United Utilities Water
Annual Performance Report 2019/20

Additional regulatory information:
Commentaries for cost assessment tables 4J-4W
Commentary of the bioresources market table

July 2020

United Utilities

Water for the North West

2019/20 Additional regulatory information

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Introduction

This document is designed to support and provide commentary on tables 4J to 4W within UUW's 2019/20 Annual Performance Report (APR).

It also provides commentary on the bioresources market table, which is published on our website.

Tables 4J to 4W of the APR contains information on the allocation of expenditure to different investment categories. They also contains information on the drivers of expenditure, such as population served or asset capacities.

This document should be read alongside tables 4J to 4W and the bioresources market table and provides additional detailed information on and issues and assumptions used in developing our reported values together.

Assurance

As set out in the Final Assurance Plan that is published on our website, we have applied a three lines of assurance review and governance approach.

All data has been subject to data owner and senior manager (Level 3) sign-off and independent expert / peer review of supporting information and audit trails. Due to the COVID-19 working restriction imposed by the government the reviews and audits were conducted remotely.

The regulatory reporting process, including the cost assessment data, was reviewed by UU Corporate Audit. The audit covered the following areas, with no issues being noted:

- The validity consistency of the data reported in Sections 3 and 4 of the Annual Performance Report. This included sample testing to agree data back to underlying UU records and systems;
- Consistency of the commentary with the underlying data within the APR;
- Compliance of the reported data in the APR with key aspects of Regulatory Guideline 3.11 "Guideline for the format and disclosures for the annual performance report";
- Overall governance arrangements in place to ensure the regulatory data is complete and accurate and reported in line with the required timescales;
- Confirmation that assurance activities detailed in UU's published Final Assurance Plan have been completed in line with the plan; and
- Review the proposed Assurance Report (to be published along with the Annual Performance Report 2019/20) to ensure it is a fair reflection of the associated assurance activities and results thereof.

The data within this submission was also added to the scope of the assurance review undertaken by our technical auditor Glen Hawken from Jacobs Limited. Jacobs undertook an agreed upon procedures review and concluded that *"On the basis of our audit work and with exceptions as noted in Appendix 1 we are satisfied that the information within and which supports the RR19 has been assembled using appropriate data and methodologies and provides a reliable representation of Company performance. There is also good evidence of senior management engagement, governance and programme management".*

The results and findings from the review and assurance processes were presented to and discussed with the UUW Board, as part of their review and approval of the Annual Performance Report in June 2020.

The findings of the Jacobs review and the findings of the second line review undertaken by UU Corporate Audit are included within Appendix 1 of our APR, which is published on our website.

2019/20 Additional regulatory information

Table 4J – Atypical expenditure by business unit – Wholesale water

Block A – Operating expenditure

Line 4J.1 – Power

Power costs increase primarily due to inflationary impacts on cost per unit of imported. These were partly offset against lower consumption due to efficiencies and lower demand in 2019/20 than the previous year when we experienced an extended period of dry weather. Costs were also reduced by targeting higher consumption when costs were lower.

Line 4J.2 – Income generated as negative expenditure

No commentary

Line 4J.3 – Abstraction charges/discharge consents

UUW is charged for each abstraction licence based on the annual volume. There's a Standard Unit Charge (SUC) and an Environmental Improvement Unit Charge (EIUC) for each licence. This is allocated 100% against Water Resources. Charges have increased slightly but are broadly consistent with previous years.

Line 4J.4 – Bulk supply

Bulk supply costs are relatively small, there was however a reduction in FY20 due the timing of costs in relation to imported supplies related to Alston from Northumbrian Water, which we expect will increase costs in FY21.

Line 4J.5 – Renewals expensed in year (infrastructure)

There was an increased level of activity in the water network in the first three years of the period to secure AMP6 outcome delivery incentive (ODI) performance requirements and to implement a number of large reservoir schemes. Spend in 2018/19 and 2019/20 reduced to more typical levels.

Line 4J.6 – Renewals expensed in year (non-infrastructure)

We have not included any expenditure within this line.

Line 4J.7 – Other operating expenditure excluding renewals

There is an increase in the cost reported from 2018/19 to 2019/20 in line with the comparable data for table 4D. The main factors are an increase in chemical prices as well as additional expenditure to meet customer service and leakage improvements within the water network business.

Line 4J.8 – Local authority and Cumulo rates

Rates are currently assessed on a cumulo basis and are not asset specific, in line with the RAGs we split Water cumulo rates by GMEAV and therefore movements will occur as GMEAV moves over time without any real cost fluctuations in overall cumulo rates costs. Within FY20 we have benefitted from a correction to the cumulo rates calculation relating to 2017 onwards.

Line 4J.9 – Total operating expenditure excluding third party services

This is a sum of lines 1-8, for an explanation of variance see the individual line commentary above.

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Line 4J.10 – Third party services

The costs allocated to this line are relatively low in line with prior years, however they do now include some further costs in relation to standpipes

Line 4J.11 – Total operating expenditure

This is a sum of lines 1-8, 10 for an explanation of variance see the individual line commentary above.

Block B – Capital expenditure (exc. atypicals)

To develop the capex values reported within this table we have, presented expenditure on a principle use[1] basis in accordance with RAG 4.08 and ensured that the capex is fully consistent with the capex reported in other tables within our 2019/20 APR and Regulatory Accounts.

Line 4J.12 – Maintaining the long term capability of the assets - infra

IRE is reported within Section A - Operating Expenditure line 4J.5

Line 4J.13 – Maintaining the long term capability of the assets - non-infra

Spend during AMP6 is relatively high compared to historic precedent due to acceleration of the maintenance programmes to respond to the challenges of our AMP6 ODIs together with the impact of the reinvestment incurred in providing additional resilience to some of our key assets and processes. The costs reported have been developed on a principle use basis.

Line 4J.14 – Other capital expenditure - infra

Expenditure in this area is relatively high due to substantial expenditure on the "West Cumbria Future Strategy project" which is a major project to construct a pipeline and new water treatment facilities to provide additional water supplies from Thirlmere reservoir to the West Cumbria area.

Line 4J.15 – Other capital expenditure – non-infra

Non infrastructure enhancement has remained high as a number of high profile and high cost projects progress, particularly the Thirlmere West Cumbria future strategy.

Line 4J.16 – Infrastructure network reinforcement

The level of this cost in 2019/20 is broadly in line with historic precedent and future expectations.

Line 4J.17 – Total gross capital expenditure excluding third party services

This is a sum of lines 12-15, for an explanation of variance see the individual line commentary above.

Line 4J.18 – Third party services

We have no capital expenditure included as third party services.

Line 4J.19 – Total gross capital expenditure

This is a sum of lines 12-15 and 18 for an explanation of variance see the individual line commentary above.

[1] **Principle use** - Since the final determination was published Ofwat have provided revised guidance (RAG 2.06) on cost allocation principles. This sets out that capital expenditures and associated depreciation of assets should be reported in the service of principal use of that asset with recharges made to the other services that use the asset.

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Line 4J.20 – Grants and contributions (price control)

We have populated this line to be consistent with APR Table 4D.

Line 4J.21 – Totex

This is a sum of lines 1-15, 18, 20 for an explanation of variance see the individual line commentary above.

Block C – Cash expenditure (exc. atypicals)

Line 4J.22 – Pension deficit recovery payments

Accelerated pension deficit repair contributions in 2019/20 eliminated the company's pension deficits, with the expectation that the pension schemes will now be fully funded on a low dependency basis without additional contributions from the company.

Line 4J.23 – Other cash items

We have no costs included in other cash items.

Line 4J.24 – Totex including cash items

This is a sum of lines 21 to 23, for an explanation of variance see the individual line commentary above.

Block D – Atypical expenditure

Line 4J.25 Covid 19

Additional operational costs incurred to provide contingency measures following government guidance along with costs associated with the wider economic and industry impacts following the outbreak of covid-19.

Line 4J.26 Dry weather maintenance

Expenditure associated with the ongoing completion of dry weather resilience projects commenced in FY19.

Block E – Total expenditure

Line 4J.31 – Total expenditure

This is the sum of lines above, for an explanation of variance see the individual line commentary.

2019/20 Additional regulatory information

Table 4K – Atypical expenditure by business unit – Wholesale wastewater

Block A – Operating expenditure

Line 4K.1 – Power

Our power expenditure rises due to inflation and asset growth offset by efficiencies to reduce gross consumption and targeted lower cost time of usage.

Line 4K.2 – Income generated as negative expenditure

This line contains the ROC income from CHP generation, gas to grid at our wastewater treatment works and renewable heat incentive.

Line 4K.3 – Discharge consents

The majority of these costs relate to Environment Agency charges. These are reviewed with the Environment Agency to ensure that we are paying the correct charges for our assets.

Line 4K.4 – Bulk discharge

We have no bulk supply or bulk discharge costs.

Line 4K.5 – Other operating expenditure - Renewals expensed in year (Infrastructure)

There has been an increased level of activity and expenditure in the wastewater network to secure AMP6 outcome delivery incentive performance requirements. However, overall expenditure levels decreased in 2019/20 mainly due to the maintenance impact of a number of major infrastructure enhancement projects being completed in prior years.

Line 4K.6 – Other operating expenditure - Renewals expensed in year (Non-Infrastructure)

We have not included any expenditure within this line.

Line 4K.7 – Other operating expenditure excluding renewals

Reported costs are in line with prior year after adjusting for a £10m commercial settlement in 2018/19.

Line 4K.8 – Local authority rates and Cumulo

Reduction in rate is primarily due to a reduction in accrued property rates relating to wastewater assets.

Line 4K.9 – Total operating expenditure (excluding third party services)

This is a calculated line.

Line 4K.10 – Third party services

We recover costs from third parties that damaged our assets, when we are able to trace and bill that party. Charges are designed to recover the costs of the repair only. This includes costs recovered for bulk sewerage services.

Line 4K.11 – Total operating expenditure

This is a calculated line.

2019/20 Additional regulatory information

Block B – Capital expenditure (exc. atypicals)

To develop the capex values reported within this table we have, presented expenditure on a principle use[2] basis in accordance with RAG 4.08 and ensured that the capex align with the capex reported in other tables within our 2019/20 APR and Regulatory Accounts.

Line 4K.12 – Maintaining the long-term capability of the assets - infra

IRE is reported within Section A - Operating Expenditure line 4J.5.

Line 4K.13 – Maintaining the long-term capability of the assets - non-infra

Spend in the first three years of the AMP was relatively high compared to historic precedent due to the acceleration of the maintenance programmes to respond to the challenges of our AMP6 ODIs, the impact of the reinvestment incurred in providing additional resilience to some of our key assets and processes and the maintenance expenditure associated with major projects at Davyhulme WwTW and Oldham WwTW. Spend reduced in 2018/19 reflecting the completion of a number of major schemes, with a further slight reduction in spend in 2019/20. The costs reported for the AMP6 period for this line have been developed on a principle use basis.

Line 4K.14 – Other capital expenditure – infra

Expenditure levels are heavily dependent upon the nature and scale of the enhancement programmes, expenditure levels.

Line 4K.15 – Other capital expenditure – non-infra

Expenditure levels reported against this line are also dependent upon the nature and scale of the enhancement programmes.

Line 4K.16 – Infrastructure network reinforcement

The level of this cost in 2019/20 is broadly in line with historic precedent.

Line 4K.17 – Total gross capital expenditure excluding third party services

This is a calculated line.

Line 4K.18 – Third party services

We have no capital expenditure included as third party services.

Line 4K.19 – Total gross capital expenditure

This is a calculated line.

Line 4K.20 – Grants and contributions

We have populated this line to be consistent with APR Table 4E.

Line 4K.21 – Totex (calculated line)

This is a calculated line.

Block C – Cash expenditure

[2] **Principle use** - Since the final determination was published Ofwat have provided revised guidance (RAG 2.06) on cost allocation principles. This sets out that capital expenditures and associated depreciation of assets should be reported in the service of principal use of that asset with recharges made to the other services that use the asset.

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Line 4K.22 – Pension deficit recovery payments

Accelerated pension deficit repair contributions in 2019/20 eliminated the company's pension deficits, with the expectation that the pension schemes will now be fully funded on a low dependency basis without additional contributions from the company.

Line 4K.23 – Other cash items

We have no costs in other cash items.

Line 4K.24 – Totex including cash items (calculated line)

This is a calculated line.

Block D – Atypical expenditure

Line 4K.26 Covid-19

Additional costs associated with the Covid-19 incident £1.2m.

Line 4K.27 Shell Green Incineration stock write off

Critical spares related to Shell Green incineration facility £0.3m.

Block E – Total expenditure

Line 4K.31 – Total expenditure

This is a calculated line.

2019/20 Additional regulatory information

Table 4L – Enhancement expenditure by purpose – Wholesale water

Wholesale water enhancement expenditure overview

Every project in our capital expenditure programme is recorded on our corporate SAP system. Each project is proportionally allocated to purpose category drivers reflecting the percentage split of investment between purpose category drivers. For example, if an enhancement project also has a maintenance element this will have at least two investment category mappings (enhancement and maintenance).

The investment category which is the principal driver for the project is assigned as the "prime" driver for the project (this is usually, but not always, the category with the highest proportion of the total spend).

In completing this table, we have adopted a three-stage process, which is in accordance with our previous August submissions: -

1. Expenditure has been allocated on a proportional basis by "capital expenditure" purpose category to identify the total enhancement expenditure associated with each project
2. Any supply demand enhancement is allocated to a supply demand line (line 4L.20 or 4L.21)
3. Any quality enhancement expenditure has been allocated on a prime quality driver basis (i.e. all enhancement expenditure has been allocated to a single driver even where that project addresses multiple enhancement drivers).

A summary of the expenditure within each line of this table is set out below, with the project level allocation to the key programmes set out below the line-by-line commentary.

Block A – Enhancement expenditure by purpose – Wholesale water

Line 4L.1 – NEP - Making ecological improvements at abstractions (habitats directive, SSSi, BAPs)

This line has been populated with capital expenditure linked to programmes that are driven by statutory obligations agreed with the Environment Agency and included in the National Environment Programme. The annual variances in expenditure are due to the different programmes of work ramping up during the AMP6 period. There are four key legislative drivers in AMP6: -

- Safeguard zones
- Water Framework Directive
- Eels and Elvers regulations
- Habitats Directive

Expenditure in the earlier part of AMP6 is driven by investigations and preparatory work with expenditure levels increasing in the later years of the AMP when the majority of the programme is fully mobilised.

Line 4L.2 – NEP – Eels Regulations (measures at intakes)

There is no expenditure associated with Eels regulations.

