within the PAYG value in line 1 and not separately identified on line 2.

Line 3 – 11

These values are sourced from the Ofwat financial model. The numbers are transferred using the Ofwat Data input tool.

'[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx]BPT Extracts'H153:L161

Line 12 – Total wholesale wastewater network revenue requirement for 2019/2020

The methodology used was to take the 2019/2020 price control for wholesale wastewater and to notionally allocate this between the bio resources and the waste water network price control using data from the Annual Performance Report 2018 and the RCV allocation shown on PR19 data table WWS12.

Description of building blocks	Units	2019/2020	Allocation driver	BIO	WWN+
PAYG	£m	237.5	APR 2018	59.0	178.6
Pension Deficit Repair Allowance	£m	5.9	APR 2018	1.5	4.5
Totex menu additional income	£m	0.2	APR 2018	0.1	0.2
Other Income (inc 3rd party income)	£m	(1.2)	APR 2018	(0.3)	(0.9)
Return on Capital	£m	121.1	RCV - MEAV	9.1	112.0
Depreciation	£m	91.3	RCV - MEAV	6.9	84.4
Tax	£m	1.0	Sum of above	0.2	0.8
2010 to 2015 performance - RCM	£m	11.0	Sum of above	1.8	9.2
2010 to 2015 performance - OIA	£m	-	APR 2018	-	-
2010 to 2015 performance - CIS	£m	-	APR 2018	-	-
	£m	**467.0**		**78.2**	**388.8**

This allocation was used to then split the forecast revenue of £564.863m (as stated in WWS13) between the two price controls.

Block B - Wholesale wastewater network ~ other price control income

Line 13 - Third party revenue ~ wholesale wastewater network

This has been linked to table WS1 to line 10, to the relevant price control columns.

Block C - Wholesale wastewater network ~ non-price control income (third party services)

Lines 14 – 18

The inputs are from the 2017/2018 Annual Performance Report tables 2A and 2I.

The assumption used is that the values will inflate by RPI to 2020 and then will be linked to CPIH within the next price control.

Block D - Wholesale wastewater network ~ non-price control income (principal services)

Line 19

The inputs are from the 2017/2018 Annual Performance Report tables 2A and 2I.

The assumption used is that the values will inflate by RPI to 2020 and then will be linked to CPIH within the next price control.

Block E - Wholesale wastewater network charges

This Block has been calculated using the following components of data:

- Consumption/rateable value
- Volumetric and standing charges
- Number of properties

Measured household

1. Consumption

The consumption forecast is manually calculated using several inputs from the Water Resource Management Plan i.e. occupancy rates, population, per capita consumption and meter under registration as well as the forecast property numbers. This gives a water consumption figure, a water: sewerage assumption of 95% is applied to arrive at the wastewater figure.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

The actual property numbers are input to 2017/2018 with the 2018/2019 and 2019/2020 forecasts come from the internal tariff model, these numbers reconcile to table R9, Block C.

The forecast new connections and DMO's, which come directly from the WRMP, are added to the 2019/2020 forecast after applying a sewerage factor. This factor is based on historical actual property and DMO information with a consistent trend.

The average consumption and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast to get to a forecast revenue.

Unmeasured household

1. Average rateable value

The starting point is the actual average RV up to the most recent year. The actual historic average annual movement is assumed to continue going forwards to forecast future years average RV.

To get to the RV forecast, the anticipated average RV is multiplied by the number of DMO's for sewerage. To work out the opening RV each year, the DMO RV is subtracted from the total RV for the previous year, it is this logic that is rolled forward across future years.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

The actual wastewater properties are input up to 2017/2018. The 2018/2019 and 2019/2020 forecasts come from the internal tariff model which have been used to set out the tariffs in those years, these numbers reconcile to table R9, Block C. Therefore 2019/2020 is the base year for the PR19 forecast.

The forecast sewerage properties forecast is based on 2019/2020 properties, minus the DMO's, which are calculated by applying an assumed wastewater percentage to the WRMP DMO forecast, the percentage assumption is based on historic actual properties.

Measured non-household

1. Consumption

The total measured non-household wastewater consumption is taken as a proportion of the water consumption, which is taken directly from the WRMP.

The average actual historic proportion of sewerage consumption, by consumption banding, is assumed to continue into PR19 and therefore applied to the water consumption forecast to establish a sewerage forecast.

The annual consumption trend is compared to that of the property forecast to ensure it is in line.

Trade effluent

Forecast trade effluent consumption from table WWN3 is broken down in to the consumption bandings using historical actual weightings.

1. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

2. Number of properties

The new connections forecast is a 5-year average in line with the WRMP, this is added to the 2017/2018 base. The measured sewerage reduction assumption is similar to the water reduction assumption.

This is broken down in to the consumption bands using the historic actual property weighting and rolling forward the average into PR19, it is a consistent trend.

The average rateable value and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast.

Actual property growth is assumed to continue into PR19, with the banding split based on historic actual weightings. This forecast has been signed off by the Trade Effluent Manager.

Unmeasured non-household

1. Average rateable value

For non-household, the actual average RV per property is assumed to continue into PR19, therefore moves in line with forecast property growth.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

Actuals are input up to 2017/2018. Each year the properties are reduced by subtracting the non-household assumed reductions. This assumption is taken directly from the WRMP.

Block F - Grants & contributions

Line 25 Wastewater network grants and contributions (price control)

This information has been sourced from table App28 lines 24-26

Line 26 Wastewater network grants and contributions (non-price control)

This information has been sourced from table App28 lines 27,28.

The sum of both Lines 25 and 26 has been checked back to line 20 on table WWS1, under the relevant price control.

Block G - Revenue control total ~ wholesale wastewater network

This is a calculated Block.

Adjustments to sources of inputs for modelling purposes

There have been no adjustments to the sources of inputs

WWn6 - Cost recovery for wastewater network plus

Please refer to the commentary within Wr4 for information on this table.

WWn7 - Weighted average cost of capital for the wastewater network plus control

Please refer to the commentary within App32 for information on this table.

WWn8 - Wholesale wastewater network plus special cost factors

Block A: WWN+01 Cellared properties

This data is supported by appendix 8L which is our full narrative relating to our cost adjustment claim for cellared properties. Additionally, our approach to 'cost adjustment claims' is set out in Appendix 8H.

