Annual Performance Report 2021

Commentary – Non-Financial Metrics

Table 3A - Water performance commitments (financial)

3A.1 Water quality compliance (CRI):

Our performance commitment (PC) target of 0 for compliance risk index (CRI) was not achieved in 2020. Our score of 1.31 is within the PC deadband of 2 and is our best performance against this measure since 2016. Lockdowns during 2020 had some impact on our sampling programme in water supply zones. We were unable to take around 6% of the required samples and the random nature was curtailed from March 2020. We believe that our performance would have remained within the deadband if we had been able to take the complete set of samples in the required random manner.

3A.2 Water supply interruptions

We have achieved our target of 6 minutes 30 seconds for the average number of minutes our customer base has been affected by a supply interruption in the year.

This is the first year that average minutes of interruption has been a performance commitment for the Affinity, although we have tracked the metric in previous years. We improved out performance in the year by nearly 8 minutes from the 00:13:42 recorded for 2019/20.

Changing the company mindset to concentrate on 'water always on' has been instrumental in improving our performance. This has been alongside investment in new capabilities, tools and techniques. We are continuing to look at reductions in response times, availability of resources and innovative methods of ensuring water is always on to meet our stretching targets in future reporting years.

We can confirm we are 'green' against all the checklist elements contained in the Ofwat reporting guidance for Water supply interruptions.

3A.3 Leakage

We did not meet our performance commitment of three-years average leakage reduction of 2.7%. Although we achieved 1.7% leakage reduction, we fell short of our target. Weather conditions from January 2021 until March 2021 proved challenging with prolonged low temperature causing more bursts than usual.

The AMP7 leakage figures are based on a different Ofwat methodology to those reported during AMP6 and cannot therefore be directly compared to those reported in the public domain for prior years. AMP6 additionally worked on spot year figures whilst AMP7 is reported as a three-year average. Comparisons for spot year figures need to be to against the prior years' shadow reported figures which can now be seen in table 3F.

Leakage is very important to us, and we are very disappointed not to have met our target. We remain committed to reducing leakage by 20% over AMP7 as set out in our WRMP and recognise that we will need to change our approach if we are to succeed in meeting our stretching targets.

We have put in place an immediate action plan for 2021/22 based on a mix of leakage control activities that we can roll out now. We need to make sure that we have the resources in place for our field staff to show agility in responding so that we reduce the run time of leaks on our network. We plan to spend approximately £100m to tackle leaks in AMP7 and meet our target. Our plan is to fix 50% of

visible leaks in 24 hours, 70% within 48 hours and 90% within five days so we can maximise the amount of water we save and offer more free repairs to customers where there are leaks on the pipe supplying their home.

We recognise that this immediate plan will only get us so far, and that we need to innovate to meet our targets over the rest of AMP7. We are looking to bring in new methods and technologies, targeting our approach to maximise the benefit delivered both in amount of water saved and in managing visible leaks.

This work will be overseen by a leakage taskforce, chaired by the Director of Asset Strategy with weekly updates discussed by the Executive Management Team and monthly updates will be discussed by the Board.

Compliance checklist

We can confirm we are green for 13 of the 16 main components against the compliance checklist. Below is the breakdown of sub-components where we are reporting Red or Amber against them.

Component / Element	RAG	Reasons for non-compliance	Actions / Comments
1. **Coverage**			
1a) 95% of all properties have continuous night flow monitoring through the year	Amber	Guidance requires that 95% of all properties have continuous night flow monitoring throughout the year. The percentage is 90.0%.	We have a program of work planned for year 1 of AMP7 to increase our current coverage to 95% | AMP Year	Properties	%
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2	36,019	2.4
3	22,545	1.5
4	15,839	1.1	
2. **Availability**			
2a) At least 90% of all properties within continuous night flow monitoring networks available for reporting night flow data through the year	Amber	At least 90% of all properties within continuous night flow monitoring networks should be available for reporting night flow data through the year. The availability in terms of total properties should be 90%*95% = 85.5%.	The reason for the low level of availability is largely to do with the low level of coverage (in 1a). As the coverage increases, the availability should increase. We currently have approximately 92.7% availability of DMAs for reporting (90.0% coverage).
6. **Non-household night use**			
6d) Stratification of non-households to a number of groups and consumption bands is representative of the varying characteristics of commercial and industrial properties	Amber	The current sample is not fully representative of the company.	The representativeness of the current set of non-household sample properties was assessed and found to be unrepresentative of some of the cohorts and ABV distribution. Affinity Water have spent 2019/20 assessing which commercial properties should be included within their continuously logged monitor, ready for 2022/23.
6f) Reliable and representative average billed volume (ABV) model based on data logging of the representative sample sufficient to capture demand variations with further seasonal logging where relevant. Continuously logged properties not part of the sample.	Amber	The current sample is not fully representative of the company. The non-household night use model for Affinity Water has been built using night use data collected from a sample of commercial properties and their ABV for 2019-20. Since the logged properties are only monitored for short periods (up to 2 weeks), seasonality is not fully captured for each property.	Each of the sample properties has been logged at different periods throughout the year, so the sample contains consumption readings in both peak and non-peak periods. Affinity Water are in the process of setting up a continuous commercial monitor to fully understand and model seasonality in the future.