Line 4L.3 – NEP – Invasive Non Native Species

There is no expenditure associated with invasive non-native species.

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Line 4L.4 – Addressing low pressure

There is no expenditure associated with low pressure.

Line 4.L5 – Improving taste/odour/colour

The expenditure allocated to this line is primarily focussed on mains and large diameter trunk main (LDTM) cleaning to reduce customer contacts for discolouration. During 2018/19 and 2019/20 spend levels increased due to a scheme on the Vyrnwy aqueduct and other LDTM sliplining and cleaning activity.

Line 4.L6 – Meeting lead standards

We have a small amount of investment in this area that focuses on continuing to optimise our phosphate dosing, education campaigns, addressing the lead risk in public buildings and trials such as lining of lead pipes through to the customer tap.

Line 4L.7 – Supply side enhancements to the supply/demand balance (dry year critical/peak conditions)
Line 4L.8 – Supply side enhancements to the supply/demand balance (dry year annual average conditions)
Line 4L.9 – Demand side enhancements to the supply/demand balance (dry year critical/peak conditions)
Line 4L.10 – Demand side enhancements to the supply/demand balance (dry year annual average conditions)

In line with the approach taken in our PR14 and PR19 business plans, we have reported all supply demand expenditure in these lines, including our work to resolve the forecast critical period and dry year supply demand deficit in West Cumbria, completion of our multi-AMP Southport strategy and network enhancements to supply major new developments in the region.

There are no new demand side measures or supply side measures for the AMP6 period. However, work is ongoing to maintain the current enhanced levels of water efficiency and leakage activities and as part of the interim measures in West Cumbria, we have committed to reduce leakage as far as possible within the West Cumbria resource zone to reduce abstraction from Ennerdale Water. Work continues to progress the Thirlmere Transfer scheme to provide alternative supplies for West Cumbria in 2022.

We have delivered a suite of interim measures in the West Cumbria resource zone to reduce abstraction from Ennerdale Water as much as possible. This is an environmental driver and so some of the measures (e.g. Summergrove scheme and South Egremont boreholes at enhanced capacities, potentially up to 14 Ml/d in future) do not result in a supply or demand side benefit. We consider that the Ml/d unit reported on lines 20 to 23 of table 4Q, does not reflect work that is currently underway to claim supply-demand benefits in future years or future AMPs.

From 2017/18 onwards West Cumbria Future Strategy is accounted for under 4L.9 with only minor supply side expenditure being allocated to line 4L.7. No expenditure has been allocated to lines 8 and 10.

Line 4L.11 – New developments

Our expenditure reflects the length of new mains reported within the properties table. We have invested more against this line in FY20 than was forecast at PR14. This reflects the higher than anticipated activity levels.

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Line 4L.12 – New connection element of new development (CPs, meters)

Capital investment in this area varies to reflect changes in the pace of development.

Line 4L.13 – Investment to address raw water deterioration (THM, nitrates, Crypto, pesticides, others)

This line includes expenditure for projects at treatment works for pesticides, nickel, taste and odour, manganese removal and concessionary supplies. The spend profile is now reducing as projects complete.

Line 4L.14 – Resilience

Although we are undertaking a significant amount of work to improve the resilience of our asset base this is usually being undertaken as part of projects with other cost drivers and as such only a relatively low amount of expenditure is directly allocated to this line.

Line 4L.15 – SEMD

This line includes expenditure required to comply with security enhancement obligations under the Security and Emergency Measures Direction (SEMD).

Line 4L.16 – NEP – Drinking Water protected Areas (schemes)

We have incurred no expenditure associated with drinking water protected areas this year.

Line 4L.17 – NEP – Water framework directive measure

This line includes expenditure required to comply with the water framework directive.

Line 4L.18 – NEP – Investigations

We have incurred no expenditure associated with NEP investigations.

Line 4L.19 – Improvements to river flows

We have incurred no expenditure associated with river improvements this year.

Line 4L.20 - Metering (excluding cost of providing metering to new service connections) for meters requested by optants

Uptake levels and associated expenditure for meter optants is below that assumed at PR14. This is because the PR14 target was based on predictions in customer behaviour using the UKWIR econometric opting model, which have not materialised. The level of customer demand for free water meters, although varying year on year is at much lower levels than forecasted at PR14.

Line 4L.21 – Metering - Metering (excluding cost of providing metering to new service connections) meters introduced by companies

We have not included any capital expenditure against this line.

Line 4L.22 – Metering - Metering (excluding cost of providing metering to new service connections) other

We have not included any capital expenditure against this line.

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Additional lines

Line 4L.23 – Concessionary supplies

This lines includes expenditure on concessionary supplies.

Line 4L.24 – Dry Weather

We have not included any capital expenditure against this line.

Lines 4L.25 – Network reinforcement

This lines includes expenditure on network reinforcement.

Line 4L.38 – Total enhancement capital expenditure

This line is a sum of the lines above see above line commentaries for more information.

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Table 4M – Enhancement expenditure by purpose – Wastewater

Every project in our capital expenditure programme is recorded on our corporate SAP system. Each project is proportionally allocated to purpose category drivers reflecting the percentage split of investment between purpose category drivers. For example if an enhancement project also has a maintenance element this will have at least two investment category mappings (enhancement and maintenance).

The investment category which is the principal driver for the project is assigned as the "prime" driver for the project (this is usually, but not always, the category with the highest proportion of the total spend).

In completing this table, we have adopted a three-stage process, which is in accordance with our previous August submissions: -

1. Expenditure has been allocated on a proportional basis by "capital expenditure" purpose category to identify the total enhancement expenditure associated with each project
2. Any supply demand enhancement is allocated to a supply demand line (line 4L.20 or 4L.21)
3. Any quality enhancement expenditure has been allocated on a prime quality driver basis (i.e. all enhancement expenditure has been allocated to a single driver even where that project addresses multiple enhancement drivers).

A summary of the expenditure within each line of this table is set out below, with the project level allocation to the key programmes set out below the line-by-line commentary.

Block A – Enhancement capital expenditure by purpose

Line 4M.1 – First time sewerage

We have reported a small amount of spend this year against this line, which is final elements of spend from previous projects. No new projects have been delivered this financial year.

Line 4M.2 – Sludge enhancement (quality)

The expenditure reported is for the completion of the projects at Leigh and Burnley.

Line 4M.3 – Sludge enhancement (growth)

We have reported no sludge enhancement against growth.

Line 4M.4 – NEP – Conservation drivers

This expenditure associated with the CAST programme.

Line 4M.5 – NEP – Eels regulations (measures at outfalls)

We have reported no Eels regulations expenditure.

Line 4M.6 – NEP – Event Duration Monitoring (EDM) at intermittent discharges

In AMP6 we have a significant programme of EDM projects, which will see over 2,000 monitors installed on our assets. Due to the large number and small size of the projects we report the same value in the in-year and cumulative tables.

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Line 4M.7 – NEP – Flow monitoring at sewage treatment works

We have reported no expenditure in this line.

Line 4M.8 – NEP – Monitoring of pass forward flows at CSOs

We have a programme of CSO monitoring.

Line 4M.9 – Schemes to increase flow to full treatment

We have reported no expenditure in this line.

Line 4M.10 – Schemes to increase storm tank capacity

We have delivered a significant volume of storage this year including projects at Ulverston, Failsworth, Oldham and Royton.

Line 4M.11 – NEP – Storage schemes to reduce spill frequency at CSO's, storm tanks, etc.

This has been and remains a major investment driver for AMP6 with large numbers of schemes being implemented. This line does not include for projects that will reduce spill frequencies at CSOs, storm tanks etc. as a result of extensions to long sea outfalls or increased FTFT. It includes projects at Schola Green, Snipe clough and Hathershaw.

Line 4M.12 – NEP – Chemical removal pilot/ investigations / options appraisal

This is generally a low-level cost driver with work being undertaken on the chemical investigation Programme (CIP).

Line 4M.13 – NEP – National phosphorus removal technology appraisal

We do not have any projects with this driver.

Line 4M.14 – NEP – Groundwater schemes

We do not have any projects that have a prime groundwater driver.

Line 4M.15 – NEP - Investigations

This is relatively low costs driver, with expenditure being driven by the specific programmes of work within the Chemicals investigation programme.

Line 4M.16 – NEP – Nutrients (N removal)

We do not have any projects that have a prime nitrogen removal driver.

Line 4M.17 – NEP – Nutrients (P removal at activated sludge STWs)

The scale of P removal has a major impact on the cost in delivering and subsequently operating the projects. We have delivered projects at Calthwaite and the Windermere catchment.

Line 4M.18 – NEP – Nutrients (P removal at filter bed STWs)

This has been and remains a major investment driver for us. This year the projects we have seen significant investment at Aspatria, Barton, Halsall, Haskayne, Hayfield, Hayton, Motherby, West Newton and Winsford. The scale of P removal has a major impact on the cost in delivering and subsequently operating the projects.

Line 4M.19 – NEP – Reduction in sanitary parameters

This is a substantial investment driver including "no deterioration" projects. This year we have significant spend at Crewe, Horwich, Colne, Failsworth, Lawton Gate and Kidsgrove.

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Line 4M.20 – NEP – UV disinfection (or similar)

Expenditure has varied reflecting the delivery of the programme, which is predominantly completed.

Line 4M.21 – NEP – Discharge relocation

Expenditure has varied reflecting the delivery of the programme, which is predominantly completed.

Line 4M.22 – NEP – Flow 1 schemes

We do not have any projects that have a prime Flow 1 driver.

Line 4M.23 – Odour

Although we continue to invest in odour control assets as part of new enhancement schemes or via maintenance of existing equipment, the level of expenditure on specific odour control schemes has reduced over time as issues have been addressed.

Line 4M.24 – New development and growth

Capital investment in new development and growth in sewerage services varying to reflect changes in the pace and location of development.

Line 4M.25 – Growth at sewage treatment works (excluding sludge treatment)

Expenditure in recent years has been substantial mainly due to specific enhancement work being required at some major works for example at Davyhulme WwTW. This year we have completed one project at Crewe WwTW.

Line 4M.26 – Resilience

Although we invest in providing increased resilience to our asset base, this investment typically forms part of other enhancement schemes, with assets being constructed to meet increased resilience expectations or through maintenance programmes where existing assets are replaced with new and more resilient assets. As such we have not delivered any enhancement projects whose prime driver is resilience.

Line 4M.27 – SEMD

This has generally been a relatively low level cost driver in the wastewater service, with no expenditure in 2019/20.

Line 4M.28 – Reduced risk of flooding for property

In AMP6 the focus of the flooding programme has moved to addressing incidents caused by flooding other causes events, mainly through targeted maintenance activity, rather than through specific projects to reduce the risk of hydraulic sewer flooding.

Line 4M.29 – Transferred private sewers and pumping stations

Due to the large number and small size of the projects we report the same value in the in-year and cumulative tables.

Additional lines

We have added three lines to the table, which have been significant AMP6 costs drivers.

Line 4M.30 – NEP phase 5 WFD schemes - treatment, increased storage or investigations

We have no expenditure in this area this financial year.

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Line 4M.31 – NEP requirement for bathing water / shellfish driver delivered through long sea outfall or increased FTFT

This has been and remains a major investment driver for us. This year we have incurred significant spend at Blackburn and Darwen, Morcambe and Rabycote.

Line 4M.32 Network Reinforcement – Capex

This line include spend to reinforce the network to support new developments and growth.

Line 4M.40 – Total enhancement capital expenditure

This is a calculated line.

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Table 4N – Sewage treatment functional expenditure

The number of large works has remains at 64. However, Colne WwTW moved to a size band 5 and Wigton, which was commissioned in 2019/20 is a size band 6. This is an unusual works because it only receives flows from a single trader and does not receive any domestic flows.

Lines 4N.1 – 4N.5 – Direct costs of STW size bands 1 – 5 STWs

For size band one – five we have allocated the expenditure based on manpower.
Underlying costs are in line with previous years after adjusting for a commercial claim.

Line 4N.6 General & support costs of STWs in size bands 1 to 5

Costs are consistent with previous years.

Line 4N.7 Functional expenditure of STWs in size bands 1 to 5

This is a calculated line.

Line 4N.8 – Service charges for STWs in size band 6

The majority of the costs in this line are associated with our Environment Agency Permits. We continue to review our consent charges with the Environment Agency to ensure that we pay the correct charges for our discharges.

Line 4N.9 – Estimated terminal pumping station costs size band 6 works

These are estimated costs, based on power and a proportional allocation of maintenance costs. We have been reviewing our terminal pumping station assets and have included in additional pumping this year and hence costs have increased.

Line 4N.10 – Other direct costs of STWs in in size band 6

This line includes power, income treated as negative expenditure, employment costs, hired and contracted services, materials and consumables and other direct costs.
Underlying costs are in line with previous years after adjusting for a commercial claim and adjustments made as a result of the terminal pumping station review.

Line 4N.11 – Direct costs of STWs in size band 6

This is a calculated line.

Line 4N.12 – General and support costs of STWs in size band 6

Costs are consistent with previous years.

Line 4N.13 – Functional expenditure of STWs in size band 6

This is a calculated line.

Line 4N.14 – Total operating expenditure (excluding third party services)

This is a calculated line.

2019/20 Additional regulatory information

Table 4O – Large sewage treatment works – Wholesale wastewater

We have constructed a new WwTW this financial year, Wigton, which is a size band six works, this has been added to the end of the table. Wigton is an unusual works in that it receives flows from a single trader and receives no domestic flows.

Block A – Sewage treatment works explanatory variables

Line 4O.1 – Works name

This is standard information linking the works to the EA consent. Meols WwTW appears both as Meols WwTW (North Wirral) and North Wirral (Meols) therefore data has only been entered for one of these works. Wigton has been added to the end of the table.

Line 4O.2 – Classification of treatment works

For this data to be used for comparative purposes the Ofwat WwTW classifications need to be applied consistently across all companies. Without consistency data cannot be meaningfully compared.

The table below highlights the changes in treatment classification this financial year and the reason for the change.

WwTW name	Reason for change
Winsford	Has a phosphate consent the classification has been changed to reflect this; the works is now TB2

Line 4O.3 – Population equivalent of total load received

In order for this to be used for comparative purposes assurance would be required that every company is calculating PE in a consistent manner.

The table below highlights the significant changes in population equivalent of total load received (>5% change).