The claim has been characterised as a regional operating circumstance in the type of special cost factor claim line. This is because the claim relates to the fact that we have a larger proportion of cellared properties in our region in comparison to other operational areas. This leads to an increased cost to Yorkshire water when delivering comparable levels of performance in internal sewer flooding.

Historic and forecast cost to end of AMP6 (2004/2005 to 2019/2020)

Data is extracted from our SAP (Enterprise Resource Planning System) regarding projects with their associated expenditure at an Investment Category (IC) level by year going back to the project's creation. This data is then mapped to the relevant reporting line based on the ICs. Projects which started in previous AMP periods have different ICs, these have been mapped between AMP periods to establish which of the current AMP6 ICs the projects relate to.

For this special cost claims we considered the following ICs relate to the expenditure we need to report.

For the Internal Flooding at cellared properties claim we considered a variety of ICs relating to both base spend and enhancements. Ultimately, we have chosen to report the historic expenditure relating to the following ICs, to be consistent with the AMP7 methodology used to create this claim.

We have taken all the expenditure on these ICs and then applied a proportional adjustment based on the percentage set out in the cost adjustment claim document. This ensures that the claim and historic cost is on an equivalent basis:

Table: internal sewer flooding ICs

AMP6 IC equivalent	Description	Service Area	Price Control	% Multiplier Applied
A6/C/AM/115/I/311	DG5 - Other Causes (replace) - Infra	Base Infra	Waste Water	49%
A6/C/AM/115/I/374	DG5 Other Causes (repair)*	Base Infra	Waste Water	49%
A6/C/AM/115/N/322	DG5 - Other Causes - Non-Infra	Base N	Waste Water	49%
A6/C/AM/120/I/377	DG5 Other Causes ELOS (repair)*	Enhancements Infra	Waste Water	49%
A6/C/AM/120/I/378	DG5 Other Causes ELOS (replace) - Infra	Enhancements Infra	Waste Water	49%
A6/C/AM/120/N/343	DG5 Other Causes ELOS (replace/increase	Enhancements NI	Waste Water	49%

A6/C/AM/110/I/350	DG5 overloaded sewer ELOS - Infra	Enhancements Infra	Waste Water	49%
A6/C/AM/105/I/362	DG5 Overloaded Sewer - Infra	Enhancements Infra	Waste Water	49%
A6/C/AM/105/N/342	DG5 Overloaded Sewer - Non-Infra	Enhancements NI	Waste Water	49%
A6/C/AM/110/N/329	DG5 overloaded sewer ELOS - Non-Infra	Enhancements NI	Waste Water	49%
A6/C/AM/105/I/307	DG5 New additions - Infra	Enhancements Infra	Waste Water	49%
A6/C/AM/105/N/305	DG5 New additions - Non-Infra	Enhancements NI	Waste Water	49%
A6/C/AM/553/I/730	UQ Other Causes - Infra	Enhancements Infra	Wastewater	49%
A6/C/AM/553/N/731	UQ Other Causes - Non-Infra	Enhancements NI	Wastewater	49%
A6/C/AM/553/I/732	UQ Other Causes (Repair) *	Enhancements Infra	Wastewater	49%
A6/C/AM/553/I/733	UQ Reducing Hydraulics - Infra	Enhancements Infra	Wastewater	49%
A6/C/AM/553/N/734	UQ Reducing Hydraulics - Non-Infra	Enhancements NI	Wastewater	49%
A6/C/AM/553/I/735	UQ Reducing Hydraulics (Repair) *	Enhancements Infra	Wastewater	49%
A6/C/AM/365/N/312	Proactive Sewer Invest - Non-Infra	Base NI	Wastewater	39%
A6/C/AM/365/I/370	Proactive Sewer Invest (repair)	Base Infra	Wastewater	39%
A6/C/AM/365/I/301	Proactive Sewer Invest (replace) - Infra	Base Infra	Wastewater	39%
A6/C/AM/365/I/302	Reactive Sewer Investment - Infra	Base Infra	Wastewater	49%
A6/C/AM/365/N/313	Reactive Sewer Investment - Non-Infra	Base NI	Wastewater	49%
A6/C/AM/365/I/392	Reactive Sewer Investment (repair)	Base Infra	Wastewater	49%
A6/C/AM/360/I/317	Sewer Maintenance ELOS (repair)	Enhancements Infra	Wastewater	39%

Cost adjustment claim values (2020/2021 to 2024/2024)

The expenditure populated in the AMP7 tables (2020/2021 to 2024/2025) is solely the expenditure that is being submitted as the value of the cost adjustment claim. Where the claim is only part of the total expenditure presented within the plan, we have not included the costs in these tables that are additional to the cost adjustment claim to give the total cost with the plan.

We confirm that we have only included costs associated with the cost adjustment claim in this period. For this claim we have made a further adjustment to reflect the proportion of costs that are incurred due to the increased number of cellared properties in our area relative to other companies. Full details of how these costs have been developed have been set out in our cost adjustment claim appendix 8K.

The table below shows the value of the AMP7 claim and how this relates to our estimated full investment for internal sewer flooding in the plan. This cost forms part of the Sewage Collection costs shown in table WWS1 lines 8, 12-15 and the enhancement elements are reflected in WWS2 lines 30 and 38.

Table: Total claim (WWN6 data table) value and total internal sewer flooding cost in plan

	Cost
Value of Claim (Cellared props)	£105.93m
Total Internal sewer flooding	£243.33m

Block B: WWN+04 Growth (wastewater)

This data is supported by appendix 8L which is our full narrative relating to our cost adjustment claim for wastewater growth. Additionally, our approach to 'cost adjustment claims' is set out in appendix 8H.

The claim has been characterised as an atypically large expenditure in the type of special cost factor claim line. It has been assessed as being an atypically large expenditure claim because we incur growth related expenditure in every AMP, however, due to the nature of the growth relating to these 4 new settlements at York, Parlington, Colburn (Catterick) and Green Hammerton, the costs above and beyond our 'normal' growth expenditure is atypically large.

It should be noted that the claim only relates to the costs at these four settlements. We are incurring additional 'normal' growth costs which are included in the plan and the relevant data tables but not included in the claim value.