Component / Element	RAG	Reasons for non-compliance	Actions / Comments
6g) ABV model linked to billing system or replacement database of billed volumes. Average billed volumes updated at least annually	Amber	The ABV data used in the NHHNU model is derived from CMOS, which may include some estimated reads thus reducing the accuracy of the data. There is a lack of confidence in the MOSL CMOS data. However, as this is the only consumption data available for all commercial properties in the Affinity regions, this is currently the best data available to build the model. The data is updated each year, hence the yearly NHHNU models are based on recent data. The night use data used in the model is obtained from property level logging, which is updated every year. The accuracy of this data is high and is therefore used in the model.	The non-household model is linked to the billing data provided by CMOS. However, there is an error introduced by using the CMOS data. Hence, Affinity Water plan to utilise the continuously logged commercial sample from the task above and determine how closely related the CMOS reads and logged consumption is for each of the properties. This can be used to enhance the data validity, and to understand the error so that a correction can be put in place.
11. Distribution input			
11f) Flow checks are carried out on DI meters consistent with the principles of the document 'EA Abstraction Good Metering Guide' **and in** particular the frequency of flow checking defined in Table 6.2 of the EA guide	Amber	Not all meter verification checks are up to date to meet the requirements of the "EA Abstraction Good Metering Guide".	DI meters will continue to be calibrated.
13. Unmeasured consumption			
13a) Monitors follow principles set out in the UKWIR Report 'Best Practice for unmeasured per capita consumption monitors 1999' and the more recent report 'Future Estimation of Unmeasured Household Consumption', UKWIR 2017	Amber	The guidance requires that water delivered unmeasured should be based on PCC monitors according to the UKWIR Report "Best Practice for Unmeasured Per Capita Consumption Monitors" (1999) and the more recent report "Future Estimation of Unmeasured Household Consumption" (2017). This stipulates that the monitor is representative of the unmeasured pool and is of a satisfactory sample size. WATCOM does not currently satisfy these requirements.	The Company has an IHM in place - Watcom. The monitor has been in place since 1995 and has recently seen a drift in terms of its representativeness to accurately estimate unmeasured household consumption the unmeasured population. At AR20 we made a commitment to address the shortfall in representation for the demographics we had identified earlier in the year. A business case was written to seek funding for the upgrade however due the Covid restrictions enforced by the government the programme was placed on hold. The programme will be resurrected in Year 2 and a decision made on whether an IHM is the most appropriate method for estimating uPHC or whether we can use the WSP/DMA models in its place.
13c) Evidence that survey is representative (based on demography, property type or other factors) of the company as a whole; Valid data available from at least	Red	According to the guidance on PCC monitors - individual household monitors (IHM) or Small Area Monitors (SAM) - should be representative of the company's demographics, disaggregation of the sample by demographic factors, property	See comments made in RAG reference 13a.

Component / Element	RAG	Reasons for non-compliance	Actions / Comments
80% of monitors as an annual average measure.		type or similar being regarded as good practice. WATCOM is no longer representative of the company's demographics, due to the continuous drop out of properties from the sample along the years. This has also had an impact on the sample size.	
13d) For companies using SAMs – SAM (small area monitor) comprises a representative sample of customer' characteristics. The sample size is sufficient to provide a statistically representative sample after allowing for outages. Where the proportion of metered properties in an area exceeds 50% of total properties then further data validity tests are applied or companies using IHMs – IHM (individual household monitor) comprises representative sample of customer characteristics. The sample is at least 1000 properties.	Amber	For companies using IHMs – IHM should comprise representative sample of customer characteristics. The sample should be at least 1000. Watcom is significantly below this number and the sample is not representative.	The current sample size of Watcom is c.1200 unmeasured households of which 686 have contributed to the estimation of the uPHC.
13e) Uncertainty allocated to unmeasured household consumption is estimated and justified	Amber	There is currently no assessment of the uncertainty.	Two uncertainty rules are applied within the calculation model. 1. MUR - To take into account any meter under registration of the sample 2. Leakage - Differentiate genuine consumption and suspected leakage, PHC >1500 is rejected in the calculation process. Uncertainty is also accounted for within the MLE process, the error distribution for Water Delivered Unmeasured Household is 12%.
13h) Estimate of plumbing losses is based on own data	Amber	The estimate of unmeasured consumption does not include an allowance for plumbing losses.	Plumbing losses are included in the night use estimate from the fast-logging night use methodology.

3A.4 Per capita consumption

With the three-year rolling average outturn of 3.8%, Affinity Water has failed to meet the Average Water Use performance commitment reduction target of 1.7% for Year 1 of AMP7, 5.5% above target equivalent of c.25l/p/d.

The failure to meet this year's target was predominately due to increased customer demand from people being in their homes more during lockdown. The week commencing 16th March 2020 saw a rapid escalation in measures designed to curb the spread of Covid-19 - the government issuing advice for everyone to avoid social contact as far as possible, to work from home and to not go to pubs, clubs, restaurants and theatres. This advice inevitably led to an increased population staying at home which was attributed to those either working from home or being placed on the furlough scheme

coupled with periods of school closures which naturally led to Affinity customer's spending on average an additional 7.4hrs at home, per day.

Measured Residential consumption increased by 19% and unmeasured by 13% compared to a year ago.

While we think lockdowns were in large part the cause of the increase in PCC, we did not stand still in our work to manage PCC. We worked to reduce demand during the year through initiatives including our Save our Streams campaign. While we have been unable to enter customers' properties to perform Home Water Efficiency Checks (HWECs) during lockdown, we have stepped up our activity on HWECs when we have been able to do so.

Restated 2017/18 PCC figure

Shadow reporting 2017/18 PCC figure has been amended from the figure given last year. We had previously declared a shadow reporting figure of 152.2 l/p/d, however following review and external audit an adjustment was applied to further account for the Iver burst which resulted in an outturn of 151.5 l/p/d.