WwTW name	Reason for change
Blackburn	Increase in domestic population and a 12% increase in trade effluent
Chorley	Increase in domestic population and a 30% increase in trade effluent
Congleton	Static domestic population and a 25% reduction in trade effluent
Ellesmere Port	Domestic pop growth offset by a 25% reduction in trade effluent
Huyton	Domestic pop growth offset by a 52% reduction in trade effluent
Hyndburn	Domestic pop growth and a 33 increase in trade effluent
Kendal	Domestic pop growth offset by a 13% reduction in trade effluent
Lancaster	Domestic pop growth and a 35% increase in trade effluent
Northwich	Increase in domestic population with an increase of 60% in trade effluent
Skelmersdale	Static domestic population and 20% increase in trade effluent
Walton Le Dale	Static domestic population and 30% reduction in trade effluent
Warrington North	Static domestic population and a 33% reduction in trade effluent
Westhoughton	Static domestic population and a 56% reduction in trade effluent
Whaley Bridge	Static domestic population and a 28% reduction in trade effluent
Wigan	Static domestic population and a 22% reduction in trade effluent
Workington	Static domestic population and a 94% increase in trade effluent

2019/20 Additional regulatory information

Line 4O.4 – 4O.7 Suspended solids consent, BOD_5 consent, Ammonia consent and Phosphorus consent

This is standard information linking the works to the Environment Agency consent and needs to be considered in conjunction with operating costs. An understanding of the removal rates that need to be achieved to meet a consent is required if a true comparison between WwTW performance and operating costs are to be made.

The table below highlights the significant changes in consents made this financial year.

WwTW name	Reason for change
Horwich	New ammonia consent of 1mg/l
Kendal	Has a reduced ammonia consent, the new consent is 5mg/l
Northwich	Has a new phosphate consent of 2mg/l
Winsford	Has a new phosphate consent of 2mg/l

Line 4O.8 – UV consent

This is standard information linking the works to the EA consent and needs to be identified in conjunction with operating costs. We have a significant number of smaller WwTW, which have a UV consent, these are not currently considered in any of these tables. Throughout AMP6 we will see the introduction of an even greater number of inland works with a UV consent across all size bands.

The table below highlights the changes made to UV consents this year.

WwTW name	Reason for change
N/A	UV treatment plants at several works have been upgraded to validated dose systems, however the EA have not yet issued compliance conditions and as such there is no EA agreed UV consent limit.

Line 4O.9 – Load received by STW

This is a calculated line. See population equivalent line for additional details of changes.

Line 4.O10 – Flow passed to full treatment

This is standard information linking the works to the EA consent and needs to be considered in conjunction with operating costs. During the last financial year we experienced a prolonged period of extremely wet weather. On average our works received an increase in flow of 15% therefore increases of 15%> or recorded below as are reductions below 5%.

WwTW name	Reason for change
Altrincham	Highly urbanised area. Manchester area WwTWs above average increase in flow due to very wet year
Blackburn	Highly urbanised area, above average increase in flow due to very wet year
Bolton	Highly urbanised area. Manchester area WwTWs above average increase in flow due to very wet year
Burscough	Highly Urbanised area, average increase in flow due to very wet year

2019/20 Additional regulatory information

WwTW name	Reason for change
Davyhulme	Highly urbanised area. Manchester area WwTWs above average increase in flow due to very wet year
Hazel Grove	Highly urbanised area. Manchester area WwTWs above average increase in flow due to very wet year
Hyndburn	Highly urbanised area, average increase in flow due to wet year
Northwich	Increased flows due to the transfer of Oakmere and Cuddington
Oldham	Increased flows due to the transfer of flow from Royton to Oldham
Runcorn	Previous reporting period was during a dryer than average year, exaggerating change.
St Helens	Previous reporting period was during a dryer than average year, exaggerating change.
Urmston	Highly urbanised area. Manchester area WwTWs above average increase in flow due to very wet year
Warrington North	Historic issues with flow meter onsite, now addressed
Whitehaven	Previous reporting period was during a dryer than average year, exaggerating change
Winsford	Reduction in both domestic populations and trade effluent flow and load

Block B – Operating expenditure

Line 4O.11 – Service charges

The majority of the costs in this line are associated with our Environment Agency Permits. We continue to review our consent charges with the Environment Agency to ensure that we pay the correct charges for our discharges.

Line 4O.12 – Estimated terminal pumping expenditure

These are estimated costs, based on power and a proportional allocation of maintenance costs. We have been reviewing our pumping station data and have included additional sites with terminal pumping this year.

Line 4O.13 – Other direct expenditure

This line includes power, income treated as negative expenditure, employment costs, hired and contracted services, materials and consumables and other direct costs.

Underlying costs are in line with previous years after adjusting for a commercial claim and adjustments made as a result of the terminal pumping station review.

Line 4O.14 – Total direct expenditure

This is a calculated line.

Line 4O.15 – General and support expenditure

Costs are consistent with previous years.

Line 4O.16 – Functional expenditure

This is a calculated line.

2019/20 Additional regulatory information

Table 4P – Non-financial data for WR, WT, WD – Wholesale water

Block A – Water Resources

Line 4P.1 – Proportion of distribution input derived from impounding reservoirs

Although the proportion of distribution input varies from year to year depending on weather, demand and asset outages the proportions have remained fairly stable over the last seven years. Over the last three years there has been a slight decrease in distribution input from impounding reservoirs. This is in part due to a decreased production from WTWs supplied by impounding reservoirs, predominantly Oswestry WTW due to major capital project. There will be an increase in abstraction from impounding reservoirs on completion of the West Cumbria transfer project as the zone supplied by Thirlmere Reservoir will be extended

Line 4P.2 – Proportion of distribution input derived from pumped storage reservoirs

We have not currently classed any of our reservoirs as pumped storage reservoirs therefore the number is zero.

Line 4P.3 – Proportion of distribution input derived from river abstractions and

Line 4P.4 – Proportion of distribution input derived from boreholes, excluding managed aquifer recharge (MAR) water supply schemes

The proportion of distribution input varies from year to year depending on weather, demand and asset outages. There has been a slight increase in distribution input from river abstractions compared with last year due to the greater availability of the rivers in comparison to last year, which was affected by the dry weather. Groundwater abstractions have remained largely stable since last year, with only a slight decrease.

Line 4P.5 – Proportion of distribution input derived from artificial recharge (AR) water supply schemes

We do not currently have any of these schemes therefore the number reported is zero.

Line 4P.6 – Proportion of distribution input derived from aquifer storage and recovery (ASR) water supply schemes

We do not currently have any of these schemes therefore the number is zero.

Line 4P.7 – Proportion of distribution input derived from saline abstractions

We do not currently have any of these schemes therefore the number is zero.

Line 4P.8 – Proportion of distribution input derived from water reuse schemes

We do not currently have any of these schemes therefore the number is zero.

Line 4P.9 – Number of impounding reservoirs

The number of sources varies from year to year depending on weather, demand and asset outages.

Last year we changed the operation of some of our water resource assets due to the extended period of dry weather in the summer of 2018. The operation of two impounding reservoirs was changed so they pumped to another reservoir temporarily. This meant we could not count them as a separate sources in 18/19 however these have been returned to direct supply. We have two impounding reservoirs that were used last year but are not the preferential source and therefore have not been used this year. One reservoir has been returned to service following completion of a major engineering project.

2019/20 Additional regulatory information

As per the Ofwat guidance for line 13: -

- A source is defined as an independent raw water supply that directly supplies a treatment works.
- Standby or mothballed sources from which no water has been obtained in the year should not be included.
  We have also used the previous Table 12 June Return reporting requirements (January 2011) to report the number of impounding reservoirs.
- If a treatment works receives water from a reservoir that has been filled by another reservoir then this is classified as one reservoir source.
- Reservoirs used only to regulate river flows have not been included in the source numbers.
  We own and operate a number of cascade reservoir systems where water is transferred between reservoirs but from which there is only one abstraction point to the water treatment works. River regulation reservoirs have also been excluded. The number of impounding reservoirs reported is therefore significantly lower than the actual number of impounding reservoirs that we operate and maintain in order to maintain supplies to customers. In terms of developing a suitable cost driver for totex models, it should be recognised that the costs of operating and maintaining a reservoir and its catchment land would not be expected to be significantly different whether reservoirs were in a cascade or each supplying a water treatment works directly.

Line 4P.10 – Number of pumped storage reservoirs

We have not currently classed any of our reservoirs as pumped storage reservoirs therefore the number is zero.

Our understanding is that there are a number of ways to define a pumped storage reservoir. We have a number of reservoirs which are similar to pumped storage reservoirs, but do not meet our interpretation of the definition set out by Ofwat. These include: -

- Storage reservoirs which are gravity fed from a river intake but which are remote from the supply source.
- Storage reservoirs which receive a mix of pumped and gravity supply.
- Storage reservoirs which receive either pumped or non-pumped potable water which will then need re-treating before supply to customers.
- Impounding reservoirs with natural inflow supplemented by a pumped supply.

Line 4P.11 – Number of river abstractions

The Sail Back at Buttermere river abstraction was not used this year following the closure of Buttermere WTW, reducing the number of river abstractions by one.

Line 4P.12 – Number of ground water sources, excluding managed aquifer recharge (MAR) water supply schemes

The number of boreholes used in a year can change significantly from year to year depending on weather, demand and asset outages. The two main reasons for the reduction in 2019/20 is that during the period of extended dry weather in summer 2018 we brought into operation a number of standby boreholes that were not operated this year to meet increase demand. In 2018/19 we also operated more boreholes to support the redevelopment of Broughton WTW site than we would under normal operation.

Based on the definition of a source that has been used in line 4P.16 as “an independent raw water supply to a treatment works” all boreholes which have been used in the report year have been included. In accordance to the Ofwat cost capture table clarification we have aggregated the figures where there are multiple boreholes on a single site e.g. counted these as a single source.

The number of boreholes reported is disproportionately high when compared to the number of impounding reservoirs as we have a number of reservoir cascade systems where water is only abstracted from one of the reservoirs in the group. The totex costs of maintaining and operating a chain of impounding reservoirs would be expected to be significantly higher than the costs of an individual borehole.

Line 4P.13 – Number of artificial recharge (AR) water supply schemes

We do not currently have any of these schemes therefore the number is zero.

Line 4P.14 – Number of aquifer storage and recovery (AR) water supply schemes

We do not currently have any of these schemes therefore the number is zero.

Line 4P.15 – Number of saline abstraction schemes

We do not currently have any of these schemes therefore the number is zero.

Line 4P.16 – Total number of sources

This equals the sum of lines 4P.9 to 4P.15.

We have reported the total number of sources as per the definition for line 13 and the historic Table 12 June Return reporting requirements (January 2011). This defines: -

- A source is defined as an independent raw water supply to a treatment works.
- Standby and mothballed sources have not been included.
- If a treatment works receives water from a reservoir that has been filled by another reservoir then this is classified as one reservoir.
- Reservoirs used only to regulate river flows have not been included in the source numbers.
- Bank side storage and non-impounding reservoirs have not been included as sources in their own right. The sources of water filling these reservoirs have been included in the source numbers.
- Multiple boreholes on a single site have been counted as one ground water source.

This approach does not reflect the true number of sources which we operate in order to maintain supplies to customers. If we reported all of our reservoirs which support water supply, as sources, we would be reporting 165 reservoirs, as opposed to the 50 reservoirs reported using Ofwat guidance. This is because we have a number of reservoir cascade systems where water is transferred from one reservoir to another but only abstracted from one reservoir in the group and also a number of non-impounding reservoirs from which water is abstracted. These reservoirs incur costs for operation and maintenance but are not included in the total number of sources.

Line 4P.17 – Number of saline abstraction schemes

We do not currently have any of these schemes therefore the number is zero.

Line 4P.18 – Total number of water reservoirs used for holding raw water (including impounding reservoirs, pumped storage and bank side storage)

There has been no change in the number compared with last year.

Line 4.P19 – Total capacity of water reservoirs used for holding raw water (including impounding reservoirs, pumped storage and bank side storage)

There has been no change in the capacity compared with last year.

2019/20 Additional regulatory information

Line 4.P20 – Total number of intake and source pumping stations

There has been no change in the number compared with last year.

Line 4.P21 – Total number of raw water transfer pumping stations

There has been no change in the number compared with last year.

Line 4.P22 – Total capacity of intake and source pumping stations

The total number of pumping stations has not changed this year, there has been a slight change in capacity due to changes in operation.

Line 4.P23 – Total capacity of raw water transport pumping stations

Capacity has slightly increased this year due to the use of Huntington WTW to support outages at Oswestry WTW which is undergoing a major capital project.

Line 4P.24 – Total length of raw water mains and conveyors

There has been a slight increase in the total length of raw water mains and conveyors. This can be attributed to updated asset data records.

Lines 4.P25 and 4.P26 – Average pumping head – resources and raw water transport

Water resources pumping is influenced by the hydrological conditions, as more water must be pumped in drier years to protect water resources and the environment. The exceptionally dry weather over the 2018 summer had a notable effect on raw water abstraction and raw water transport pumping head to meet demand and to move raw water regionally. Pumping at Windermere and Ullswater was more than double pumping in 2017/18 at both sites. Raw water abstraction and raw water transport pumping head have both reduced in 2019/20 as the weather was not as dry. The main differences were seen at Haweswater (30% reduction) and Ullswater (76% reduction).

Treatment head pumping head tends to be more static as the majority of major supplying works are gravity supply systems, with pumped raw water supplies.

The slight increase in distribution pumping reflects a change in operation at some sites and the commissioning of upgraded pumps to increase flows along the West to East Link Main.

Lines 4.P27 Total length of raw and pre-treated (non-potable) water transport mains

There has been a slight decrease in the total length of raw water mains and conveyors. This can be attributed to updated asset data records.

Lines 4.P28 Water resource capacity (measured using water resources yield)

The total capacity company forecast is based on the summation of the individual capacities for each of the UU water resource zones. These are provided below:

Individual water resource zones forecast for (2019/20)

- Integrated Water Resource Zone (2255.52 Ml/d)
- Carlisle Water Resource Zone (36.24 Ml/d)
- West Cumbria Water Resource Zone (53.52 Ml/d)
- North Eden Water Resource Zone (8.74 Ml/d)

- Barepot Water Resource Zone (34.10 Ml/d)

Following submission of the PR19 business plan we have updated our water resource capacity based on updated deployable output values from the revised draft WRMP tables which affect the impact of climate change. There are no immediate planned changes to sources (e.g. abstraction licence revocations) in the zones except for West Cumbria on completion of the Thirlmere transfer into West Cumbria scheme by 2020-21. We forecast the capacities in the other zones will only vary going forward because of the predicted climate change impact throughout the planning period. In West Cumbria a number of sources will no longer be used from 2020-21 onwards, and therefore the capacity will be significantly reduced from that time.