Below we provide a commentary on the data included in the data table for Block A, we have broken it down by the period it relates to and this is set out in the titles below:

Historic and forecast cost to end of AMP6 (2004/2005 to 2019/2020)

For wastewater growth we have included no historic or forecast data until the end of this AMP (2019/2020). This is because the claim relates solely to the growth expenditure driven by the 4 new settlements set out in our claim document. Therefore, the claim relates to a subset of our total growth expenditure in AMP7. As such there is no comparable historic expenditure. To ensure that the claim value is compared on a like for like basis we have not incurred any growth expenditure at these sites that is due to a new settlement being developed in the period set out. Additionally, we have included no OPEX within the claim and as such we have not included any OPEX on a historic basis to ensure that the costs are comparable.

We have provided below the investment categories where our usual expenditure in this area has been recorded against:

Table: Wastewater growth ICs

AMP6 IC equivalent	Description	Service Area	Price Control
A6/C/AM/345/N/460	Sewage treatment growth New Development	Enhancements NI	Wastewater
A6/C/AM/345/N/461	Sewage treatment growth Existing	Enhancements NI	Wastewater
A6/C/AM/345/N/462	Terminal Pumping Stations - New Development	Enhancements NI	Wastewater
A6/C/AM/345/N/463	Terminal Pumping Stations - Existing	Enhancements NI	Wastewater
A6/C/AM/370/I/360	Sewer growth New Development - Infra	Enhancements I	Wastewater
A6/C/AM/370/I/361	Sewer growth existing - Infra	Enhancements I	Wastewater
A6/C/AM/370/N/363	Sewer growth New Development - Non-Infra	Enhancements NI	Wastewater

Cost adjustment claim values (2020/2021 to 2024/2024)

The expenditure populated in the AMP7 tables (2020/2021 to 2024/2025) is solely the expenditure that is being submitted as the value of the cost adjustment claim. Where the claim is only part of the total expenditure presented within the plan, we have not included the costs in these tables that are additional to the cost adjustment claim to give the total cost with the plan.

We have included the costs associated with the growth at 4 specific new developments at Parlington, Catterick, York and Green Hammerton shown in the table 'total scheme costs'. The costs in this table are split across lines 25 and 26 of data table WWS2 based on the network and treatment works elements of these schemes.

Table: total scheme costs

Scheme	Cost
York	£29.705m
Catterick	£13.338m
Green Hammerton	£9.191m
Parlington	£3.078m

For illustrative purposes only, we have provided the details of our total expenditure in Lines 25 and 26 which includes our typical investment to manage growth in the sewerage network and at sewage treatment works assets. This is shown against out claim value in table 'Total claim (WWN6 data table) value and total wastewater growth cost in plan'.

Table: Total claim (WWN6 data table) value and total wastewater growth cost in plan

	Cost
Value of Claim (Sewerage and STW growth)	£55.312m
Total Sewerage and STW growth	£105.274m

Addendum

For comparative purposes only, we have provided the historic expenditure associated with the ICs set out in the table 'Wastewater growth ICs' and our total growth expenditure for the whole of AMP 7 including the costs included in the claim in the table below:

Table: Shadow table for wastewater growth claim, all historic and all AMP7 wastewater growth expenditure

WWN+ Growth - All Expenditure	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015
Total Spend (£m)	0.275	1.466	6.569	10.581	7.296	6.188	4.749	7.766	5.897	12.384	17.327

WWN+ Growth - All Expenditure	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023	2023/2024	2024/2025
Total Spend (£m)	6.062	6.464	10.042	10.186	6.819	15.805	27.988	30.074	22.063	9.794

The claim value is a subset of these numbers for the period 2020/2021 to 2024/2025.

Bioresources tables

Bio1 - Wholesale wastewater sludge (explanatory variables)

The table Bio 1 describes the changes to sludge production and treatment in our Bio Resource business.

For AMP6 financial years 2015/2016, 2016/2017, 2017/2018, the level of sludge produced has increased as a result of projected population growth and the NEP5 programme.

During AMP7 the level of sewage sludge produced will increase as a result of projected population growth and the WINEP programme in AMP7, the majority driven by measures associated with P removal. A full description of our approach to dealing with growth in sludge production can be found in the Bio Resources narrative, the appendix to the narrative and the Cost Claim document.

A full strategic explanation of the WINEP can be found in the WINEP appendix.

The level of sludge to be treated by a third party is associated with our third-party market approach where we plan to send some of Yorkshire Water's sludge at an efficient cost outside of the Yorkshire region. This is shown in lines 3 and line 8.

The total increase in sludge is 25.5ttds and follows the proposed investment profile in table WWWS1.

All lines in the Table Bio1 follow the same investment profile. The Ofwat guidance was followed to complete all the lines in this Table.

Bio2 - Wholesale wastewater sludge treatment process and disposal routes

The data in Table Bio 2 describes the sludge treatment processes and available sludge disposal routes. All lines in in table Bio2 have been derived using the table guidance.

Our AMP6 strategy is to move our treatment capacity fully to conventional or advanced anaerobic digestion by AMP7. Therefore, liming, phyto conditioning and incineration have been removed in the period before 2020 and there is a corresponding increase in anaerobic and advanced anaerobic digestion.

Optimisation between our advanced facility at Esholt and the rest of the standard facilities across the region takes place on a continual basis, depending on the nature and location of sludges at the Esholt STW and sludge imports. Throughout AMP7 a small percentage of sludge will be disposed of through third party using our markets-based approach to optimise our costs.

A full summary of our Bio Resources assets can be found in our Bio resources RCV.

All of our sludge will be recycled to land and we aim to achieve 100% Biosolids accreditation as per our Quality Agricultural Products Performance Commitment., However as above, and described in our narrative, appendix and cost claim, a small percentage of sludge will be recycled via a third party

Bio3 - Wholesale wastewater sludge Opex

This table is a further disaggregation of sludge treatment and disposal in table WWS1. The table reviews wholesale waste water sludge Opex, and is the same table reported in the Annual Performance Report under table 4W. Due to atypical expenditure this table does not reconcile to the Annual Performance Report 2017/2018(table 4E) and is consistent with table WWS1 which excludes atypical costs in Block A. The basis for future year allocations has been done on the same proportion of costs for each treatment categories within sludge treatment and disposal. Whilst the forecast suggests some efficiencies in this area associated with new maintenance approach and sludge tankering, there are additional operating cost pressures associated with helping the overall totex plan. In other words, smaller Opex solutions are offsetting more expensive capital solutions to treat and dispose sludge.