In Table 3F.6, the performance level (actual) for 2017/18 has therefore been subsequently updated from 152.2 to 151.5 l/p/d which forms as part of the three-year rolling average calculation for Per Capita Consumption.

Compliance checklist

We can confirm we are green for 3 of the 4 main components against the compliance checklist. Below is the breakdown of sub-components under '4) Unmeasured household consumption' where we are not yet fully compliant.

Component	RAG	Reasons for non-compliance	Actions / Comments
4a) Monitors follow principles set out in the UKWIR Report 'Best Practice for unmeasured per capita consumption monitors 1999' and the more recent report 'Future Estimation of Unmeasured Household Consumption', UKWIR 2017	Amber	The guidance requires that water delivered unmeasured should be based on PCC monitors according to the UKWIR Report "Best Practice for Unmeasured Per Capita Consumption Monitors" (1999) and the more recent report "Future Estimation of Unmeasured Household Consumption" (2017). This stipulates that the monitor is representative of the unmeasured pool and is of a satisfactory sample size. WATCOM does not currently satisfy these requirements.	The Company has an IHM in place - Watcom. The monitor has been in place since 1995 and has recently seen a drift in terms of its representativeness to accurately estimate unmeasured household consumption the unmeasured population. At AR20 we made a commitment to address the shortfall in representation for the demographics we had identified earlier in the year. A business case was written to seek funding for the upgrade however due the Covid restrictions enforced by the government the programme was placed on hold. The programme will be resurrected in Year 2 and a decision made on whether an IHM is the most appropriate method for estimating uPHC or whether we can use the WSP/DMA models in its place.
4C) Evidence that survey is representative (based on demography, property type or other factors) of the company as a whole; Valid data available from at least 80% of monitors as an annual average measure.	Red	According to the guidance on PCC monitors - individual household monitors (IHM) or Small Area Monitors (SAM) - should be representative of the company's demographics, disaggregation of the sample by demographic factors, property type or similar being regarded as good practice. WATCOM is no longer representative of the company's demographics, due	See comments made in RAG reference 4a.

Component	RAG	Reasons for non-compliance	Actions / Comments
		to the continuous drop out of properties from the sample along the years. This has also had an impact on the sample size.	
4d) For companies using SAMs – SAM (small area monitor) comprises a representative sample of customer' characteristics. The sample size is sufficient to provide a statistically representative sample after allowing for outages. Where the proportion of metered properties in an area exceeds 50% of total properties then further data validity tests are applied.or companies using IHMs – IHM (individual household monitor) comprises representative sample of customer characteristics. The sample is at least 1000 properties.	Amber	For companies using IHMs – IHM should comprise representative sample of customer characteristics. The sample should be at least 1000. Watcom is significantly below this number and the sample is not representative.	The current sample size of Watcom is c.1200 unmeasured households of which 686 have contributed to the estimation of the uPHC.
4e) Uncertainty allocated to unmeasured household consumption is estimated and justified	Amber	There is currently no assessment of the uncertainty.	Two uncertainty rules are applied within the calculation model. 1. MUR - To take into account any meter under registration of the sample 2. Leakage - Differentiate genuine consumption and suspected leakage, PHC >1500 is rejected in the calculation process. Uncertainty is also accounted for within the MLE process, the error distribution for Water Delivered Unmeasured Household is 12%.
4h) Estimate of plumbing losses is based on own data	Amber	The estimate of unmeasured consumption does not include an allowance for plumbing losses.	Plumbing losses are included in the night use estimate from the fast-logging night use methodology.

3A.5 Mains repairs

We did not achieve our 2020/21 target of carrying out less than 2,534 mains repairs in the year (equivalent to 150.7 per 1,000 km of main). The particularly dry weather of late spring/early summer did not cause us significant numbers of bursts, and up to winter we were on track to achieve the target. However, two prolonged periods of sub-zero temperatures in January and February necessitated a significant increase in the number of mains repairs. We carried out 519 more repairs compared to 2019/20.

The 2020/21 target for the number of mains repairs was very challenging, representing a reduction of 566 in the number of repairs allowed compared to prior years. This is concurrent with needing to achieve a significant reduction in the volume of water lost through leaks which is achieved at least in part through mains repairs.

The number of mains repairs is a useful indicator over time of infrastructure asset health, and we have reduced our numbers significantly over the last fifteen years. However, fluctuations will occur year-

on-year in the number of repairs carried out depending on prevailing weather conditions, particularly winter weather.

Reducing our number of mains repairs over time has been achieved through targeted renewal of mains that are most prone to bursting, reducing high night-time pressure in the mains network, and reducing the volatility and occurrences of surges within the network. We will continue to focus on these areas throughout the 2020-25 AMP period.

We can confirm we are 'green' against all the checklist elements contained in the Ofwat reporting guidance for mains repairs. For the methodology element, our assurer challenged whether we were over-reporting mains repair numbers by including instances of tightening bolts on an existing mains clamp. We raised this in a query to Ofwat. Following Ofwat's response, we have adopted our assurer's advice on interpretation and reclassified 51 jobs as adjustments to ancillary fittings.

3A.6 Unplanned outage

We can confirm we are 'green' against all the checklist elements contained in the Ofwat reporting guidance for unplanned outage and that we have met our target.

Our 2020/21 unplanned outage is 1.65%, a reduction of 1.77% in comparison to the 3.42% for 2019/20.