Block B - Water Treatment

Lines 4P.29 to 42 - Total water treated by works type and size and

Lines 4P.44 to 57 – Total number of WTW by works size and type

Usually there are relatively small changes in distribution input (DI) from year to year dependent on demand within local networks, irrespective of any changes in number of works in each category. In the summer of 2018 there was a significant increase in demand due to an extended period of dry weather. During 2019 there was a significant increase in demand for a few weeks, due to a period of dry weather. The event was shorter than the previous year (less than 2 months in total), but saw an increased demand from some of the groundwater sources and a reduction in DI from surface water sources.

Reasons for other changes to the categorisation of works are listed below:

Line 4P.31 total water treated at SW2 works and line 4P.46 total number of SW2 works

Woodgate Hill was categorised as a SW4 last year but has been changed to SW2. In 2015/16 UV disinfection was installed at Woodgate Hill WTW, however it was removed this year. Woodgate Hill has now been assigned a category SW2 because it is pre-treated for organics and crypto removal at Watchgate WTW, before supply into the Haweswater Aqueduct (HA), and only has simple treatment on site (chlorination and pH correction).

Line 4P.32 total water treated at SW3 works and line 4P.47 total number of SW3 works

The reduction in volume for WTW category SW3, is because there were recurring cryptosporidium detections in the final water at Oswestry WTW. The plant is currently having a new treatment processes installed for clarification and manganese removal. To treat the cryptosporidium, UV disinfection was installed. This moved the works from a category SW3 to SW4.

In addition to this distribution input was reduced or stopped from a number of WTWs (typically SW3 & SW5 category sites) over the summer due to significant raw water quality issues caused by algae or taste and odour causing compounds geosmin and 2MIB, at a number of our upland reservoirs.

Line 4P.33 total water treated at SW4 works and line 4P.48 total number of SW4 works

The reduction in this category is explained by the loss of distribution input for Woodgate Hill WTWs (see commentary for line 4P.31), but is not as significant because of the addition of Oswestry WTW.

Line 4P.34 total water treated at SW5 works and line 4P.49 total number of SW5 works

The total volume in this category is up from the previous year, but down on 2017/18. This can be explained by the dry weather event in 2019, but this was not as severe or prolonged as the previous summer. A lot of the individual works that were severely restricted or taken out of service because of geosmin (taste and

odour risk) or reduced resources in 2018, were able to run more frequently in 2019 (for example, Rivington , Hodder, Clay Lane and Wayoh WTWs).

Line 4P.38 total water treated at GW2 works and line 4P.46 total number of GW2 works

The increase in 2019/20 is primarily due to increased production from Lymm, Springfield and Stockswell WTWs to meet increased demand during the 2019 dry weather event. Stockswell WTW which hasn't run for a number of years has been brought back on line as a base load WTW. Springfield WTW increased production because of issues with the planned increase in production from Royal Oak WTW, which was due in 2020, but was slightly delayed.

Line 4P.40 total water treated at GW4 works and line 4P.55 total number of GW4 works

The groundwater sources were increased to support the dry weather event. Most notable are increases in output from Royal Oak WTW (taking over from Blundell House, GW2) and from Simmonds Hill WTW. The increase is partially offset by a reduction in average annual output from Lightshaw and Dark Lane WTWs. The former had periods through the year when it was out of service for installation of raw water flow meters. The latter closed in September 2019 as part of a DWI commitment with distribution input now being provided from Royal Oak WTW.

Line 4P.41 total water treated at GW5 works and line 4P.56 total number of GW5 works

There are 3 works in this category. They were used in 2018/19 due to the dry weather event but have not being required to support the dry weather in 2019/20.

Line 4P.43 – Total water treated at more than one type of works

A significant volume of treated water from Watchgate WTWs is retreated at three separate aqueduct take off points, Martholme WTWs, Townsend Fold WTW and Woodgate Hill WTWs. The volume of water treated at more than one works remains relatively steady although for the last 2 summers, the HA treatment works (Martholme, Townsend Fold and Woodgate Hill) have had reduced throughput for part of the year, because Watchgate is on reduced flow to protect raw water resources. To offset this we have increased flows from groundwater sources.

Line 4P.58 – Number of treatment works requiring remedial action because of raw water deterioration

The number of water treatment works requiring remedial action due to raw water deterioration varies from one year to the next.

Completion reports were submitted for the following schemes early and letters of release for both have been received this year.

- UUT3235 Hurleston – pesticides 30/06/2018 and resubmitted 31/01/2019 (Was FY19/20 - 30/03/2020)
- UUT3236 Huntington and Sutton Hall pesticides 30/06/2018 and resubmitted 31/01/2019 (Was FY19/20 - 30/03/2020)

There was one remaining output planned UUT3477 Vyrnwy Notice – Oswestry WTW which is ongoing.

AMP7 schemes has commenced for 4 WTWs for improvement to remove the risk of taste and odours.

- Castle Carrock WTW – 31/03/2023

- Laneshaw WTW – 30/09/2022
- Mitchells WTW – 30/09/2022
- Rivington WTW – 31/03/2023

Line 4P.59 – Zonal population receiving water treated with orthophosphate

There has been no real change in the area of coverage with phosphate dose in FY20. The apparent increase in population receiving orthophosphate is down to a change in the source population figures. Population is aligned with that used in WRMP and is based on ONS data from Edge Analytics. This has been calculated using 2020 mid-year population projections.

Line 4P.60 – Average pumping head - treatment

Water resources pumping is influenced by the hydrological conditions, as more water must be pumped in drier years to protect water resources and the environment however treatment head is a more static number as the majority of major supplying works are gravity supply systems, with pumped raw water supplies.

Block C - Water Distribution

Line 4P.61 Total length of potable mains

There are small movements in the km of mains reported each year as new mains are installed and other mains are abandoned.

Line 4P.62 – Total length of potable mains relined

Over the past five years we have not relined any of our water mains using spray lining techniques.

Line 4P.63 – Total length of potable mains renewed

Mains renewal activity increased by 3% from the previous year as a result of the delivery of a number of mains improvement projects, delayed from the previous year following the dry weather in the summer of 2018. Sections of the Stainburn to Cornhow main (3.7km) on the West Cumbria scheme previously expected to be slip-lined, were actually completed using either the ice pigging technique, or full replacement of the main which meant the total length of potable main renewed was less than forecast.

Line 4P.64 – Total length of new potable mains

New mains activity reduced by 15% from previous year, mainly due to the acceleration of the West Cumbria (Thirlmere Transfer) scheme. The majority of the mains laying associated with this (26km) was delivered in 2018/19, with only 2.2km requiring installation this year. Future performance in 2020/21 is expected to see a lower figure following the completion of the new main installation activity associated with the West Cumbria scheme. In addition, there has been a reduction in construction activity and new developments caused by the COVID-19 pandemic for a significant part of 2020/21.

Line 4P.65 – Potable water mains (≤320mm)

Line 4P.66 – Potable water mains >320mm ≤ 450mm

Line 4P.67 – Potable water mains >450mm ≤ 610mm

Line 4P.68 – Potable water mains >610mm

There are small movements in length of different sizes of mains reported each year as new mains are installed and other mains are abandoned.

2019/20 Additional regulatory information

Line 4P.69 – Capacity of booster pumping stations

There has been a slight overall decrease in booster pumping station capacity in 2019/20. We forecast the number and capacity of pumping stations will increase in 2020/21 on the completion of the West Cumbria supplies scheme.

Line 4P.70 – Capacity of service reservoirs

There has been a slight reduction in the number and capacity of service reservoirs. We expect in the long term the number will continue to decrease slightly. We are completing an enhanced programme of service reservoir inspection and cleaning. This has identified a number of sites that are in poor condition and abandonment is the best solution. When a service reservoir requires significant investment, replacement with a pumping station sometimes offers a lower whole life cost. There is therefore a slow but steady increase in the number and capacity of pumping stations.

Line 4P.71 – Capacity of water towers

There has been no change to the number of capacity of water towers in 2019/20. We would expect the value to remain reasonably consistent in the coming years.

Line 4P.72 – Distribution input

The decrease in distribution input compared with last year can largely attributed to reductions in leakage and reductions in household consumption, following the impact of the extended dry weather event on household consumption in 2018/19.

Line 4P.73 – Water delivered (non-potable)

There has been a small increase in the water delivered (non-potable) over the reporting period.

Line 4P.74 – Water delivered (potable)

There has been a small decrease in the water delivered (potable) over the reporting period. This decrease can be related to a decrease in overall consumption, following the impact of the extended dry weather event on household consumption in 2019/20.

Line 4P.75 – Water delivered (billed measured households)

Measured household water delivered has increased regionally. The increase is in line with historical trend and expected due to new properties and meter optants. There is also increase in the underlying value measured per household consumption.

Line 4P.76 – Water delivered (billed measured non-households)

There has been a slight increase in billed measured non-household, but it is broadly in line with last years reported value.

Line 4P.77 – Total leakage

Total leakage is 16.55Ml.d under our regulatory leakage target of 462.7 Ml/d due to elevated levels of leakage detection and repair resource, along with a mild winter.

Line 4P.78 – Distribution losses

Distribution losses were broadly aligned with last year's with the decrease in 2019/20 attributed to the extended period of dry weather in summer 2018 impacting the previous year's performance.

2019/20 Additional regulatory information

Line 4P.79 – Water taken unbilled

Within this line we have included the total water which is taken unbilled (whether legally or illegally). Water that we have used for mains tests, flushing, washouts, running to waste, or has been incurred through burst mains or other leakage has been excluded. There is a slight increase of 0.9 Ml/d in the value of water taken illegally unbilled. This is partially caused by a further increase in the number of void properties, and is being investigated, as there has been an increase from the long term level of void properties in the last three reporting years.

Line 4P.80 – Number of lead communication pipes

There has been a reduction in the number of lead communications pipes in-line with the number replaced and claimed as water outputs.

Line 4P.81 – Number of galvanised iron communication pipes

There has been a slight reduction in the number of galvanised iron communication pipes in-line with the number replaced and claimed as water outputs.

Line 4P.82 – Number of other communication pipes

The small increase compared to last year is in-line with anticipated connection growth and movement of lead pipes to the other materials category.

Line 4P.83 – Number of booster pumping stations

There has been a slight overall decrease in booster pumping station capacity in 2019/20. We forecast the number and capacity of pumping stations will increase in 2020/21 on the completion of the West Cumbria supplies scheme.

Line 4P.84 – Total number of service reservoirs

There has been a slight reduction in the number and capacity of service reservoirs. We expect in the long term the number will continue to decrease slightly. We are completing an enhanced programme of service reservoir inspection and cleaning. This has identified a number of sites that are in poor condition and abandonment is the best solution. When a service reservoir requires significant investment, replacement with a pumping station sometimes offers a lower whole life cost. There is therefore a slow but steady increase in the number and capacity of pumping stations.

Water towers have not been included in this number as these are reported separately in line 4P.80.

Line 4P.85 – Number of water towers

There has been no change to the number of capacity of water towers in 2019/20. We would expect the value to remain reasonably consistent in the coming years.

Lines 4P.86 to 4P.93 – Total length of mains laid or structurally refurbished by age band

The mains length in each category is relatively stable across AMP6 with only slight variation due to improvements in the records (including the implementation of a new geographical information system in FY14). There has been a slight increase in the number of mains laid between 1961 and 1980. This can be attributed to updated GIS data; for example, mains with previously unverified characteristics (i.e. laid date and diameters) have now become verified. The post 2001 category shows a more marked increase as newly laid mains continue to contribute to this category.

The data shows the pattern that would be expected with fewer older mains as many of these have now been replaced with newer mains. There are however two noticeable exceptions: -

- Fewer mains were laid between 1941 and 1960, this corresponds with the Second World War and subsequent recovery
- More mains were laid in the 1981 to 2000 period, this corresponds with our significant NW90 programme which replaced cast iron mains.

We are currently investing in a significant scheme in West Cumbria which will see changes in the treatment and distribution of water to customers in West Cumbria: this will increase the length of mains in future years.

Line 4P.94 – Average pumping head – treated water distribution

Water resources pumping is influenced by the hydrological conditions, as more water must be pumped in drier years to protect water resources and the environment. The summer of 2018 saw exceptionally dry weather over the North West region. Supplies were maximised across all sites. This had a notable effect on raw water abstraction and raw water transport pumping head to meet demand and to move raw water regionally. This year has seen a reduction in raw water abstraction, transport and treated water distribution average pumping head following on from the exceptional weather.

Block D – Water Treatment Works Band Disclosure

Lines 4P.95 – 4P.110 Water Treatment Works by size band and Proportion of DI by size band

There has been no change to the number of water treatment works in the different size bands compared to last year.

The percentage of distribution input (DI) from different size band works changes slightly from year to year dependent on demand within local networks. During 2019, similar to the previous summer, there was a significant increase in demand for approximately 2 months, due to an extended period of dry weather. The event was shorter than the previous year, but saw an increased demand from some of the groundwater sources and a reduction in distribution input from surface water sources. Additional to this, a number of the upland impounding reservoirs had significant raw water quality issues over the summer because of algae or taste and odour causing compounds geosmin and 2MIB. Distribution input from the works was reduced or stopped altogether because of this.

2019/20 Additional regulatory information

Table 4Q – Non-financial data – Properties and population and other – Wholesale water

Block A - Properties and population

Line 4Q.1 – Residential properties billed for measured water (external meter)

Line 4Q.2 – Residential properties billed for measured water (not external meter)

The number of metered residential properties has increased consistently with the number of new connections, we expect this increase to continue.

Line 4Q.3 – Business properties billed measured water

There has been a decrease in billed measured business properties since FY17 partly due to an increase in the number of empty premises on the billing system. The number of business properties at FY19 year end is based on the number of Service Points in the Central Market Operating System. This is predominantly due to an increase of over 3,000 Vacant SPIDs in March 2020 as a result of the effects of the Coronavirus pandemic.

Line 4Q.4 Residential properties for unmeasured water

There has been a reduction in the number of residential properties billed for unmeasured water primarily due to the number of free meter optants.

Line 4Q.5 – Business properties billed for unmeasured water

There has been a reduction in number of business properties billed for unmeasured water partly as the result of an increase in the number of empty premises on the billing system. The number of business properties at FY19 year end is based on the number of Service Points in the Central Market Operating System. This is predominantly due to an increase of over 3,000 Vacant SPIDs in March 2020 as a result of the effects of the Coronavirus pandemic.

Line 4Q.6 – Total business properties connected at year end

The number of non-household properties has slightly increased compared with 2018/19.

Line 4Q.7 – Total residential connected properties at year end

Continued confidence in the housing sector is reflected in the increased number of new properties connected for the period FY14 to FY20. The increased volume of new properties connected for this period exceeded the original forecast target.