Historical cost depreciation reviews the capital plan and determines the level of depreciation in total using APP16. The increases forecast to the end of AMP7 is reflective of the increase in capital expenditure which creates assets and therefore depreciation. Increases in historical cost depreciation is reflective of the significant investment on new anaerobic digestion plants within the sludge plan.

Bio4 - Wholesale revenue projections for the wastewater bioresources price control

Block A - Wholesale wastewater bioresources revenue requirement aggregated by building blocks

Line 2 - Pension deficit repair contributions ~ wholesale wastewater bioresources

The value for the pension deficit repair contribution is included within the operating cost on WWS1 and not separately identified in Block C, therefore the pension deficit is included within the PAYG value in line 1 and not separately identified on line 2.

Line 3 – 11

These values are sourced from the Ofwat financial model. The numbers are transferred using the Ofwat Data input tool.

'[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx]BPT Extracts'H169:L177

Line 12 – Total wholesale wastewater bioresources revenue requirement for 2019/2020

This has been calculated on an internal model titled 'Revenue 2019/2020 allocation to BR'

The methodology used was to take the 2019/2020 price control for wholesale wastewater and to notionally allocate this between the bio resources and the waste water network price control using data from the Annual Performance Report 2018 and the RCV allocation shown on PR19 data table WWS12.

Description of building blocks	Units	2019/2020	Allocation driver	BIO	WWN+
PAYG	£m	237.5	APR 2018	59.0	178.6
Pension Deficit Repair Allowance	£m	5.9	APR 2018	1.5	4.5
Totex menu additional income	£m	0.2	APR 2018	0.1	0.2
Other Income (inc 3rd party income)	£m	(1.2)	APR 2018	(0.3)	(0.9)
Return on Capital	£m	121.1	RCV - MEAV	9.1	112.0
Depreciation	£m	91.3	RCV - MEAV	6.9	84.4
Tax	£m	1.0	Sum of above	0.2	0.8
2010 to 2015 performance - RCM	£m	11.0	Sum of above	1.8	9.2
2010 to 2015 performance - OIA	£m	-	APR 2018	-	-
2010 to 2015 performance - CIS	£m	-	APR 2018	-	-
	£m	**467.0**		**78.2**	**388.8**

This allocation was used to then split the forecast revenue of £564.863m (as stated in WWS13) between the two price controls.

Block B - Wholesale wastewater bioresources ~ other price control income

Line 13 - Third party revenue ~ wholesale wastewater bioresources

This has been linked to table WWS1 to line 10, to the relevant price control columns.

Block C - Wholesale wastewater bioresources ~ non-price control income (third party services)

Lines 14 – 18

The inputs are from the 2017/2018 Annual Performance Report tables 2A and 2I.

The assumption used is that the values will inflate by RPI to 2020 and then will be linked to CPIH within the next price control.

Block D - Wholesale wastewater bioresources ~ non-price control income (principal services)

Line 19

This line has been completed using the internal spreadsheet 'other income – WR3_WN3_WWN5_BIO4'. The inputs are form the 2017/2018 Annual Performance Report tables 2A and 2I.

The assumption used is that the values will inflate by RPI to 2020 and then will be linked to CPIH within the next price control.

Block E - Wholesale wastewater bioresources charges

This Block has been calculated using the following components of data:

- Consumption/rateable value
- Volumetric and standing charges
- Number of properties

Wastewater

Measured household

1. Consumption

The consumption forecast is manually calculated using several inputs from the Water Resource Management Plan i.e. occupancy rates, population, per capita consumption and meter under registration as well as the forecast property numbers. This gives a water consumption figure, a water:sewerage assumption of 95% is applied to arrive at the wastewater figure.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

The actual property numbers are input to 2017/2018 with the 2018/2019 and 2019/2020 forecasts come from the internal tariff model, these numbers reconcile to table R9, Block C.

The forecast new connections and DMO's, which come directly from the WRMP, are added to the 2019/2020 forecast after applying a sewerage factor. This factor is based on historical actual property and DMO information with a consistent trend.

The average consumption and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast to get to a forecast revenue.

Unmeasured household

1. Average rateable value

The starting point is the actual average RV up to the most recent year. The actual historic average annual movement is assumed to continue going forwards to forecast future years average RV.

To get to the RV forecast, the anticipated average RV is multiplied by the number of DMO's for sewerage. To work out the opening RV each year, the DMO RV is subtracted from the total RV for the previous year, it is this logic that is rolled forward across future years.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

The actual wastewater properties are input up to 2017/2018. The 2018/2019 and 2019/2020 forecasts come from the internal tariff model which have been used to set out the tariffs in those years, these numbers reconcile to table R9, Block C. Therefore 2019/2020 is the base year for the PR19 forecast.

The forecast sewerage properties forecast is based on 2019/2020 properties, minus the DMO's, which are calculated by applying an assumed wastewater percentage to the WRMP DMO forecast, the percentage assumption is based on historic actual properties.

Measured non-household

1. Consumption

The total measured non-household wastewater consumption is taken as a proportion of the water consumption, which is taken directly from the WRMP.

The average actual historic proportion of sewerage consumption, by consumption banding, is assumed to continue into PR19 and therefore applied to the water consumption forecast to establish a sewerage forecast.

The annual consumption trend is compared to that of the property forecast to ensure it is in line.

Trade effluent

Forecast trade effluent consumption from table WWN3 is broken down in to the consumption bandings using historical actual weightings.

1. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

2. Number of properties

The new connections forecast is a 5-year average in line with the WRMP, this is added to the 2017/2018 base. The measured sewerage reduction assumption is similar to the water reduction assumption.

This is broken down in to the consumption bands using the historic actual property weighting and rolling forward the average into PR19, it is a consistent trend.

The average rateable value and charges are used to calculate an average charge per property, this is then multiplied by the number of properties forecast.

Actual property growth is assumed to continue into PR19, with the banding split based on historic actual weightings. This forecast has been signed off by the Trade Effluent Manager.

Unmeasured non-household

1. Average rateable value

For non-household, the actual average RV per property is assumed to continue into PR19, therefore moves in line with forecast property growth.

2. Volumetric and standing charges

The volumetric and standing charges have been forecast to balance the required revenue percentage weightings.

3. Number of properties

Actuals are input up to 2017/2018. Each year the properties are reduced by subtracting the non-household assumed reductions. This assumption is taken directly from the WRMP

Block F - Grants & contributions

Line 25 Wastewater bioresources grants and contributions (price control)

This information has been sourced from table App28 lines 24-26

Line 26 Wastewater bioresources grants and contributions (non-price control)

This information has been sourced from table App28 lines 27,28.