The reasons for this reduction in unplanned outage are:
- Better reporting of the difference between planned and unplanned outage
- Improved operational response time to restoration of failed assets.
- Improved understanding of reporting for overrun planned works.
- Implementation of PR19 Y1 planned capital investment to replace or refurbish previously faulty and/or underperforming assets.

The reduction is unplanned outage for 2020/21 is aligned with the reported and forecasted values in prior year reporting and is therefore not considered to be exceptional.

There are further planned improvement actions to automate capture of the flow data, validation of the data and as well as the calculation processes. We are planning to implement more internal cross-checking points between different APR reporting lines and methodologies to provide improved levels of assurance.

3A.7 Environmental innovation - delivery of community projects

We have reported zero units delivered in 2020/21. We are disappointed to be unable to report units complete in Year 1. We are working internally (and with our CCG for assurance) on project outputs for at least 4 project units which we intend to report next year.

3A.8 Reducing the total number of void properties by identifying false voids

We have outperformed our target on false voids in 2020/21. We note that a number of clarifications arose during the APR preparation process and audit (and mentioned in Atkins' non-financial audit report) – we provide commentary about these areas below.

It is not explicitly stated within the FD which denominator to use for calculating Void properties. We therefore want to clarify that we have used residential connected properties to calculate this performance commitment.

We have set the uneconomic to bill level for measured customers to <5m^3 per year. This was stated in the business plan when we set out our proposed targets. We have used this level for numerous

years and we understand it is also the level set my many other water companies. We will continue to discuss and clarify our uneconomic to bill level with our auditors at our 2021/22 half year audit.

3A.9 River restoration

We have achieved the target of 7 projects in Yr1 despite coronavirus restrictions and believe we are in a good position to continuing delivering over the AMP.

3A.10 Abstraction reduction

We have committed to reducing abstraction at seven sources by 27.33 Ml/d by 2024. The target is zero for the first four years of the AMP and the full reduction is then required within year 5. We are reporting zero for the first year. There have been no changes to the methodology since AMP6 for confirming whether the abstraction reduction has been achieved; this will be based on our abstraction data.

3A.11 Number of sources operating under the Abstraction Incentive Mechanism

The objective of AIM is to encourage water companies to leave more water in the environment during low flow periods. Affinity Water have put forward 19 sources which are assessed under the AIM for the period April 2020 - March 2025. Each of these sites has been assigned a flow trigger which is typically set in the downstream gauging station. If the trigger is reached, we are incentivised to maintain abstraction below the respective AIM baseline. In some cases, where multiple sources are in the same catchment, a combined AIM baseline is applied.

In the financial year 2020/21, AIM was active in two catchments (three sources). This number is significantly lower than previous reporting years due to significant winter rainfall and above average groundwater levels over the period. Despite this, we outperformed our target of 0 Ml/d and our global AIM performance score was -304.31 megalitres. This year a correction was issued by Ofwat to the Final Determination. This removed a discrepancy which was identified during audits over the 2020/21 fiscal year between the Final Determination as issued from Ofwat and AIM baselines for some of our sources.

3A.12 Properties at risk of receiving low pressure

We identified 43,237 properties as receiving low pressure during 2020/21. In the context of this measure, 'low pressure' means less than 15 metres head in the main for a period of an hour or more in the year (after allowable exclusions have been applied). This was a considerable increase on the 7,879 properties seen in 2019/20 and is a consequence of 2020 summer weather combined with the effect of Covid-19 on the volume and pattern of household water usage. In many instances pressures fell only marginally below 15 metres head and did not give rise to any customer contact.

Most instances of low pressure result from high demand from households during hot/dry summer weather. This is a well-known feature in water supply and distribution, but the problem was exacerbated in 2020/21 by the social effects of the pandemic.

During the year we carried out works/actions benefiting 12,833 properties, such that we believe they are not likely to experience low pressure again (even in conditions the same as those experienced in 2020/21).

This measure requires us to report performance as the number of properties that have received low pressure and are likely to continue to do so. We are unable to say with any certainty how many of the 43,237 properties that received low pressure in 2020/21 will continue to do so in 2021/22, as this is very much dependent on summer weather and the continuing effect of lockdowns on water usage patterns. We believe a maximum of 30,311 properties (equivalent to 197.453 per 10,000 connections)

would be impacted, but it may prove to be considerably less. In our annual performance report 2022 we propose to restate the 2020/21 performance to reflect the actual number of properties that continued to receive low pressure in 2021/22. We propose to follow a similar approach for the remaining years AMP7, to 'true-up' reported numbers to reflect actual performance. We will do this irrespective of whether actual numbers prove to be lower or higher than forecast. In theory this could result in the need to seek a redetermination of penalties through the in period ODI process.

Late in the AMP6 period we quadrupled the number of permanent critical-point data loggers in our network (from around 300 to 1,200), allowing for at least one logger in every district meter zone. We installed these loggers to increase leakage reduction through pressure management, to give 'early warning' of supply interruptions and other events affecting customers, and to have better data on the service our customers experience through the year. Installing the loggers has, however, had an adverse effect on reported performance against this measure; in simple terms the more loggers we install the more likely we are to identify incidences of low pressure. It appears likely that Affinity Water has adopted a different approach to the measurement of low pressure than our peers within the industry. This has been identified both by our external assurer and through our own analysis.