Line 4Q.8 – Total connected properties at year end

This line is a sum of lines 4Q.6 and 4Q.7 see variance explanation for these lines.

Line 4Q.9 – Number of residential meters renewed

There has been an increase in the number of residential renewals.

Line 4Q.10 – Number of business meters renewed

There has been an increase in the number of business renewals compared to last year because of an increase in demand for business meter exchanges.

2019/20 Additional regulatory information

Line 4.Q11 – Number of meter optants

There has been a reduction in the number of residential renewals. In 2019/20 36,492 applications were received compared to 44,629 the previous year, a reduction of 18.2%. All non-urgent metering work was halted from 25 March 2020 in accordance with government COVID-19 pandemic restrictions. This meant we did not fit any FMO's in the last 7 days of 2019/20, in previous weeks we were fitting circa 800.

Lower household bill increases are thought to be a contributing factor to this lower take up. Our meter target was based on historical performance and predictions in customer behaviour using the UKWIR econometric opting model. This also included 18,000 installations facilitated by additional pipework alterations or policy charges plus 25,000 from a targeted campaign to customers in financial hardship. To address the lower than expected meter uptake we have initiated a number of actions.

A successful pilot trial on our 'Lowest Bill Guarantee' ran in 2019/20 in which customers that opt for a new free water meter will have a 'Lowest Bill Guarantee' for a 24-month period. This ensures that customers will pay the lesser of the existing Rateable Value based charges or our new metered charges. The offer has been designed to reduce the potential 'loss aversion' that customers tell us is preventing them from moving to a meter, whilst still offering a potential financial saving to reduce water use, along with the use information that a meter provides.

An FMO promotion was run alongside second half billing between 27 August and 9 September. The promotion was for approximately 35,000 customers who may make a saving based on their rateable value and the number of occupiers in their property. These customers received a personalised letter which gave a comparison showing how much they may save, as well as an insert promoting our FMO scheme. Following this promotion, we saw a substantial increase in applications throughout September.

Line 4Q.12 – Number of selective meters installed

We do not currently selectively meter properties.

Lines 4Q.13 and 4Q.14 – Total number of new business and residential connections

Continued confidence in the housing sector in 2019/20 contributed towards the increased volume of newly connected properties. We continued to experience a high volume of properties connected to large apartment blocks in FY2019/20.

Line 4Q.15 – Total population served

The increase in population of 0.94% is within the historic range. There is some movement between the water resource zones (no material impact on total value reported), which will be in part population movement or different rates of growth, and the yearly update of the water supply zones.

Line 4Q.16 – Number of business meters (billed properties)

Line 4Q.17 – Number of residential meters (billed properties)

This may be a relatively small cost driver.

Line 4Q.18 – Company area

The company area served by the water business remains stable.

2019/20 Additional regulatory information

Block B - Other

Line 4Q19 – Number of lead communication pipes replaced for water quality

The number of lead communications pipes replaced for quality purposes is broadly aligned with the number of historic replacements. We intend to continue reducing the number of customers with lead communication pipes.

Line 4Q.20 – Total supply side enhancements to the supply demand balance (dry year critical/peak conditions)
Line 4Q.21 – Total supply side enhancements to the supply demand balance (dry year annual average conditions)

Our groundwater supply scheme at South Egremont to offset sustainability reductions at Ennerdale Water was originally designed to supply 6.4 Ml/d. In 2013 the scheme was re-designed for 11 Ml/d for delivery in 2015 as declared in the 2015 Water Resources Management Plan (with associated WAFU benefit of 3 Ml/d). This scheme was to address the need to reduce abstraction from Ennerdale Water following an Environment Agency review of abstraction licences to comply with the EU Habitats Directive.
However, following implementation of an Environmental Damage Notice at Ennerdale, there is significant benefit to customers and the environment of greater supply capability. The boreholes at South Egremont are one of several interim measures in the 2015 Water Resources Management Plan. This, along with the Summergrove rezoning scheme and enhanced water efficiency and leakage activity, make up the suite of interim measures aimed to reduce abstraction from Ennerdale Water until the Thirlmere Transfer Scheme is delivered.
Project completion in 2017/18 delivered a supply side enhancement of 3 Ml/d. Operational enhancements implemented in 2019/20 achieved an increased pumping rate of 6.5 Ml/d (previously 4.3 Ml/d) for the River Eden to Castle Carrock pumped raw water transfer; this provides a WAFU benefit to Carlisle resource zone of +0.7 Ml/d for 2019/20 which along with other operational changes give the an overall benefit relative to WRMP15 of +1.9 Ml/d.

Line 4Q.22 – Total demand side enhancements to the supply demand balance (dry year critical/peak conditions)
Line 4Q.23 – Total demand side enhancements to the supply demand balance (dry year annual average conditions)

There are no new demand side measures or supply side measures for the AMP6 period. However, work is ongoing to maintain the current enhanced levels of water efficiency and leakage activities, and as part of the interim measures in West Cumbria we have committed to reduce leakage as far as possible within the West Cumbria resource zone to reduce abstraction from Ennerdale Water. Work continues to progress the Thirlmere Transfer scheme to provide alternative supplies for West Cumbria in 2022.

When looking at the change in West Cumbria leakage from FY19 to FY20 this manifests as a negative value. However, the reported value in this line is zero as there no defined demand-side options included for AMP6 in the 2016 Water Resources Management Plan. The drivers behind the suite of interim measures in West Cumbria is environmental, to reduce abstraction from Ennerdale Water until delivery of the Thirlmere Transfer scheme.

For all the four lines above we consider that the Ml/d unit does not reflect the work that is currently underway to claim supply-demand benefits in future years/AMPs, for example the Thirlmere Transfer scheme.

2019/20 Additional regulatory information

Lines 4Q.24, 4Q.25, 4Q.26 – Energy consumption – wholesale, network+ and water resources

The total consumption of energy (electricity and natural gas) this year decreased compared with 2018/19 primarily due to reduced raw water pumping from Windermere and Ullswater. Energy consumption in 2018/19 was high due to the extended period of dry weather which required us to increase raw water abstraction and transport pumping as we maximised groundwater sources to meet the increase in demand and manage surface water levels. 2019/20 is the first year we have included liquid fuels in this line. For water resources no liquid fuel use as been allocated to this operation further work is required to understand and allocate any liquid fuel use for this operation. Therefore, all liquid fuel use for Water operations is allocated to Network + operations. For reference Network + consume circa 85% of the total electricity for the overall water business.

Line 4Q.27 – Mean Zonal Compliance

Mean zonal compliance measures performance against 39 water quality standards. Performance this year at 99.96% fell short of the performance commitment of 100% compliance which is challenging, not least due to the influence of customer internal plumbing on several water quality parameters.

In 2019, we have seen a decrease in the number of infringements compared to 2018, which has included a significant decrease in the number of lead infringements. This can be attributed to the increased focus on phosphate dosing performance, which is now reviewed on a monthly basis at director level.

Line 4Q.28 – Compliance Risk Index

This compliance risk index (CRI) score is a DWI calendar measure and refers to the compliance risk for 2019. The reported performance is the provisional figure provided by DWI and is subject to confirmation of the annual figure from DWI due after the Ofwat APR publication deadline. The index is volatile from year to year dependant on where an infringing sample is taken, the nature of the sample and the subjective inspector assessment score.

We have experienced a deterioration in performance compared to 2018 attributable to significantly more infringements at WTWs, although there have been fewer infringements at Service Reservoirs and in WSZs. The company has an action plan in place to drive water quality improvement which will improve performance against our AMP7 ODIs and the Compliance Risk Index.

Line 4Q.29 – Event Risk Index

The event risk index (ERI) score reported is a DWI calendar measure and refers events which were reported to the DWI between 01 January 2019 and 31 December 2019. The metric is particularly volatile as it is heavily dependent on the type of incident that occurs, the location and number of properties potentially impacted and the duration of the event.

The provisional performance score for 2019 (1459.97) is higher in comparison to the DWI confirmed ERI score for events reported during the period 01 January 2018 to 31 December 2018 (87). This score is the DWI provisional score as received from the DWI on 05/05/2020, the DWI will confirm the score for 2019 after the Ofwat APR publication deadline. The Company has reported 43 events to the DWI in 2019, significantly more than the 31 events reported during 2018. The highest impacting event reported during 2019, in terms of ERI, was the Oswestry WTW cryptosporidium event with an ERI score of 1230.64. This is due to the fact that the event occurred over several days, and the oocysts (considered to be a public health risk) were

present in the final water so the total population of the supply from Oswestry was included in the calculation.

Line 4Q.30 – Volume of Leakage above or below the sustainable economic level

Total leakage has reduced in 2019/20 compared to 2018/19 and over AMP6 total leakage has remained significantly below the economic level. We have followed the guidance when calculating this value, although we believe that using ELL would better reflect the cost company has to bear to maintain leakage at this, significantly lower than economic, level.

2019/20 Additional regulatory information

Table 4R – Non-financial data – Wastewater network and sludge

We support the collection of the wastewater network data as we consider it to be defined, reportable and potentially useful for cost assessment, although it is imperative that each company reports to consistent definitions.

However, it is important to consider the confidence grades applied and the use of inferred information within any of the datasets provided. This year we have continued with our data improvement project, which is improving the accuracy of our inferred data, on both the existing and ex private sewer network, where the use of inferred data could have substantial impacts upon the data being reported by different companies. This project also aimed to improve the general quality of the network data that we are submitting.

Network performance can be influenced by other factors such as rainfall levels, run off rates and population density or level of urbanisation, which are not considered in this data set.

Block A – Wastewater network

Line 4R.1 – Connectable properties served by s101A schemes completed in the report year

The number of first time sewerage projects can vary depending on the number of applications that are received from customers. No schemes have been completed this financial year.

Line 4.R2 – Number of s101A schemes completed in the report year

No schemes have been completed this financial year.

Line 4R.3 & 4R.4 – Total pumping station capacity and number of network stations

We extract pumping station numbers and capacity from our corporate management system. Pumping station data has checked and verified as part of our data improvement project by operational and asset management teams.

We have continued our data improvement and checking programme this resulted in an increase in both the number of stations and capacity that we have reported. The increases in capacity and number of stations are predominantly as a result of; stations adopted through the S.104 adoption process, the continuing identification of private pumping stations that have now transferred in to our ownership through S.105a and improvements to the quality of our asset data. We will continue with our data improvement programme in to FY21.

Line 4R.5 – Total number of sewer blockages

The numbers of blockages that impact our network has slightly decreased this year on for our existing assets and increased slightly for our and transferred network, resulting in an overall reduction in blockage numbers. We are continuing to apply our targeted operating model, which focuses on reducing incident numbers and the impact that they have on customers. Our reactive resolution vehicles and the equipment that they carry are key to this, as they are helping to identify the root cause of problems so that we can resolve incidents first time. We are also analysis risk so that we can proactively identify network issues before they have an impact on customers. This has been very effective in reducing the numbers of repeat incidents.

2019/20 Additional regulatory information

Line 4R.6 – Total number of gravity sewer collapses

We have seen a slight increase in the numbers of collapses this financial year. Over recent years we have enhanced the use of CCTV surveys and fully utilised our programme to identify structural defects and sewer deformations, this has enabled us to proactively repair sewers, reducing the impact that collapses have on our customers.

Line 4R.7 – Total number of sewer rising main bursts/collapses

The number of collapses varies across the period, however, our performance has been reasonably stable over the last few years. We naturally see a fluctuation in performance in rising mains due to the level of operational technology and innovation that is available for rising main assets. We plan to continue our research to consider post incident materials testing following rising mains bursts, we hope this could be used to identify those assets where repeat failure of the rising main is likely and enable better planning of refurbishment and replacement schemes.

Due to the relatively low expenditure likely to be associated with rising main bursts/collapses over time we believe that other explanatory factors are more significant in explaining costs for models with limited degrees of freedom.

Line 4R.8 – Number of combined sewer overflows

Our profile of overflows changes over time. Increases in the number of overflows can be as a result of the adoption of previously private assets or the discovery and permitting of previously unknown/unpermitted assets. Decreases occur when assets are closed and also from the discovery that some assets do not exist (the permits for these assets are then surrendered). If multiple overflows are present at one location, the overflow numbers have been included within this line. Over AMP6 we are installing a significant number of event duration monitors on these assets. The information gathered from these monitors may drive future investment.

If this factor were to be used in benchmarking models then the most up to date values (i.e. current year) should be used as a basis for forecasting for future activity rather than a trend based on historic changes.

Line 4.R9 – Number of emergency overflows

Our profile of overflows changes over time. Increases in the number of overflows can be as a result of the adoption of previously private assets or the discovery and permitting of previously unknown/unpermitted assets. Decreases occur when assets are closed and from the discovery that some assets do not exist (the permits for these assets are then surrendered). If multiple overflows are present at one location, the overflow numbers have been included within Line 8. If this factor were to be used in benchmarking models then the most up to date values (i.e. current year) should be used as a basis for forecasting for future activity rather than a trend based on historic changes.

Line 4R.10 – Number of settled storm overflows

Our profile of overflows changes over time. Increases in the number of overflows can be as a result of the adoption of previously private assets or the discovery and permitting of previously unknown/unpermitted assets. Decreases occur when assets are closed and also from the discovery that some assets do not exist (the permits for these assets are then surrendered). If multiple overflows are present at one location, the overflow numbers have been included within line 8. If this factor were to be used in benchmarking models then the most up to date values (i.e. current year) should be used as a basis for forecasting for future activity rather than a trend based on historic changes.

2019/20 Additional regulatory information

Line 4R.11– Sewer age profile

The numbers of sewers constructed after 2001 grows steadily each year, as a result of construction and adoption.

Line 4R.12 – Volume of trade effluent

There is minimal variance in the volume of trade effluent across this period, although we have seen a small decrease (<1%) this year. We believe that this is as a result of the change in the way that trade effluent values are captured. Retailers are now responsible for meter readings of trade effluent customers in the market. We have seen that the data provided for some traders has not always been updated.
We do not believe that this line is required for cost comparison models as the flows and loads for significant works are accounted for elsewhere in the tables.

Line 4R.13 – Volume of wastewater receiving treatment at sewage treatment works

This line includes all flows not just domestic flows. We have seen a significant increase in flows this year. This is as a result of the extremely wet weather experienced in the North West of England throughout the year. This has resulted in an increase in the surface water flows received in to our network.

The quality of the data provided for this table has increased across this AMP as we install more flow recording devices at our WwTW. Where a site is not MCERT'd we have estimated the flow based on the information we have available in relation to P.E and flow. This estimation is reflected in the confidence grade.