The sum of both Lines 25 and 26 has been checked back to line 20 on table WWS1, under the relevant price control.

Block G - Revenue control total ~ wholesale wastewater bioresources

This is a calculated Block.

Block H - Wholesale wastewater bioresources ~ revenue to cover bioresources costs

A detailed review of underlying operating expenditure has been carried out to categorise costs into fixed and variable expenditure. The main assumption was to calculate the financial savings (by category) resulting from a reduction in treatment volume. The outcome of the review was that the fixed and variable costs for sludge transport, treatment and disposal are different due to the nature of each business, along with varying Opex proportions. The capital expenditure for this exercise was assumed to be all fixed costs given that we could not assume the variability of volumes to be long term. Using this information, the percentage for fixed costs is applied to elements of Block A and these financials are applied to line 28.

The main forecast movement is from end of AMP6 going into AMP7 due to the level of efficiency that is expected going into the new AMP period in 2020. The increases year on year in AMP7 are mainly because of the run-off of post 2020 investment.

Adjustments to sources of inputs for modelling purposes

There have been no adjustments to the sources of inputs

Bio5 - Cost recovery for bioresources

Please refer to the commentary within Wr4 for information on this table.

Bio6 - Weighted average cost of capital for the bioresources control

Please refer to the commentary within App 32 for information on this table.

Bio7 - Wholesale wastewater bioresources special cost factors

Block A: BIO01 Bioresources enhancement

This data is supported by Appendix 8M which is our full narrative relating to our cost adjustment claim for Bioresources enhancement. Additionally, our approach to 'cost adjustment claims' is set out in Appendix 8M.

The claim has been characterised as an atypically large expenditure in the type of special cost factor claim line.

Historic and forecast cost to end of AMP6 (2004/2005 to 2019/2020)

Data is extracted from SAP regarding projects with their associated expenditure at an Investment Category (IC) level by year going back to the project's creation. This data is then mapped to the relevant reporting line based on the ICs. Projects which started in previous AMP periods have different ICs, these have been mapped between AMP periods to establish which of the current AMP6 ICs the projects relate to.

For the Bioresources claim we have included two ICs relating to sludge quality schemes these are shown in the table 'Bioresources enhancement ICs' below.

We have included no OPEX within the claim and as such we have not included any OPEX on a historic basis to ensure that the costs are comparable.

Table: Bioresources enhancement ICs

AMP6 IC equivalent	Description	Service Area	Price Control
A6/C/AM/380/N/485	Sludge Treatment from FFD Quality	Enhancements NI	Wastewater
A6/C/AM/380/N/929	Additional Sludge due to new STQ drivers	Enhancements NI	Wastewater

Cost adjustment claim values (2020/2021 to 2024/2025)

The expenditure populated in the AMP7 tables (2020/2021 to 2024/2025) is solely the expenditure that is being submitted as the value of the cost adjustment claim. Where the claim is only part of the total expenditure presented within the plan, we have not included the costs in these tables that are additional to the cost adjustment claim to give the total cost with the plan.

We have only included the costs associated with the WINEP3 programme in our cost adjustment claim. This investment is related to providing additional capacity at Knostrop Sewage Treatment Works to manage the additional sludge produced by our WINEP3 investment programme.

The full expenditure in Bioresources Quality also includes a small amount of expenditure in Medium Combustion Plant Directive (MCPD) compliance and it is this value of £65.99m which is shown in line 2 of WWS2.

Retail tables

R1 - Residential retail

Data has been populated according to the guidance.

Block A - Operating Expenditure

Our debt performance is historically strong compared to other water companies. Our use of data has helped keep operating costs low whilst delivering improved customer service and financial support to those in need of help.

Customer Service costs are forecast to reduce by 2020 due to a reduction in inbound contacts handled by agents from our digital transformation. The use of digital transactions will also reduce the mailing costs from 2020 onwards. The reduction equates to £15m over the 5-year period. An additional benefit of £4m will be realised from 2023 to 2025 due to the embedding of the Customer Relationship Management Systems.

Debt management costs are forecast to reduce in real terms due to innovative ways of understanding our customers and targeting support effectively.

Doubtful debt is based on the historic relationship between Household revenue and the doubtful debt charge over a period of time and then applied to the future Household Revenue forecasts to arrive at an initial doubtful debt charge. An efficiency of £6m has then been applied to the resulting numbers together with planned further reductions relating to additional customer help schemes (fresh start) to provide a stretching target for the AMP. The reduction between years 2019/2020 and 2020/2021 reflects the initial efficiency at the start of AMP7. The doubtful debt charge forecasts do not reflect any potential increases due to future economic factors.

Block B – Customer Numbers

Line 16 Household Connected

12 months ended 31 March 2013 to 2018.

These inputs are actual property numbers that come from an internal tariff model used to set the tariffs each year.

12 months ended 31 March 2019 to 2025.

Water only

For years 2018/2019 and 2019-2020 these come from an internal tariff model and reconcile to data table R9 – section C. From 2019/20, new connections and the domestic meter optants forecast come directly from the Water Resource Management Plan, these are factored in to the 2019/20 base to establish a total water property forecast.

A water only split is forecast based on the average actual historical weighting of ‘water only’ and ‘water and sewerage’, this is assumed to continue into PR19.

To calculate the unmeasured and measured water only elements, the historical average annual ‘measured/unmeasured’ swing is assumed to continue and is therefore applied to the total water only forecast.

Wastewater only

Similar to water, the forecast for years 2018/2019 and 2019/2020 also come from an internal tariff model. The WRMP new connections and DMO’s are factored in after applying an assumed wastewater percent, this percentage is an average based on historic actuals.

Once the total household sewerage property figure is established, the forecast water and sewerage is subtracted to leave the sewerage only element.

To calculate the unmeasured and measured sewerage only elements, the historic average annual 'measured/unmeasured' swing is assumed to continue and is therefore applied to the total sewerage only forecast.

Water and sewerage

This is simply the total water property forecast, less the water only element explained above.

Block C – Operating Expenditure part funded by Wholesale

Information for CCC & Annual Performance Report tables is extracted from the financial records held each year within SAP, in accordance with the documented procedures to comply with the Regulatory Accounting Guidelines as supplied by OFWAT. These tables have been subject to both internal and external assurance.