The Discover Water industry data for 2019/20 show that out performance at 35 properties per 10,000 connections versus an industry average of 2.64 properties per 10,000. Our customer contact data in relation to low pressure is not commensurate with this magnitude of differential suggesting that we are an outlier. Over the next 12 months we intend to review our current approach in line with others. If this means we want to propose a change to our methodology and can demonstrate that such a change would be in customers' interests we will provide the required evidence and consult with Ofwat on the result of our investigations, any proposed methodology change.

The increase in incidence of low pressure in 2020/21 due to lockdown is seen in our other low-pressure performance measure 'average hours of low pressure'. The average length of time properties experienced low pressure in 2020/21 was 05:02:48 hh:mm:ss, compared with 03:22:23 in 2019/20.

In contrast to the 'properties at risk' measure, increasing the number of critical-point data loggers has revealed our performance to be considerably better than the >12:00:00 we believed at the time of the business plan. Increasing the intensity of coverage has improved the accuracy of the overall reporting and revealed large areas where no incidence of low pressure was experienced, even with the Covid effect on household demand. Both measures use the same data and 15 metres-head reporting threshold but use different approaches for assessing the significance of low-pressure events. The 'average hours' measure focuses on frequency of low pressure that properties experience across the whole year, rather than simply identifying the worst-case incidence recorded in the year. The only difference in the reporting criteria is that the 'average hours' measure does not exclude low pressures that result from 'one-off' events such as burst mains, and therefore is a more comprehensive measure of what our customers experienced across the year.

3A.13 Number of occupied properties not billed (Gap sites)

We have exceeded the target of identifying 50 gap sites in Yr1. Our external assurer has confirmed that:

- *There were no material issues identified.*
- *The Company's methodology for identifying Gap Sites is comprehensive and it is accurately documented.*
- *Our audit checks on the data were satisfactory in all cases and we concluded that the reporting is robust.*
- *The Company significantly outperformed its Performance Commitment and appears to be well-placed for next year as there is a strong pipeline of investigations already identified.*

3A.14 Unplanned interruptions to supply over 12 hours

We have failed to meet our target for unplanned interruptions greater than 12 hours and have incurred the full ODI penalty. This is a very disappointing result as we have been working hard to focus our resources to a 'water always on' mindset. 468 of the properties affected were the result of a single incident where there was no alternative method of supply to the customers involved.

This has always been a difficult target for us to meet; as a smaller company, one large interruption can have a significant impact on our performance. Focus for the coming year remains on improving response times, increasing local resources and alternative methods of continuing to ensure the water supply to customers properties is not interrupted.

3A.15 Customer contacts per 1000 population for Water Quality (taste, odour & appearance)

Our performance commitment (PC) for customer contacts per 1,000 population for water quality (taste, odour & appearance) was not met in 2020 with the contact rate being 0.83 against a target of 0.67. From January to April 2020, the contact rate was on target to meet the PC but from May onwards, the contact rate increased and has remained at a higher level for the rest of the year. We believe that this may have been caused by lockdowns, where more people were at home and higher demand led to quality issues. We believe this may have caused more observations regarding the aesthetic quality of water.

Table 3C - Customer measure of experience (C-MeX)

Our overall C-MeX score during the year ended 31 March 2021 equated to 77.88, compared to an industry average of 81.62. Whilst our score represented a small improvement upon the 2019/20 shadow year, our ranking of 15th of the 17 water companies remained static.

This year, we have worked to bring together Community Operations and Customer Experience into one directorate focused on delivering improved experience right across the customer journey. We have introduced new operating models in operational teams, multi-skilled all contact centres to create a single team, enhanced our customer insights and defined new customer journeys including targeted communications with a single tone of voice, based on newly created personas.

We recognise that it is the Customer Experience element of C-MeX, based on customer perception and awareness, that has pulled down our score this year. In 2021/22 we will be launching an unprecedented brand campaign aimed at improving customer awareness, perception of value for money, and trust, in addition to changing behaviours around water usage. Together, these activities will ensure we are in a stronger position to climb up the C-MeX league table.

We confirm that we offered at least 5 communication channels for receiving customer contacts and complaints and at least three online channels throughout the reporting year.

Table 3D - Developer services measure of experience (D-MeX) table

At full year, we are placed 10th out of 17 companies in the industry league table, up from 16th in the shadow year 2019/20.

Our performance has significantly improved throughout the year, from 15th in Q1, to 10th in Q2 and 9th in Q3. Our Q4 score showed a further improvement on our qualitative performance to 73.85, remaining 9th in the league table and confirming our overall year end position of 10th.

Due to our Covid-19 approach during the first national lockdown, which saw us halt delivery works in Developer Services, there was a negative impact on our compliance percentage across the Water UK Levels of service metrics (W4.1, W8.1, W18.1 and W27.1) in Q1. Upon successful remobilisation of our teams at the end of May 2020, we mitigated the potential impact through effective planning of

our backlog of works. As a result, from Q2 onwards, our quantitative performance has improved upwards of 99%, showing an average year to date performance of 98.05%.

Table 3E - Non financial performance commitments

3E.1 Risk of severe restrictions in a drought

Year 1 Performance

The full year audit confirmed that the PC has failed year 1 due to Covid-related high demand and leakage position, if compared with both the PR19 and the revised baseline. At half year, the target was missed by c. 50Ml/d (Covid impacts over the half year were larger than this, so failure can be attributed to Covid). However, the current 'residual' after lockdown was still 4%, which means the targets for next year and subsequent years are threatened. If these high levels of demand are sustained in AMP7, the number of customers at risk will be higher than forecast .