We do not believe that this should be used for comparative purposes, as it does not include losses from the network and it assumes a similar coverage of MCERT'd works across all companies. This measure does not consider the variability in dry weather flows and flow to full treatment and the potential costs in dealing with a significant range in flows.

Line 4R.14 – Length of gravity sewers rehabilitated

The length of gravity sewer rehabilitated varies across the five year period. This is as would be expected as our strategies and work banks are variable across the AMP. This trend is consistent with previous AMP's. We have seen an increase this year in the length of sewer refurbished as we begin preparations for AMP7 programmes of work, addressing structural defects to help to reduce future incidents of blockages, collapses and flooding.

We do not believe that this should be used a cost driver because it is a small dataset.

Line 4R.15 – Length of rising mains replaced or structurally refurbished

We currently maintain our rising mains on a reactive basis. We classify refurbishment of a rising main when we have replaced or re-lined a length of rising main to increase the expected lifespan of that asset. We have not refurbished any rising mains this financial year. This line does not include any new lengths of rising main constructed. We have not replaced any rising main length this financial year.

We do not believe that this should be used for cost comparative purposes, as companies may be working to inconsistent definitions of structural refurbishment.

2019/20 Additional regulatory information

Line 4R.16 – 4R.21 – Length of foul (only), surface water, combined public sewers, rising mains, total length of other wastewater network pipework and total length of "legacy" public sewers as at 31 March and Line 4R.22 – Length of formerly private sewers and lateral drains (s105A sewers)

We have continued with our data improvement project this financial year. The project has focused in improving the quality of our sewer records, particularly those records that are inferred. As a result of this we have again seen a very small increase in our existing asset length, whilst transferred assets have remained the same. We will continue this process next year to further improve this data set.

Block B – Sludge

We use our Regional Sludge Operational Management (RSOM) system as the primary source of measuring sludge production.

Line 4R.23 – Total sewage sludge produced treated by incumbents

This financial year we have seen a small increase in the volume of raw sludge that we have produced. This is as a result of a small increase in population, an increase in the trade effluent loads that we have received and an increase in the number of WwTW that have a phosphate consent. The 2019/20 figure is derived from measured data for digester feed using our RSOM system. When measured data has not been available we have applied a back calculation. We have added to this figure a raw sludge production number for the sludge that we lime treat. Both figures exclude any inbound sludge trading and is constrained to the sludge produced within our region. It excludes the volume of lime addition, grit and screenings from sewage treatment and excludes grit and screenings arising from sludge treatment.

It excludes our sludge that is treated using lime by a 3rd party contractor, detailed in line 24.

Line 4R.24 – Total sewage sludge produced treated by 3rd party sludge service provider

This figure is a raw sludge production number and excludes any inbound sludge trading and is constrained to the sludge produced within our region. It excludes the volume of lime addition, grit and screenings from sewerage treatment and excludes grit and screenings arising from sludge treatment. The volume of sludge has increased slightly this year. To help provide treatment capacity during time of asset failure we have moved more sludge around the region and have had an increased reliance on third party contractors.

Line 4R.25 – Total sewage sludge produced

This is a calculated line.

Line 4R.26 Total sewage sludge produced from non-appointed liquid waste treatment

This is a small volume of our overall sludge production figure.

Line 4R.27 – Percentage of sludge produced and treated at a site of STW and STC co-location

We have interpreted the line to include all co-located indigenous sludge production and indigenous sludge from physically separate sites connected by pipeline where any sludge treatment activity takes place and where that site has the appropriate Biosolids Approval Scheme (BAS) accreditation. Our number is consistent with the previous years' reported figure.

2019/20 Additional regulatory information

Line 4R.28 – Total sewage sludge disposed by incumbents

Volumes of sludge disposed have significantly reduced this financial year. We experienced a very wet year last year which meant that we were unable to dispose of as much sludge to agricultural land as in previous years.

Line 4R.29 – Total sewage sludge disposed by 3rd party sludge service provider

We have disposed of more sludge via third parties this year. Due to the wetter weather and asset failures this year we have disposed of more sludge to restoration.

Line 4R.30 – Total sewage sludge disposed

This is a calculated line.

Line 4R.31 – Total measure of intersiting 'work' done by pipeline

The work done by pipeline has been calculated using the total tonnes dry solids moved from each start site to end location. The total volume was then multiplied by the distance in one direction to give the total work done.

We have interpreted the line to include all intersiting 'work' done by pipeline that transports both raw and treated sludge, one way only. For clarity in the future this line could be split into two pipelines:

- Total measure of raw sludge intersiting 'work' done by pipeline
- Total measure of treated sludge intersiting 'work' done by pipeline

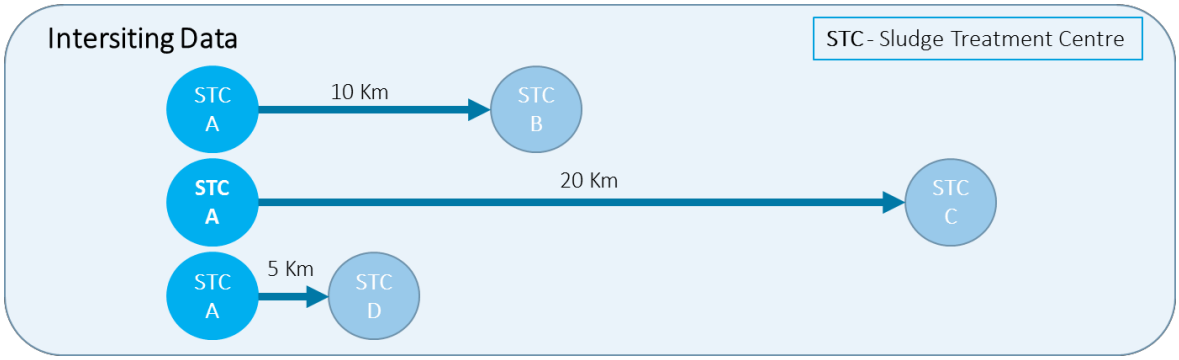
Line 4R.32 – Total measure of intersiting 'work' done by tanker

We have interpreted the line to include all treated and untreated liquid sludge intersiting 'work' done as a liquid sludge, one way only.

The total work done via tanker has been calculated by:

- Calculating the total tTDS for each route
- Calculating the distance travelled in one direction
- The total distance for each route is then multiplied by the total tTDS
- The regional total is a sum of all of the routes

The diagram summarises this:



This figure is measured. Sludge to land transport activity is excluded as this is captured under sludge disposal.

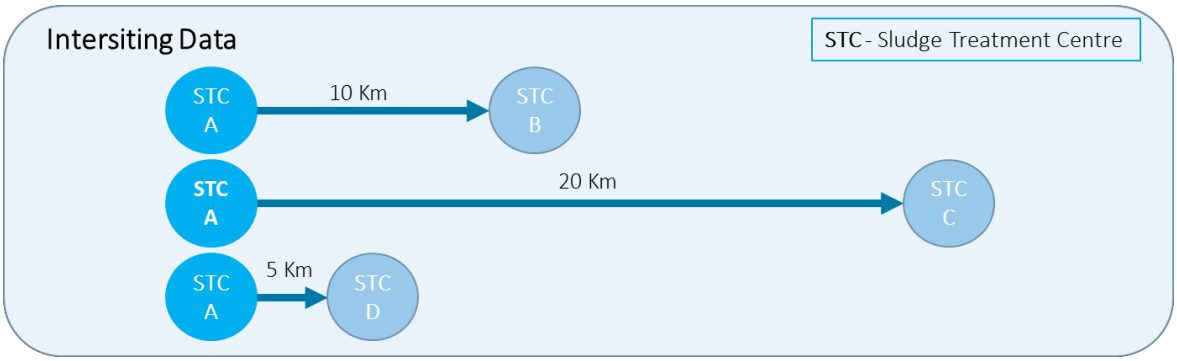
The figure that we have reported is higher than the last financial year. We have produced more sludge this year as we have seen a small rise in reported figures for both population and trade effluent discharges. We

have improved the accuracy of the data that we are recording for intersiting distances.

Line 4R.33 – Total measure of intersiting 'work' done by truck

We have interpreted this line to include all untreated and treated sludge as a solid (cake) intersiting 'work' done, one way only. All of this work is all raw sludge cake movements.
The total work done via truck has been calculated by:

- Calculating the total tTDS for each route
- Calculating the distance travelled in one direction
- The total distance for each route is then multiplied by the total tTDS
- The regional total is a sum of all of the routes The diagram below summarises this:



Sludge to land transport activity is excluded as this is captured under sludge disposal. To mitigate some of the asset failure and capital work this financial year we have removed more raw cake out of the system rather than in previous years intersite the sludge for further treatment.

Line 4R.34 – Total measure of intersiting 'work' done (all forms of transportation)

This is a calculated line.

Line 4R.35 – Total measure of intersiting 'work' by tanker (by volume tanker)

The figure that we have reported is higher than the last financial year. We have produced more sludge this year as we have seen a small rise in reported figures for both population and trade effluent discharges. We have also improved the quality of the data that we record and have improved the accuracy for both volume, quality and distance sludge moved.

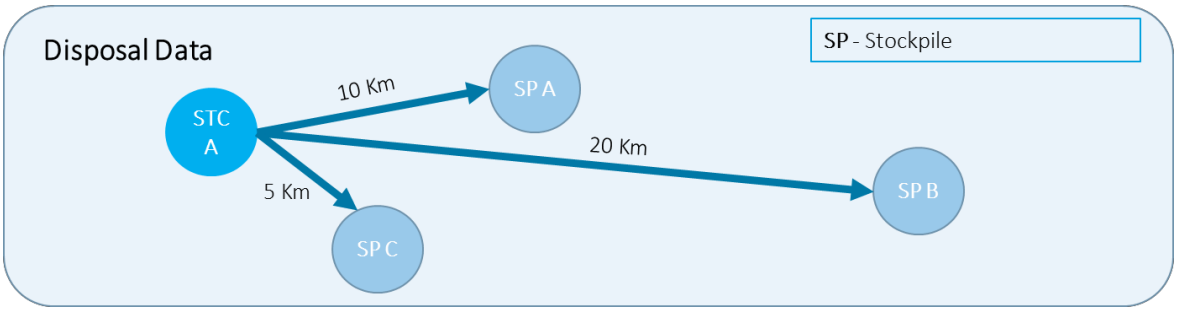
Line 4R.36 – Total measure of 'work' done in sludge disposal operations by pipeline

We do not dispose of any sludge by pipeline.

Line 4R.37 – Total measure of 'work' done in sludge disposal operations by tanker

The figures have been calculated from measured tTDS and distance travelled as recorded on our vehicles. The diagram below summarises how we have calculated this:

2019/20 Additional regulatory information

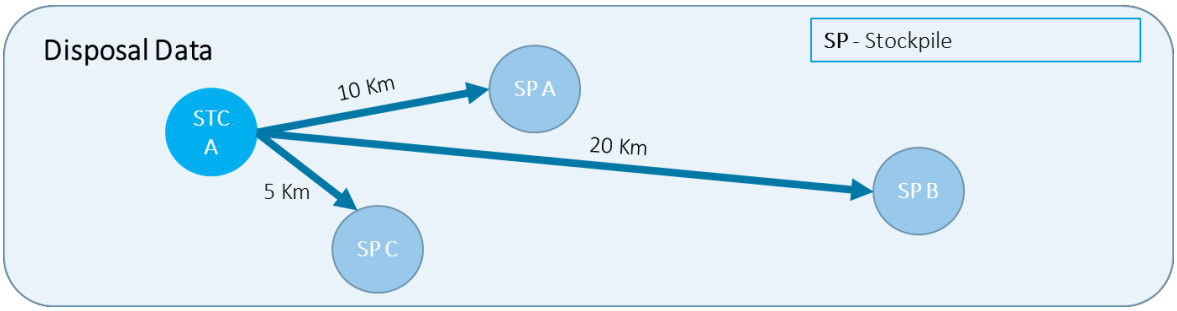


As can be seen from the trend in our numbers we are steadily reducing the volumes of sludge that we dispose of by tanker; this year we have not disposed of any sludge by tanker.

Line 4R.38 – Total measure of 'work' done in sludge disposal operations by truck

From 2016/17 onwards our vehicles have been able to record distances on board to automatically calculate distances travelled.

- This diagram below summarises how we have calculated the volumes of sludge disposed by truck:



Volumes disposed of by truck have significantly increased this financial year. This is because;

- We have produced more sludge this financial year
- This weather this financial year has been very wet across the North West region. As a result we have not been able to dispose of as much sludge to land or stockpile in fields. As a result we have disposed of more sludge to restoration.
- We have not incinerated any sludge at Shell Green this financial year
- Some minor process failures at STC occurred, reducing the sludge quality standard produced. In order to appropriately dispose of the lower quality sludge we have had to transport it further away or have disposed of the sludge to restoration
- We have disposed of more sludge to restoration, which is much further away

Line 4R.39 – Total measure of 'work' done in sludge disposal operations (all forms of transportation)

This is a calculated line.

Line 4R.40 – Total measure of 'work' done by tanker in sludge disposal operations (by volume transported)

As can be seen in our figures we have not disposed of any sludge this year by tanker.

Line 4R.41 – Chemical P sludge as percentage of sludge produced at STWs

The percentage reported has increased this year. We have seen an increase in population, and the

number of treatment works with both P consents and tightened P consents.

Table 4S – Non-financial data – Sewage treatment

We believe that the variables considered within this table will provide a good basis for the comparison of costs between companies. It is imperative that the size, consent conditions, treatment works classifications, flow and load removal rates are all considered when making cost comparisons between companies, as each of these factors can influence the capex and opex that are required to build and operate a works to meet any given standard.

The breakdown of the phosphate (P) removal consent categories in the table is logical and seems to be based on the additional treatment that would be required to achieve the different levels of P removal. It should be noted that P removal with a consent of greater than1mg/l may not require an additional process to capture solids. Additional solids capture stages at any WwTW will significantly increase both capex and opex requirements.

The breakdown of biochemical oxygen demand (BOD) categories within the table seem to be logical. The lower the BOD generally the larger the secondary treatment process required. A larger secondary process would result in an increase in both capex and opex. For a works with a BOD consent between 10-20 additional solids, it may be possible to achieve the consent without additional solids capture, but not in all circumstances.

The breakdown of ammonia categories is logical. The lower the ammonia consent the larger the secondary treatment required or there may be an increased likelihood that a tertiary stage will be required to achieve consent standards. This table may need to be divided so that activated sludge works and filter works can be considered separately as lower ammonia consents are easier to achieve with an activated sludge works than a filter works. A filter works with a consent of less than 5mg/l would usually require tertiary ammonia treatment whereas an activated sludge plant could be optimised to be able to achieve this.