As prior year information has not been compiled in the format required by PR19, the total figures from the Retail tables have been apportioned using the customer number weightings as described in RAG 2.

Block D - Recharges for assets shared by Retail and Wholesale

Following extensive customer research, a Customer Relationship Management (CRM) system is being designed to enable a more automated, digital service offering which provides tailored services to each customer's needs and expectations.

These costing, along with additional "Management & General" assets have been collated by BSG business unit for both Wholesale & Retail activity.

R2 - Residential retail special cost factors

Nil return – no cost adjustment claims/ special cost factors to submit in residential retail.

There are no special cost factors within Residential Retail. The cost of CRM was considered but was not supported by the Yorkshire Forum for Water Customers. The activity is viewed to be business as usual and the costs are not as significant in AMP 7 as first thought.

R3 - Residential retail ~ further information on bad debt and customer services

Data has been populated according to the guidance.

With increased vulnerability identification through new data sources we have been able to utilise data to better support vulnerable customers.

We now place the support we offer vulnerable customers at the heart of our non-enforcement strategies, encouraging customers in arears to contact us and to find out how we can help. Help includes, flexible payment arrangements through to our payment incentive scheme, Resolve, where customers with over 12 months arears, can have their arears written off as long as they maintain regular agreed payments for 12 months. We also have our social tariff for customers on the lowest incomes. We have also significantly increased our external visits to customers offering our customer support on the doorstep.

Line 2 – Debt Written Off - residential

AMP7 numbers are initially based on forecasted write-off levels for 2018/2019 with each year increasing in line with the Household revenue forecasts. This reflects expected write-off levels including additional customer help schemes (fresh start) offered to customers. The reduction between years 2019/2020 and 2020/2021 reflects an initial efficiency at the start of AMP7. The write-off forecasts do not reflect any potential increases due to future economic factors.

Line 3 – Total residential revenue outstanding

The revenue outstanding forecasts for AMP7 are based on the historical movements year on year in arrears and the expected outturn position for 2019/2020. These are normally reflective of price increases together with continuing pressures on household incomes. Another aspect of arrears relating to Metered customers in particular, is additional new connections and the nature of billing in arrears for customers who choose to pay 'by bill'. A specific adjustment has been made to year 2023/2024 to increase revenue outstanding above the normal level to reflect the fact that a main customer instalment date of 31st March falls on a Sunday and we will not therefore be able to collect direct debits from these customers until April.

Lines 4 - 15 – Total residential revenue outstanding by month(s)

The total revenue outstanding has been aged based on historical billing system aged debt reports in the relevant categories across AMP7.

Line 16 – Percentage of revenue collected each year

The household revenue forecast less total revenue outstanding in table R3 line 3 is the revenue collected for the report year. This calculated value is then divided by the household revenue forecast to give the % of revenue collected each year.

Lines C17 – 28

The numbers used for volume of customer contacts are those that resulted in a contact being logged against a customer account on our systems for Billing, Clean Water and Waste Water Services. The exception for this is the social media contacts where an average of the last 3 months total first responses was taken, due to the fact that these often do not result in a customer being identified to allow the contact to be logged on the account.

Since 2015, Yorkshire Water has seen a steady increase in the number of online payments made by customers reducing the volume of telephone contacts and increasing the volume received via e-mail and web forms. More payments are now received over this channel than over the phone and it is forecast that we will continue to see this trend increase over the next AMP. As these are automated this significantly improves the cost to serve of the e-mail/webform channel. Similarly, there has been a steady decrease in the number of contacts received by letter or other forms through the post, this decrease has also been expected to continue.

Yorkshire Water are currently investing in improving the online billing account management available to customers, starting with introducing an improved and automated moving home webform. This is anticipated to move an additional 150,000 inbound contacts over the remainder of the AMP. As this will also be automated this continues to improve the efficiency of this channel.

In 2017 additional promotion of webchat saw the use of this channel grow by over 100% and current customer behaviour suggests that there is still further growth than can be achieve in this channel. A new web call back option was also introduced successfully although these contacts continue to be logged in the telephone category. Social Media contacts remain very low in comparison to the other channels but are growing quickly and this has been included in the projections.

The Contact Centre cost were taken to be all direct cost for operating the Contact Centre, plus 50% of all the additional overheads (IT, building and facilities management etc.) calculated by using headcount as the cost driver. To calculate the cost per channel the staff cost (e.g. agent salary) was proportioned based on the assumed resources allocated in the business plan to handle each channel, while the overheads were allocated using the volume of contacts on each channel.

Due to the increased automation of contacts described above the overall operating cost of the contact centre are assumed to reduce by £2m by 2020. However additional investment in a CRM system to improve clean and waste water customer service, planned for 2021, will introduce and additional £2.5m of licence fees, although this is offset by an anticipated saving of £1m in 2023.

R4 - Business retail ~ Welsh companies

This table is a nil return.

R5 - Business retail ~ non-exited companies operating in England

We have used the updated table provided to us by Ofwat.

Lines 1 to 10

Total operating expenditure (Line 1) is broadly flat across the 2020-2025 period because of the positive impacts of operating efficiency initiatives and lower costs directly linked to reducing customer numbers being offset by input price pressures.

During 2015-2020, operating expenditure noticeably increases for a period as a result of expenditure for market opening, subsequent to which costs reduce as a result of operating efficiency initiatives and lower costs directly linked to reducing customer numbers.

Depreciation (Lines 2 - 4) reduces to nil by 2023/2024 because of the full depreciation of historical capitalised costs. New capital expenditure is expected to be incurred by the separate Kelda Group legal entity - Three Sixty Water – which under formal contract provides YWBS' outsourced activities. The future operating costs to YWBS, for the Three Sixty contract (included within the Line 1 costs), include amounts for capital assets.

In the 2020-2025 period there is no forecast depreciation in respect of legacy assets existing at 31 March 2015.

Total 2015-2020 capital expenditure will amount to £9.870m, from:

- Retail competition market opening programme costs - £8.897m with 5-year straight line depreciation until 30.6.22, resulting in an opening PR19 book value of £4.004m to be depreciated in the PR19 period (2020/2021: £1.779m, 2021/2022: £1.779m and 2022/2023: £0.446m).
- £0.973m of other individually smaller assets, including office and IT related which are expected to be fully depreciated before the start of the PR19 period.