Mitigation is to evaluate 'fast track' options to still close the balance in 2024. The 'fast track' options being considered are the acceleration of a trading scheme, the acceleration of the second stage of Supply 2040 combined with a potential reduction of our bulk export to South East Water and non-household demand management activities.

The figure reported within Table 3E for year 1 (2020/21) is 67.7%.

A breakdown of the main elements that contribute to the overall metric performance is presented within Table 3I. As there is no guidance for these lines, we have applied the following assumptions:

- Deployable output is reported as the declared baseline deployable output in the WRMP tables without any impact from climate change, sustainability reductions, treatment losses, etc.
- Elements 4 to 8 (from deployable output to total population supplied) are reported as in-year figures rather than averages.
- Customers at risk is reported as the 25-year average to be consistent with the percentage of customers at risk that is reported in Table 3E.

Table 3I extract:

Line description	Deployable output	Outage allowance	Dry year demand	Target headroom	Total population supplied	Customers at risk
Risk of severe restrictions in drought						
Risk of severe restrictions in drought	978.3	38.58	966.77	85.98	3,830,549	2,867,508

Performance commitment levels

In our final PR19 submission to Ofwat, we set performance commitment levels for the 2020-2025 period. In doing that, the annual forecast, rather than the 25-year average, was used to calculate the expected future performance and set our targets. In addition, future schemes that were selected in the WRMP19 to manage supply and demand between 2020 and 2045 (25-year period) were also included and their expected benefits reported in future years. This interpretation of the Ofwat guidance resulted in the target falling to 0% by the start of AMP7. During AMP7, the net movement of schemes and demand changes forecast in the WRMP keeps the target at 0%.

		2018/19	2019/20	2020/21	2021/22	2022/23	2023/24	2024/25
PC level annual profile - App1	%	46.0	34.0	0.0	0.0	0.0	0.0	0.0

However, using the methodology from the FD and interpretations from our external auditor during the AR21 audit has resulted in the AR21 reported figure diverting from the way performance commitment levels were set for the PR19 submission. Therefore, it should be noted that the AR21 reported figure is not directly comparable with the commitment levels set at PR19.

In addition, the following data sources have changed since the performance commitment levels were set:

Table 1 Revised data sources

Element	Previous data source	Current data source
Outage	WRMP19 - Water Resources Planning Tables	Latest WRMP24 Outage Forecast
Target headroom	WRMP19 - Water Resources Planning Tables	Revised values from WRP Tables
Distribution input	EA Table (reporting year)	Water Resources Planning Tables – WRMP19 or EA Table (reporting year)
Transfers	WRMP19 - Water Resources Planning Tables	EA Table (based on capacities)

The use of the WRMP24 outage allowance has slightly worsened the SDB in certain zones while improving it in others, resulting in a negligible net effect when considering the performance for the company as a whole. The use of the 25-year average also excludes the expected benefits from future supply-side and demand-side schemes.

Given these changes, commitment levels have been calculated to assess what the equivalent targets would have been, had we set them using the equivalent approach and data. These reworked targets are presented below.

Risk of severe restrictions in a drought

	Unit	2020-21	2021-22	2022-23	2023-24	2024-25
Revised PC Levels - updated TUBs	%	65.47	64.94	62.43	61.06	58.49

Lines 3E.2-4 Priority services for customers in vulnerable circumstances

PSR Reach

As per RAG 4.09 we are using '4R.19: Residential properties billed at year end' as the PSR denominator. For clarity this does not include properties which are uneconomical to bill.

PSR Membership – Breakdown of Categories

The table below provides the breakdown of categories for the year end 2020/21 for individuals registered on our PSR.

Year	Communication	Mobility and access	Other	Security	Supply
2020/21	17,803	37,683	3,535	31,306	70,265

Due to the significant work we have carried out on the PSR combined with the impact of Covid, our numbers on the PSR have increased beyond where we expected to be in Year 2. We anticipate this will level off and numbers return for our forecasted figures later into the AMP period.

The table below shows our previously given forecast figures for the AMP.

Forecast	Communication	Mobility and access	Other	Security	Supply
2020/21	12,441	10,920	3,216	27,115	12,865
2021/22	16,174	14,196	4,181	35,249	16,724
2022/23	21,026	18,455	5,435	45,824	21,742
2023/24	27,544	24,176	7,120	60,029	28,481
2024/25	36,082	31,671	9,327	78,638	37,311

NB – The above forecast numbers will be higher than the overall number of households on the register as there is an element of double counting. For example, a household who has advised they require support with communication and supply interruptions will be counted under each category. We will improve the way we count the categories for the next reporting year to ensure that a household is not counted more than once in each category.

Line 3E.6 Average time properties experience low pressure

Commentary relating to this measure is included within that for 3A.12 *properties at risk of receiving low pressure.*

Lines 3E.7-8, 11-12 Customers in vulnerable circumstances

We have exceeded our target of 90% across all four of the vulnerable customer metrics and improved our score from last year. Feedback is requested following customer contact with our contact centre via telephone (SMS survey) or following the resolution of queries following email contact (email survey).

Line 3E.9 BSI accreditation

BS 18477 was renewed on the 15 December 2020 and is due for renewal 28 April 2022.

Line 3E.10 IT resilience

We have achieved the target of less than 1,600 priority one and priority two incidents in the year, reporting 949 in 2020/21. The IT services cover IT Networks, Telephony services, infrastructure and Applications that support the business and wider customer interactions.