There have been a number of changes this financial year to the number of works that we operate and the size band that these works are in. This then changes the distribution of these works across consent categories. We have also continued to check and validate our works data, but there are fewer changes than last financial year. The table below highlights all of the changes identified (see large works table for changes in sizeband 6 works);

Works Name	Previous data	New data
Size band movements		
Aglionby	1	2
Alpraham	1	2
Bolton Penrith	2	3
Caldbeck	2	3
Colne	6	5
Dent	2	1
Langdale	1	2
Little Budworth South	1	2
Melling	4	3
New works		
Cedar bank	N/A	1
Langdale House	N/A	1
Closed works		

2019/20 Additional regulatory information

Works Name	Previous data	New data
Cuddington	4	N/A
Oakmere	3	N/A

Block A Load received at sewage treatment works

Lines 4S.1 – 4S.7 – Load received at sewage treatment works in size bands 1-6 and total load

Load received is a good comparator between WwTW. However, it is important that each company is calculating load using the same methodology.

Line 4S.8 – Load received by trade effluent customers at treatment works

We have seen a small decrease in trade effluent loads this year. It is important to understand the loads that we receive from trade customers. These loads can be difficult to treat and can significantly increase costs at a WwTW. Again, a consistent method to calculate load is needed between companies.

Block B Number of sewage treatment works

Lines 4S.9 – 4S.15 – Number of sewage treatment works in size band 1 – 6 and total number of works

Number of works is a good comparator between WwTW. However, it must be used in conjunction with consent, load and WwTW classification information.

This is standard information linking the works to the Environment Agency consent and needs to be considered in conjunction with operating costs. In AMP6 we will start to see the introduction of lower P consents at our works, with the lowest being 0.25mg/l at Windermere WwTW. The industry has accepted that consents can go as low as 0.5mg/l in AMP6 for P however, we have accepted three limits tighter than this in Cumbria in recognition of the sensitive environments they discharge to (Grasmere 0.4mg/l, Cleator 0.4mg/l and Windermere 0.25mg/l). The costs at these works may increase because of these particularly low P consents.

In AMP7 it is likely that there will be a requirement for some plants to remove priority substances (subject to the outcome of the CIP2 collaborative R and D project).

Line 4S.16 – Current population equivalent served by STWs

The PE served by our works continues to steadily grow year on year.

Lines 4S.17 – 4S.25 Current population equivalent served by:

- **discharge relocation schemes,**
- **filter bed STWs with tightened/new P consents,**
- **activated sludge STWs with tightened/new P consents,**
- **groundwater protection schemes,**
- **STWs with a Flow1 driver scheme,**
- **STWs with tightened/new N consents,**

- **tightened/new sanitary parameter consents and STWs with tightened/new UV consents**

Further details of the projects delivered can be found in the APR commentary.

Line 4S.25 – Population equivalent treatment capacity enhancement

Population equivalent (PE) enhancement at a WwTW does not reflect the scale of the impact of a new development on wastewater infrastructure. It also discounts any investment made on the wastewater network to incorporate growth and new development. PE as a measure of investment can only be reviewed against a baseline PE from which the improvements have been made at individual WwTWs. This information is available and can give an indication of the impact on that particular WwTW but many other variables influence the cost and scope of a project such as the current headroom, the sensitivity of the watercourse, the current size, age and reliability of the individual process units, the availability of land for expansion etc. The design criteria also has assumptions associated with PE (occupancy rates, water use, infiltration etc.) that can reduce confidence in the capacity enhancement accurately reflecting the PE it can accommodate.

Table 4T – Non-financial data – Sludge treatment

Block A – Sludge treatment process

This table has been populated on the basis of the STC capability not the product that is produced.

Line 4T.1 – % sludge untreated

As a result of operational issues at some of our STC we have seen an increase in untreated sludge volumes. Some of this sludge was traded out of region to a neighbouring Water and Wastewater company for treatment and disposal.

Line 4T.2 – % sludge treatment process – raw sludge liming

Volumes of raw sludge liming have reduced this year as raw sludge has been taken out of the system.

Some asset failures have meant that sludge has been diverted for lime treatment and have been included in line 1.

Line 4T.3 – % sludge treatment process – conventional AD

The volumes of sludge that we treat using conventional processes remains relatively constant.

Line 4T.4 – % sludge treatment process – advanced AD

The volume if sludge that we treat using advanced processes remains relatively constant.

Line 4T.5 – % sludge treatment process – incineration of raw sludge

We do not use this treatment process.

Line 4T.6 – % sludge treatment process – incineration of digested sludge

We do not use sludge incinerator as a method of treatment. This line is not aligned to RAG4.08 as incineration of digested sludge is a disposal activity.

2019/20 Additional regulatory information

Line 4T.7 – % sludge treatment process – phyto-conditioning/composting

We do not use this treatment process.

Line 4T.8 – % sludge treatment process – other (specify)

All of our sludge treatment processes have been included above.

Line 4T.9 – % sludge treatment process – Total

This is a calculated line.

Block B – (un-incinerated) sludge disposal route

Line 4T.10 – % sludge disposal route – landfill, raw

We have not used this disposal route.

Line 4T.11 – % sludge disposal route – landfill, partly treated

We have not used this disposal route.

Line 4T.12 – % sludge disposal route – land restoration/reclamation

We have interpreted the line to be calculated from a treated sludge figure. The wet weather conditions experienced in the North West this year mean that we have been unable to dispose as much sludge to land or stockpile sludge on farmland. Instead we have disposed of larger volume of sludge to restoration. Asset failures and planned capital work reduced the treatment throughput capacity at our treatment centres therefore reduced volumes of sludge that could be proceed. This sludge was also sent to restoration.

Line 4T.13 – % sludge disposal route – sludge disposed to farmland

We have interpreted the line to be calculated from a treated sludge figure (regardless of origin i.e. sludge traded in has been included in scope). We have interpreted this line to include the volume of lime addition, where relevant, as this is the physical volume of material actually disposed. We have disposed of less sludge to farmland this year as a result of the wet weather conditions, asset issues and reduced treatment capacity through capital projects.

Line 4T.14 – % sludge disposal route – Other (specify)

We have not incinerated any sludge at Shell green this financial year.

Line 4T.15 – % sludge disposal route – Total

This is a calculated line.

2019/20 Additional regulatory information

Table 4U – Non-financial data – Properties, population and other – Wholesale wastewater

Block A – Properties and population

Line 4U.1 – Residential properties connected during the year

Continued confidence in the housing sector has contributed towards the number of properties connected this year. Year end numbers had not been impacted on by Covid-19.

Line 4U.2 – Business properties connected during the year

Continued confidence in the housing sector has contributed towards the number of properties connected this year. Year end numbers has not been impacted on by Covid-19.

Line 4U.3 – Residential properties billed unmeasured sewage

The number of unmetered Residential has decreased broadly in line with the number of meter optants.

Line 4U. 4 – Residential properties billed measured sewage

The number of metered residential has increased consistently with the number of meter optants and the number of new Residential connections.

Line 4U.5 – Residential properties billed for sewage

This is a calculated line.

Line 4U.6 – Business properties billed unmeasured sewage

The number of unmetered Business has decreased this year.

Line 4U.7 – Business properties billed measured sewage

The number of metered Business has decreased this year but we have seen an increase in the number of void properties.

Line 4U.8 – Business properties billed for sewage

This is a calculated line.

Line 4U.9 – Void properties

The number of voids remains stable. There was a small increase at year end partly due to the impact of Covid-19.

Line 4U.10 – Total number of properties

This is a calculated line.

Line 4U.11 – Resident population

Population is useful for comparative purposes, however, it is important that all companies use the same methodology for estimating populations and expected growth rates. It is also import to consider population density as we believe that this will vary significantly both within and between companies and may influence opex and capex costs.

Our population continues to grow steadily rising year on year. This growth is a combination of expected regional growth and an improvement in data quality as a result of improvements to the accuracy of the drainage area mapping data used to assign population.

2019/20 Additional regulatory information

Line 4U.12 – Non-resident population

The number of non-residents continues to grow steadily. This data has a lower confidence grade as it is an extrapolation from a small data set.

Block B – Other

Lines 4U.13 – 4U.15 – Energy consumption – wholesale, Energy consumption – network + and Energy consumption - sludge

Total wastewater energy consumption in 2019/20 increased by 84 GWh compared with the previous year. Approximately 60 GWh is due to the inclusion of liquid fuels within reported consumption figures. The remaining increase in electricity and natural gas use was due to:

1) Increase in electricity use due to higher than average rainfall.
2) Increase due to new capital projects coming on line which have more stringent permit requirements needing additional energy use to treat.
3) Natural gas use increased due to an increase associated with the operation of the sludge process at Manchester Bioresources Centre at Davyhulme WwTW.

Line 4U.16 – Population resident in National Parks, SSSIs and Areas of Outstanding Natural Beauty (AONB)

We have seen a small reduction in the population that resides within areas of special designation this year. The population within these areas has slightly reduced this year. Although some new properties have been built, some have been converted in to holiday homes.

Line 4U.17 – Total sewerage catchment area

We have continued our review of the data held within GIS which records the drainage areas around our WwTW and Ww assets. This review has resulted in a small reduction in the area of wastewater catchment recorded.

Line 4U.18 – Designated bathing waters

We currently have 29 designated bathing waters in our region. This figure has reduced because Allonby South has been de-designated. There is the potential for additional designation of bathing waters particularly as open water swimming becomes more popular and we predict that over time more lakes will become designated bathing waters. We will treat newly designated bathing waters in the same manner promoting improvements where appropriate and supported by customers, to ensure our assets are not preventing bathing waters achieving excellent status by 2040.
The current population equivalent served by wastewater assets that have been upgraded due to bathing waters investment is 1.9 million. We regard population equivalent as a more meaningful metric to capture than the basic number of bathing beaches in a region. These have received significant upgrades to reduce the risk of bacteria or viruses reaching these sensitive locations. This is a significant proportion of the population. Although there is a reduction in the number of designated bathing waters, the shellfish beds and the requirement to protect them remains. Therefore there will not be a reduction in operational costs due to the de-designation of bathing waters.

There remains a significant gap between the performance of bathing waters in the North West when compared with the rest of England which may result in the need for further investment. Customer insight and research into their views is key to whether enhancement beyond the current minimum sufficient

standard is required. During AMP7 we will be carrying out partnership and catchment investigations to further investigate potential improvements. It is crucial that we ensure we maintain the performance of our assets to secure the resilience of these bathing waters in protecting the public health of our customers.

Line 4U.19 – Number of intermittent discharge sites with event duration monitoring

We will continue to deliver our substantial programme of monitor installations over the remainder of the AMP6 period.

Line 4U.20 – Number of monitors for flow monitoring at STWs

We have installed two flow monitor this financial year.

Line 4U.21 – Number of odour related complaints

Numbers of odour related complaints remains reasonably constant, with just a small increase in contacts this financial year. Throughout 2019/20 we have been implementing odour plans at process sites. We believe that COVID19 will have an impact on our odour performance as odour complaints have been deemed to be a non-critical activity and we have reduced or response to such complaints.

Line 4U.22 – Volume of storage provided at CSOs, storm tanks, etc. to meet spill frequency objectives

We believe that volume of storage provided to meet spill frequency can be a good indicator for financial models as long as all companies apply a consistent definition. It must be noted that the solution provided to respond to an NEP driver may be different between companies and the scale of the programme of work may vary. This may lead to the construction of alternative processes, which provide the same benefits without the need for significant storage. We have delivered a significant volume of storage this financial year, a summary table of this can be found below.

Name	Delivered Storage (m^3)	Date delivered
Oldham Storm Tanks	12,000	23/03/20
Royton Storm Tanks	5,080	23/03/20
Dragley Beck CSO	3,000	28/06/19
Ulverston WwTW Storm Tanks	4,000	
Schola Green Pumping Station	24,000	31/07/19
Morecambe WwTW	9,187	31/03/20
Glebe Road CSO	2,685	31/03/20
NR Coppy Clough CSO HYN005	8,565	31/03/20
Kidsgrove WwTW Storm Tanks	1,600	31/03/20
Lawton Gate WwTW Inlet Overflow and Storm Tanks	2,000	31/03/20
Rishton CSO	1,460	31/03/20
Langho sewer CSO	160	31/03/20
South of Old Langho CSO	130	31/03/20
Failsworth WwTW, Inlet Overflow and Storm Tanks	10,000	31/03/20
Snipe Clough	6,000	31/03/20

Hathershaw	5,728	31/03/20
Ashton Road CSO	874	31/03/20
Oswaldtwistle	900	31/03/20
Total	97,369	

Line 4U.23 – Total volume of network storage

We have continued our data improvement project this year. As a result we have seen a small reduction in the volume of network storage as we check and further validate our data.

2019/20 Additional regulatory information

Table 4V – Operating cost analysis – Water resources

Block A – Opex analysis

Water resource cost analysis

Line 4V.1 – Power

All energy costs including any associated levies and power hedging costs are reported in this line. Any costs saving from power generated internally is netted off these costs. Where possible costs are allocated down to supply point level and therefore the associated asset class within the Water resources price control. Despite inflationary impacts to the unit prices for power, these rise have been more than offset by a reduction in volume largely related to the dry weather event in FY19 and subsequent recovery period.

Line 4V.2 – Income treated as negative expenditure

Income received from Renewable Obligation Certificates, Gas Exports and Electricity Exports. There is minimal value allocated to Water Resources as this primarily only relates to generation at one site.

Line 4.V3 - Abstraction charges/ discharge consents

Total cost of abstraction charges and service charges from the Environment Agency (EA), Canal & River Trust and Severn Trent (service charge for use of Vyrnwy). For EA abstraction charges the costs are individually listed by each licence and therefore the associated Water Resource asset types, using this information, a percentage of total cost for each water resource category is calculated. On a comparable basis the costs have remained similar between FY19 & FY20.

Line 4.V4 – Bulk supplies

We do not incur costs in this area

Lines 4V.5 – Renewals expensed in year (infrastructure)

We have allocated the IRE expenditure to improve reservoir safety as shown on Table 4D against impounding reservoirs. On a comparable basis the costs have increased in line with our Impounding Reservoir programme.

Lines 4V.6 – Renewals expensed in year (non infrastructure)

We have not included any expenditure within this line.

Line 4V.7 - Other operating expenditure excluding renewals – direct

There has been a significant reduction the costs reported within this line in FY20 compared to FY19, which is primarily due to the dry weather incident and subsequent recovery in FY19.