Pension deficit contributions (Line 5) cease after 2021/2022 because the schemes are then expected to be in surplus.

Line 11

Any difference in value between our actual/forecast retail costs and the costs recovered from within customers' default tariff structures.

Our forecast of costs is higher than those we have included within the customer tariffs and as a result the Line 11 cross check does not equal zero. The plan is financeable in the round, however, because we expect the margin returns will be sufficient to support the actual costs.

Wholesale/retail differentiated default tariffs were not in existence prior to 2015/2016. As there is no tariff data populated in blocks E to N for the three years 2012-2015, therefore, the Line 11 cross check does not equal zero.

Lines 12 to 14: an aggregated summary of the revenues and net margins that our proposed default tariffs will generate given the tabled assumptions e.g. number of businesses being served and wholesale charge value

Line 12 wholesale charges and Line 13 total business retail revenues reduce from 2016/2017 to 2022/2023 as a result of losses from customer switching being greater than the increase in wholesale and retail unit prices. It is assumed the rate of switching (customer losses) reduces over

time and therefore after 2022/2023 the impact of the customer switching is more than offset by increasing wholesale and retail unit prices.

The Line 13 total revenues for 2015/2016 to 2017/2018 are as reported in the Annual Performance Reports. The Line 12 wholesale charge values are slightly lower than reported in the APRs (average annual difference of less than 0.3%), however, as a result of using different approaches to derive the wholesale charges:

- The Annual Performance Report table wholesale values for each tariff type were calculated by deducting the retail components (derived by applying expected gross margins to the total customer revenues) from the total customer revenues.
- The R5 wholesale values have been calculated using the same method as for the 2018/2019 to 2024/2025 forecasts:
    - for the category 2 (gross margin) tariffs – same approach as the Annual Performance Report tables; and
    - for the category 1 (net margin) tariffs - using the PR16 retail costs per customer and PR16 net margins.

Line 14 is supposed to calculate the aggregate net margins from the default tariff information in the subsequent blocks but is actually calculating the aggregate accounting gross profit margin. The values we have included on Line 2 of R8 are the aggregate net margins we would have expected this R5 Line 14 to calculate.

Line 15: number of connected businesses being served

Connection numbers are forecast to reduce as customers switch to other retailers.

2012/2013 to 2014/2015 cells are showing as zero because the cells are adding up the number of connections in the individual default tariff blocks further down the table. These blocks for 2012/2013 to 2014/2015 have been left blank because wholesale/retail differentiated default tariffs were not in existence prior to 2015/2016.

Lines 16 to 22: expenditure on demand side water efficiency initiatives and customer side leak repairs - and any funding contributions towards the expenditure from Wholesale;

Yorkshire Water does not incur any costs on demand side water efficiency relating to non-household customers. Similarly, any repairs to customer side leaks are recharged to the customer.

Lines 23 to 26: recharges from / to other price controls where there is shared use of assets across price controls.

2012/2013 to 2014/2015 cells have been left blank because recharges from price control(s) of principal use to other price controls only commenced from 2015/2016.

The recharging parties are tabled below. The increase from 2019/2020 is due to assumed charges relating to a new corporate SAP implementation.

Pricipal use recharges

To Business Retail…	2015/16 £M	2016/17 £M	2017/18 £M	2018/19 £M	2019/20 £M	2020/21 £M	2021/22 £M	2022/23 £M	2023/24 £M	2024/25 £M
From Wastewater	0.000	0.080	0.216	0.216	0.301	0.301	0.301	0.301	0.301	0.301
From Household retail	0.000	0.000	0.261	0.261	0.261	0.261	0.261	0.261	0.261	0.261
From Business Retail…										
To Household retail	0.378	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Lines 27 onwards (Blocks E to M): details of the assumptions behind our nine proposed default tariffs

2012/2013 to 2014/2015 cells have been left blank because wholesale/retail differentiated default tariffs were not in existence prior to 2015/2016.

Actuals have been reported within the 2015/2016 to 2017/2018 columns.

The 2018/2019 to 2024/2025 forecasts have been influenced by:

- Considering the likely acceptability to customers;
- Rolling forward net margins from our current PR16 determination and continuing to move towards the uniform gross margin caps;
- Minimising incidence effects of customer bills moving significantly in any one year; and
- Ensuring sufficient revenues are generated to fund efficient operating costs and provide appropriate post interest and tax returns.

Cost recovery

Customer group 1 default charges include a retail cost per customer consistent with the PR16 determination until 2019/2020, and thereafter adjusts the 2019/2020 amount to exclude pension deficit contributions beyond 2021/2022 (when we expect the deficit to be cleared), and to include the impact of real price effect input price pressures.

For customer group 2, the PR16 determination gross margin approach is retained and, as a result, costs allocated to these customer types are not a ‘building block’ of the revenue allowances.

Margins

Customer group 1 tariffs have net margin percentages equal to the PR16 determination until 2019/2020, and thereafter the 2019/2020 margins are maintained.

Customer group 2 tariffs have gross margin percentages which increase towards the uniform gross margin caps, where there is headroom to do so while ensuring year-on-year retail revenue price increases remain within the supplementary cap 1% tolerance.

R6 - Business retail special cost factors

Nil return – no cost adjustment claims/ special cost factors to submit in business retail.

R7 - Revenue and cost recovery for retail

Sources of inputs

Block A - Residential retail costs ~ England and Wales

This has been populated from the PR19 financial model.

Line 1 - was sourced from the 'retail_residential' tab line 99.

Line 2 – was sourced from the 'retail_residential' tab line 98.

Line 3 – was sourced from the 'FinStat_Residential' tab line 19.

Line 4 – was sourced from the 'FinStat_Residential' tab line 16.

To assist in the population of the data tables, we have included an additional Block within the '[BPT-FM-Mapping-tool-v7.1 (2)inc.xlsx] spreadsheet titled 'YKYlinks', this links to the financial model as described above.

Block B - Business retail costs ~ Wales

We have no values for this Block.

Block C - Retail revenues

The inputs for these lines have been calculated using the information from table R5.

We were unable to source this information from the financial model due to the limited non-household retail information that is populated within model.

Full details of the retail non-household revenues are contained within the 'Business retail price control business plan'.

Adjustments to sources of inputs for modelling purposes

No adjustments have been made.