Line 3E.13 Value for Money Survey

In the 2020/21 year we unfortunately did not meet our value for money target. We achieved a final average value for money score of 7.48 (0.17 below our target of 7.65). We were below target in each quarter of this year. The survey revealed that Covid had made 49% of customers more aware of their household bills, and 41% of customers said that Covid had negatively impacted their household finances. We think, therefore that this is likely to have impacted our VFM score.

Line 3E.14 WINEP Delivery

Affinity Water has not requested any extensions from the Environment Agency to our year one WINEP delivery dates and we have no bathing water quality assessments listed under the WINEP. Overall, there has been no impact upon achieving our 2020/21 WINEP delivery in terms of completion dates 31/03/2021 or earlier.

There is a risk that the impacts of Covid-19 will be felt later in AMP7 especially, but not limited to, our River Restoration WINEP commitments due to our project partners and stakeholders being furloughed, or due to the restrictions and safe working practices of the past 15 months delaying site visits and on-site meetings. We are trying to mitigate these impacts as far as is practicable.

If alterations are required these will be developed in agreement with the Environment Agency who are aware of the risk and are being kept updated through three-monthly WINEP technical liaison meetings and other channels.

Table 3F: Underlying calculations for common performance commitments - water and retail

Line 3F.8 unplanned outage

We assessed our peak week production capacity (PWPC) to be 1,365.83Ml. This was unchanged from 2019/20.

No site-specific testing was undertaken during 2020/21 as no site performance assessments fell outside of the 5-year review timeframe.

We have a programme of performance review and testing planned for 2021/22 for those sites that fall within the 5-year trigger period, but also to assure that for sites outside of the five-year period we are still capturing the most up to date and accurate PWPC.

The total volumetric impact on PWPC of unplanned outage was 22.55Ml compared to 46.71Ml for 2019/20

Table 3I: Supplementary outcomes information

Line 3I.1 planned outage

Our reporting accuracy for planned outage has improved following the implementation of advice from mid-year audits in 2020. This focused on accounting for the transition from unplanned to planned and vice versa and has contributed towards a reduction in the year-on-year figure reported for planned outage.

We have also implemented improvement activities around capturing planned outage.

The volumetric impact of planned outage on peak week production capacity is 40.42Ml (2.96%). This compares with 118Ml (8.64%) in 2019/20, an improvement of 77.58Ml (5.68%).

Table 4A - Water bulk supply information

Where bulk supply imports are imported from separate sites owned by the same appointee, these have been combined in the table and reported as a whole for the appointee; we are unable to split costs across sites.

However as per the bulk register the following sites have been incorporated:

Bulk supply exports

Chalton – Anglian Water

Egham – Southeast Water

Odsey - Cambridge Water

NAV 3 - Bidwell, Houghton Regis

NAV 7 - Martello Lakes

NAV 5 - Stortford Fields

Bulk Imports

Kingsdown – Southern Water

Snakey Lane – Thames Water

Grafham – Anglian Water

Stonebridge Park – Thames Water

Fortis Green – Thames Water

Hampstead Garden – Thames Water

Ladymead – Thames Water

Hadstock – Cambridge Water

Days Lane - Essex and Suffolk Water

Perivale – Thames Water

TWA RES RW – Thames Water (Waraysbury Reservoir - raw water)

Table 4R - Connected properties, customers and population

Lines 4R.12, 16, 21 and 25 total connected properties

Following clarification from Ofwat (log no.142), we have amended the formula in line 4R.12 & 4R.21 (total connected residential properties, average and year end) to include uneconomic to bill properties within the calculation. This in turn means uneconomic to bill properties are included within line 4R.16 & 4R.25 (total connected properties, average and year end).

Lines 4R.5, 8, 13, and 14 business properties

As per Ofwat's clarifications on how to deal with the temporary voids that were introduced to the market during the first lockdown in March 2020, we have adjusted the figures to negate all properties which were made void during this period. This has resulted in increasing the number of business billed properties by 3,908 (706 Unmeasured, 3,202 Measured) and decreased the number of voids by the same amount.

Line 4R.18 total new business properties connected in year

We have reported the number of new connections for the year as per our interpretation of the guidance which is to include only properties that are being billed. We have a further 105 void properties with AMR meters that were connected during 2020-21 but not billed.

4R.26 resident population

Our Household Population estimates are drawn from the two main sources:

- The 2019 mid-year population estimate from ONS (Office for National Statistics) for both local authority districts and for individual COAs (census output areas).

- The 2018-based Principal sub-national population projection (SNPP) from ONS, together with accompanying assumptions on fertility, mortality and migration. These are produced on a consistent basis across all local authorities in England

- The 2018-based Principal SNPP uses a five-year history (2013-2018) to derive local fertility & mortality assumptions and a long-term UK net international migration assumption of +190k. The 2018-SNPP also uses a two-year history (2016-2018) of internal migration assumptions.

We have not used Census 2011 data for population estimates except where the underlying data has been used to inform the ONS projections.

Table 6A - Raw water transport, raw water storage and water treatment

Lines 6A.5 and 12 lengths of raw and non-potable mains

Following Ofwat's clarification (log no.72), we have included some 31km of main under line 6A.12 rather than 6A.5. These are mains which convey treated water from a treatment works to a service reservoir, but the water in the main is not classed as potable until it has discharged into the reservoir (either because of chlorine-contact time or the need for the water to be blended with water from other sources).

The remaining 5.5km of non-potable mains included in line 6A.12 are mains that supply end-customers with non-potable water.

Lines 6A.8 and 9 raw water transport imports

As per table 4A, we have one raw water import from Thames Water, which is received into our Iver site for treatment.