Line 4V.8 - Other operating expenditure excluding renewals – indirect

Costs reported in FY20 are broadly comparable to those in prior years.

Line 4V.9 - Total functional expenditure

This is the sum of lines 1-8.

2019/20 Additional regulatory information

Line 4V.10 - Local authority and Cumulo rates

Rates are currently assessed on a cumulo basis and are not asset specific, in line with the RAGs we split Water cumulo rates by GMEAV and therefore movements will occur as GMEAV moves over time without any real cost fluctuations in overall cumulo rates costs. Within FY20 we have benefitted from a correction to the cumulo rates calculation relating to 2017 onwards.

Line 4V.11 - Total operating expenditure (excluding 3rd party)

This is the sum of lines 9 and 10.

Line 4V.12 – Depreciation

The depreciation report in FY20 is comparable to that in FY19.

Line 4V.13 - Total operating costs (excluding 3rd party)

This is the sum of lines 11 and 12.

Block B – Other expenditure - wholesale water

Line 4V.14 – Employment costs – directly attributable

The gross salaries and wages for all employees directly attributable to the water service are included in this line. Costs have increased within FY20 primarily as a result of insourcing some activities.

Line 4V.15 – Employment costs – indirectly attributed

The gross salaries and wages for all employees indirectly attributable to the water service are included in this line. Costs have decreased within FY20 primarily as a result of a reduction in pension charges 19 primarily as a result of change in the allocation between direct and indirectly attributable methodology.

Line 4V.16 – Number FTEs – directly attributed

The number of FTEs has increased within FY20 primarily as a result of insourcing some activities.

Line 4V.17 – Number FTEs - indirectly attributed

The number of FTEs has increased within FY20 primarily as a result of a correlation in drivers for allocation of Scientific Service FTE's.

Line 4V.18 – Costs associated with Traffic Management Act

Traffic Management costs are lower than prior year partly due to the impact of the Dry Weather activity in FY19, along with the location and duration of repair works in the current year compared with prior year.

Block C – Service charges

Line 4V.19 – Canal & River Trust abstraction charges/ discharge consents

The costs associated with Canal & River Trust service charges and is 100% allocated to Raw Water Abstraction. This relates to the abstraction of Water from Llangollen Canal.

2019/20 Additional regulatory information

Line 4V.20– Environment Agency abstraction charges/ discharge consents

Environment Agency (EA) service charges / discharge consents are directly linked based upon data linked back to individual permits and consents. The EA service charge is allocated to Raw Water Abstraction and the Discharge Consent cost is allocated to Water Treatment.

Line 4V.21 – Other abstraction charges/ discharge consents

This line relates to service charge paid to Severn Trent for abstraction of water from Vyrnwy.

Line 4V.22 – Statutory water softening

We do not incur costs associated with statutory water softening.

2019/20 Additional regulatory information

Table 4W – Operating cost analysis – Sludge transport, treatment and disposal

Sludge treatment opex by treatment type and sludge disposal route

In block A sludge transport; the pipeline column in negligible. Our main sludge pipeline, the Mersey Valley Sludge Pipeline transports treated sludge and so we have included costs associated with this pipeline in the sludge treatment other column in block B.

The costs in block B are allocated to conventional or enhanced treatment. We have reviewed the allocation this financial year and made some minor adjustments.

Block C covers costs for sludge disposal. This financial year we have reviewed our Bioresource strategy and ceased incinerating bioresources.

In 2018/19 the allocation of costs associated with sludge recycled to farm land and land reclamation / restoration where transposed, this this has been corrected for this financial.

Lines 4W.1, 4W.14 and 4W.27 – Power

All energy costs are included in this line. Any costs saving from power generated internally is netted off these costs.

Lines 4W.2, 4W.15 and 4W.28 – Income treated as negative expenditure

This line contains income from renewables generation, bioresource products and back generation to The National Grid.

Lines 4W.3, 4W.16 and 4W.29 – Discharge consents

We continue to review the charges that we pay for our environmental permits with the Environment Agency to ensure that we pay the correct charges.

Lines 4W4, 4W.17 and 4W.30 – Bulk supply

We have no costs in this line.

Lines 4W.5, 4W.18 and 4W.31 – Renewals expensed in year (infrastructure)

We have allocated the IRE expenditure shown on Table 4E across the more detailed treatment category breakdown within table 4W. No IRE expenditure is incurred in sludge transport or disposal, with the expenditure incurred in sludge treatment being on our treated sludge pipeline and allocated to the sludge treatment.

Lines 4W.6, 4W.19 and 4W.32 – Renewals expensed in year (non infrastructure)

We have not included any expenditure within this line.

Lines 4W.7, 4W.20 and 4W.33 – Other operating expenditure excluding renewals – direct

We have no comments on this line.

Lines 4W.8, 4W.21 and 4W.34 – Other operating expenditure excluding renewals – indirect

We have no comments on this line.

2019/20 Additional regulatory information

Lines 4W.9, 4W.22 and 4W.35 – Total functional expenditure

These are calculated lines.

Lines 4W.10, 4W.23 and 4W.36 – Local authority and Cumulo rates

We have no comments on this line.

Lines 4W.11, 4W.24 4W.37 – Total operating costs (excluding 3rd party)

These are calculated lines.

Lines 4W12, 4W 25 4W.38 – Depreciation

Line 12 Sludge Transport depreciation includes costs relating to raw sludge pipelines and vehicles. The costs for the Mersey Valley Sludge Pipeline, which transports treated sludge, is included in the sludge treatment other column.

Line 25 Sludge Treatment depreciation has increased in the year largely due to accelerated depreciation on redundant assets as a result of the change in sludge treatment processes at various sites following a review of ours Bioresources strategy.

Line 38 Sludge Disposal depreciation. This line includes depreciation for the Shell Green incinerator in the 'Other' column. Although line 25 includes a column for incineration of digested sludge, RAG 4.08 requires that costs of treated sludge incineration be classified as Sludge Disposal. These costs have therefore been included in the sludge disposal other column. The significant increase in the year is due to accelerated depreciation on the incinerator which, following a review of our Bioresources strategy, is now considered unlikely to generate future economic benefits and has therefore been written down.

Lines 4W13, 4W 26 4W.39 – Total operating costs (excluding 3rd party)

These are calculated lines.

Line 4W.40 – Employment costs – directly attributable

The gross salaries and wages for all employees directly attributable to the wastewater service are included in this line.

Line 4W.41 – Employment costs – indirectly attributed

The gross salaries and wages for all employees indirectly attributable to the wastewater service are included in this line.

Line 4W.42 – Number FTEs – directly attributed

The number of FTEs has remained reasonably constant.

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Line 4W.43 – Number FTEs - indirectly attributed

The FTEs all employees indirectly attributable to the wastewater service are included in this line.

Line 4W.44 – Costs associated with Traffic Management Act

Traffic Management costs are lower than prior year primarily due to the volume, location and duration of repair works in the current year compared with prior year.

Line 4W.45 – Costs associated with Industrial Emissions Directive (IED)

This financial year we have two sites with new IED permits; Sale and Birkenhead. We have not revoked the IED permit for Shell Green but have been able to reduce the monitoring activities associated with permit compliance as we are no longer incinerating on-site. This has helped to reduce the costs associated with IED compliance.

During the first year of AMP7 we expect that more of our sites will be subject to new IED permits. Several of our existing IED permitted sites will also be require additional investment, monitoring or maintenance so that they can meet Best Available Techniques (BAT) standards. We expect this to be a significant cost.

Line 4W.46 – Canal and River Trust service charges and discharge consents

These lines will reconcile back to table 4E discharge consents.

Line 4W.47 – Environment Agency service charges/discharge consents

These lines will reconcile back to table 4E discharge consents.

Line 4W.48 – Other service charges/permits

These lines will reconcile back to table 4E discharge consents.
The reduction in costs is due to the introduction of IFRS16 leasing standard which takes costs out of operating expenditure.

2019/20 Cost capture submission

Bidding activity: Bioresources market

Assurance

We have followed detailed and documented methodologies in populating the market activity table and the data has been subject to review by internal subject matter experts and an external audit.

One issue we have identified in completing this table is that a number of definitions appear to be open to interpretation and this may result in inconsistent methodologies between WaSCs.

Bidding activity

We have a standard set of criteria which are used to appraise bids from third parties;

- Applicant Background
- Financial Standing
- Capability
- Experience
- Customer Service
- Environment and Sustainability
- Health and Safety
- Quality
- Business Continuity
- Good Standing

These criteria are applied to ensure that we engage with suppliers who can provide competent, compliant and resilient services which deliver best value to our customers.

We undertake regular market testing exercises to benchmark the performance of our current service delivery functions (both internal and third party). In the current reporting period we tendered for inter-works tankering, the outcome of which increased the number of suppliers from 13 to 15, all of which are on five year contracts.

Market share

We currently outsource a significant proportion of our production line, including Inter-works Transportation and Agricultural and Field Management Services.

With respect to treatment, we have engaged in short term trading with Severn Trent with a number of our South Cheshire sites exporting liquid sludge and raw sludge cake to its Strongford and Minworth treatment facilities. We are also exploring an opportunity to engage in a long term raw cake export agreement to Strongford in AMP7. In addition to Severn Trent, we are actively negotiating with other neighbouring water companies to establish ‘spot trade’ contracts for contingency management and are exploring capacity tracking technologies with other WASCs. Finally, we have some liming undertaken by a third party in Cumbria, however this is planned to cease within the next reporting period as digestion capacity becomes available.

Going forward we anticipate that more sludge will be treated externally if the market can provide better value for our customers. Initially we believe this will be through trading with other WaSCs until the market matures and interest develops from third parties (i.e. Other Organic Waste companies).

Risks, issues and barriers

We believe the existing markets relating to transportation and recycling are well established and there are high levels of engagement. However this level of engagement has not yet been reflected in the market for treatment, which at present is largely confined to trading between WaSCs or exporting to liming companies (an established industry outlet).

Despite the potential benefits for a convergence between sludge and Other Organic Waste (OOW) markets, we believe the complex regulatory landscape is acting as a barrier to this occurring though we are beginning to see and enable progress in this area (see engagement activities/interests section).

In addition to the environmental regulatory obstacles, there are other significant barriers to new entrants looking to treat sludge. For example, it is commonplace within comparable sectors – such as municipal waste or food AD – to commit to long term agreements which give commercial operators the financial security to invest in treatment facilities. However, the current AMP cycle makes it difficult for WaSCs to commit beyond a five year horizon.

With respect to sludge trading, our experience to date suggests that there are two significant challenges to overcome.

Firstly, across the sector there appears to be a shortage of spare digestion capacity which is constraining potential opportunities to trade and most WaSCs are seeking to export rather than import. As companies drive for greater efficiencies in AMP7 it is likely that available capacity will become even more limited.

Secondly, where trades seem viable from a geographic perspective (i.e. a shorter distance to a neighbouring WaSCs treatment facility), we have found that in some instances the ‘gate fee’ we are being quoted is greater than the efficiency associated with reduced transportation, making the overall trade more expensive than treating indigenously. However, this is being reviewed and betterment of short term ‘gate fees’ is being explored. There is an additional risk to the success for trading as longer term ‘gate fees’ which include depreciations are potentially cost prohibitive.

Engagement activities/initiatives

The Environment Agency (EA) has initiated several workstreams to review the regulatory framework relating to the transport, treatment and disposal of sludge that will take several years to complete and implementation may be delivered across AMP7 and AMP8. Whilst these reviews are ongoing and there is significant uncertainty and risk over future regulatory requirements and cost, it is unlikely that there will be significant change to the existing market. We are actively supporting the review of the regulatory framework though representation at Director level on the joint EA and Water UK Sludge Strategy Steering Group and through leading technical discussions on behalf of the industry.

The EA has made changes to its interpretation of the Industrial Emissions Directive (IED) and in July 2019 communicated to the industry that the IED applies to Anaerobic Digestion of sludge. Treatment of sewage sludge was previously considered to be regulated under the Urban Wastewater Treatment Directive and exempt from waste regulation.

2019/20 Cost capture submission

A requirement of IED is to meet Best Available Technique (BAT) standards, which will drive a significant programme of investment at our sludge treatment facilities to bring them in line with waste AD standards. The EA has set out their expectations that IED permit applications and improvement plans for facilities against new BAT standards are to be submitted to the EA from January 2021. We have commissioned consultants to undertake a survey of our assets to understand the full requirements at our sites to meet IED.

Regarding sludge disposal, the Environment Agency strategy for safe and sustainable sludge use was published on 17 March 2020. The direction set out in this document is for sludge disposal regulation to be through Environmental Permitting Regulations and for Sludge Use in Agriculture Regulations to be revoked. We have contributed to the development of the strategy document and over the next few years we will be working with the EA through participation in several working groups.

We have supported the development of markets through improving the Industry reporting of the EA Satisfactory Sludge Disposal performance metric. The EA suspended the metric over concerns of inconsistent interpretation and reporting. We led Water UK and EA discussions on the reporting criteria and calculation and this has enabled compliance reporting for traded sludge to be consistently reported across all companies. Shadow reporting is taking place for 2020 before a decision to relaunch the metric is taken by the EA.

We are keen to embrace the market and our AMP7 delivery model is premised on an increased utilisation of third parties to deliver elements of our production line, especially in relation to treatment.

We have modelled the market information published by WaSCs and where potential trading opportunities have been identified we have proactively engaged with the relevant parties. We are actively trading with one neighbouring WaSC and exploring trading opportunities with three others. We have also sought to widen our thinking beyond trading and are exploring more strategic partnering going forward, such as investment in common assets, sharing of land banks and co-ordination of planned shutdowns to ensure capacity resilience across the combined asset bases.

From a procurement perspective we have undertaken a tendering exercise for inter-works tankering, resulting in contracts being awarded to a number of new suppliers. We have also undertaken an extensive market testing exercise with an external consultancy to identify the most efficient way of delivering our services. The output of this activity will lead to further engagement with the market to support delivery of a new operating model.

We are also utilising United Utilities' Innovation Lab to engage with third parties in identifying novel and pioneering solutions which can transform the way Bioresource Services are delivered. The Innovation Lab has allowed us to reach out beyond our traditional supply chain to engage with a new demographic of companies – such as entrepreneurial start-ups and SME's particularly data technology innovators – providing them with a platform to share their ideas and supporting them in development of commercial solutions.

Finally, we are active members of the Anaerobic Digestion and Biogas Association (ADBA) which provides us with an opportunity to engage with the wider AD market (i.e. Other Organic Waste sector) to identify mutually beneficial opportunities.