R8 - Net retail margins

The household retail margin of 1.0% is in accordance with the margin suggested by Ofwat in their PR19 methodology, December 2017.

Block A

Line 2 values are the aggregated net margins of the proposed Business Retail default tariffs for years 2020/2021 to 2024/2025. We would have expected Line 14 of R5 to calculate these values.

Customer group 1 tariffs (unmeasured and less than 5Ml per annum) have fixed net margin percentages equal to the PR16 determination for 2019/2020. Customer group 2 tariffs (at least 5Ml per annum) have gross margin percentages which increase across 2020-2025, where there is headroom to do so, towards the uniform gross margin caps, while ensuring year-on-year retail revenue price increases remain within the supplementary cap 1% tolerance.

The 2020-2025 annual average aggregate retail margin is 3.6%. This is higher than the initial 2.5% aggregate margin from the PR16 determination because of the allowed increase in customer group 2 gross margins, towards the uniform gross margin caps. The 3.6% reduces to 1.3% (profit before interest and tax) after costs not included in the build-up of the default tariffs.

This approach conforms with the PR19 final methodology guidance: “we consider that the margins set for contestable activities at PR16 remain appropriate. That is, for PR19 we currently consider that where applicable:

a) the net margins which water companies used to set their default tariffs remain appropriate; and
b) the allowed gross margins and the supplementary cap[65] remain appropriate.

[65] This is the additional limit on price increases for companies’ tariffs that are below the level implied by the gross margin cap. It stops price increases of more than 1% in the final bill for any customer type in any year.”

R9 - PR14 reconciliation of household retail revenue

This table contains the inputs used for populating the household retail revenue reconciliation model and the revenue adjustments arising as calculated by the household retail revenue reconciliation model. The household retail revenue reconciliation model calculates in outturn (nominal) prices and is converted to 2017/2018 prices in the revenue adjustments feeder model.

The submission has been calculated using the model that was provided by Ofwat in line with the PR14 reconciliation rulebook.

Sources of inputs

- 2015/2016, 2016/2017 and 2017/2018: Actual customer numbers and retail revenues collected have been sourced from our published Annual Performance Report table 2F. Reforecast customer numbers and the revenue sacrifice inputs have been sourced from our annual tariff setting model.
- 2018/2019: Reforecast customer numbers, revenue sacrifice and forecast retail revenues collected have been sourced from our 2018/2019 tariff model, which we used to set out 2018/2019 tariffs.
- 2019/2020: We have used a draft version of the 2019/2020 tariff model to provide the reforecast customer numbers, revenue sacrifice and forecast retail revenues collected for 2019/2020. This model is in early stages of the tariff setting process and is due to be assured in line with our annual tariff setting process.

No adjustments have been made to the inputs.

Retail household revenue modelling; This has been calculated using the Ofwat published model, which can be found using the following link:

https://www.ofwat.gov.uk/publication/household-retail-pr14-reconciliation-spreadsheet/.

	2015/2016	2016/2017	2017/2018	2018/2019	2019/2020
Adjusted revenue control	59.25	61.06	62.68	64.54	66.43
Actual revenue	60.89	61.21	64.02	64.63	66.53
(over)/under recovery	(1.63)	(0.15)	(1.34)	(0.09)	(0.10)

The forecast impact of the over recovery in revenue is a penalty of £3.3m.

PR19 adjustment for retail household revenue. The penalty of £3.3m will be phased over the 2020-2025 price control within the Retail household price control.

R10 - PR14 Service incentive mechanism

Lines 1-9

The data in this table has been populated according to the guidance.

The qualitative SIM score in line 5 is derived from the average survey score. This is based on the score provided by BMG Research on behalf of Ofwat. This calculation is based on the annual number of surveys carried out.

Our SIM score has improved each year reflecting our improvements in customer service. The main factors for increased scores relate to a very strong billing satisfaction score and an overall reduction in complaints and those escalated. In 2017/2018 we also delivered a significant reduction in unwanted calls due to offering more self- serve channels and our drive to resolve issues first time.

Ofwat requires companies to forecast their SIM score in 2018/2019 in their business plans because this impacts on companies' bill forecasts. Final results for 2018/2019 will be available during PR19 to inform the application of the SIM high performance payments and poor performance penalties.

Ofwat requires companies to forecast their SIM score in 2019/2020 as this informs whether they have met their own performance commitments with reputational ODIs. The 2019/2020 information will not be used to inform any financial incentives.

Companies are required to provide an estimate of their SIM high performance payment or poor performance penalty in their financial model.

Lines 1 to 8

All the information for these lines are taken from the "Ofwat SIM Calculator spreadsheet" that is used to complete Table 5b & 3D within the Annual Performance Reporting Data. They are then manually input into the relevant line in this table. See Table 5b Annual Performance Report Procedure for a comprehensive process summary of the data used to complete the "Ofwat SIM Calculator spreadsheet".

Block A - Lines 1, 2, 3 and 4

Ofwat's nominated research company and the Household Retail Team carry out quality checks on interviews that have taken place to ensure that the answers reflect the customers response and that the interviewer has followed the correct procedure for carrying out and recording the interview. The scores of the respective qualitative surveys for the current reporting year are as provided by Ofwat's nominated research company.

Block A - Line 5

The qualitative score is calculated as follows:

[(S - LS) / (HS - LS)] * WS

where:

- S = qualitative survey annual average score (unrounded).
- LS = minimum survey score possible (set at 1).
- HS = maximum survey score possible (set at 5).
- WS = survey weighting (set at 75)."

Block B - Line 6

The information required for this table is externally assured through the annual reporting process by the technical assurer, currently Jacobs, and signed off by the responsible Tier 2 Data Manager.

The quantitative composite score is calculated as follows:

[(unwanted phone contacts x 1) + (written complaints x 5) + (escalated written complaints x 100) + (CCWater investigated complaints x 1000)] / (connected household properties /1000)"

Block B - Line 7

The quantitative score is calculated as follows:

[1 - [(C - CL) / (CH - CL)]] * WC

where:

- C = total contact score (see above).
- CL = contact score minimum (set at 0).
- CH = contact score maximum (set at 500).
- WC = contact score weighting (set at 25)."

Block C - Line 8

The total annual SIM score is the addition of R10 lines 5 and 7.

Block D - Line 9

SIM high performance payment / (low performance penalty) revenue adjustment at end of period for retail. Output item from revenue adjustments model. The value entered is prior to profiling.

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