Lines 6A.13 to 19 water treatment type analysis

Changes in Treatment Works classifications:

- Horsley Cross – Upgraded from GW3 to GW4 as UV has now been installed.

- Kensworth Lynch – Downgraded from GW5 to GW4 as GAC has been decommissioned.

We are no longer reporting the following two sites as they have been out of use for over 18 months and would need to undergo recommissioning to be brought back into use:

- Marlowes (GW) - Site offline since April 2019 due to high turbidity issues.

- Chartridge (GW4) - Site not run since August 2018 as not needed.

Sites counted but not used in the year:

- Clandon – The site has not run since January 2019 due to water quality issues but is being maintained and could be used with precautionary advice in an emergency situation. It is also due to have the existing UV treatment replaced in year 3 of the current AMP.

Changes due in 2021/22:

- We currently have three sites which are in the process of having their treatment changed because of work surrounding HS2. West Hyde, Northmoor and Amersham have each had membranes added as pre-treatment to the existing treatment on site. Northmoor and West Hyde have both used this new membrane treatment intermittently to put water into supply from late March 2021 and Amersham membrane pre-treatment has not yet been commissioned. We are not planning to change the sites treatment category for all three sites to GW5 until 2021/22 as none of these sites have undergone a full performance test as part of the project final sign-off.

Table 6C - Water network+ - Mains, communication pipes and other data

Line 6C.4 total length of new potable mains

As clarified in the RAG query (log ref. 5), we have included in this line mains laid by SLPs (table/line 4Q.14).

Line 6C.15 total length of potable mains laid or structurally refurbished between 1921 and 1940

We have increased the reported figure in this line by 1.5km compared to that given in APR-20. This is the result of a more accurate age assessment being carried out to certain lengths of cast iron mains. The 1.5km would have previously been included in the 1941 to 1960 band.

We will be continuing this type of age assessment to iron mains so there may be further slight revisions to lengths in these bands in subsequent years.

Line 6C.20 company area

Our area of 4,515 km^2 includes areas supplied via a NAV (or for which a NAV has been granted but no supply yet afforded).

It is unclear from the guidance whether NAV areas should be deducted from the company area. If so, this would reduce the figure by 3.90 km^2 to 4,511km^2.

The 3.90 km^2 of NAV areas is made up as listed below:

NAV name	NAV location	Area km^2
Bidwell	Houghton Regis (Central)	1.99
Bishops Stortford North	Bishops Stortford (Central)	1.15
Martello Lakes	Hythe (Southeast)	0.46
Oakwood Park	Clacton-on-Sea (East)	0.12
Archers Court Road	Whitfield (Southeast)	0.11
Former Nestle Site	Hayes (Central)	0.07
Total		3.90

Line 6C.21 number of lead communication pipes replaced for water quality

We continued our AMP6 lead communication pipe replacement programme (AFW3326) in year 1 of AMP7, with all the work completed by 23 February 2021. We replaced 500 lead communication pipes in Watford and Finchley in 2020/21 and we have included this number in our figure for this line.

Our AMP7 lead communication and supply pipe replacement programme in north Clacton and the surrounding area was affected by the Covid related lockdowns and restrictions, such that to date we have not carried out any lead pipe replacement work in this area. Currently, DWI has not issued us with a legally binding instrument of works for this programme.

This year we have been able to identify a number of lead communication pipe replacements from our works management system (Maximo) where the customer has replaced their lead supply pipe and has requested that we replace our lead communication pipe, which we have done. It appears that a significant number of these customer contacts were initiated as a result of "flow/pressure" problems but were then processed under Regulation 30(1), where if the customer replaces their lead supply pipe, we are obliged to replace the communications pipe if it is lead. Consequently, we have included all these communication pipe replacements in this line.

Line 6C.25 Internal interconnectors delivering benefits in 2020-25

One scheme is reported under this line for 2020/21.

The scope of this project was to install a new Internal interconnector between our Colne and Pinn water resource zones. The project relates to the installation of a new main and pressure reducing valve (PRV) from an existing 21" main (Edgware Way) from Clay Lane WTW linking to a 12" main (Hale Lane), using a 560mm SDR17 (493.9mm internal diameter) pipe of 570m length. The benefits of the project are listed below.

No.	Area	Scope	Rationale
1.	New main	New Main and PRV, Magnolia Gardens: A new main from the existing 21" (Edgware Way) in Clay Lane was linked to the 12" (Hale Lane) in Uphill Drive using a 560mm SDR17 (493.9mm internal) length 570m	Provide network capacity to supply developments
2.	New Control Valve	New PRV (maximum flow approximately 200l/s)	Control pressure at night in Harrow umbrella

Table 6D - Demand management - Metering and leakage activities

We have not installed any meters that utilise smart metering technologies. Wherever possible we install AMR (automated meter reading) meters, but these are not smart meters. With AMR meters, we can obtain a reading from the meter by walking or driving past the property, without the need to lift a cover or enter the property. This makes meter reading more efficient and has also been of considerable benefit in the need to maintain social distancing during the Covid pandemic. Some customers are vehemently opposed to smart meters, and we have gone to some lengths to explain and reassure that AMR is not a smart meter. As required in the *Regulatory Accounting Guidance* documents, we have reported AMR installations in table 6D in the 'smart meter' rather than 'basic meter' column, although we are not comfortable with this. However, we note that in the revisions to the guidance and tables proposed for 2021/22 reporting, Ofwat are correcting this by differentiating between AMR and true smart meter installations.

Line 6D.13 residential meters renewed - supply-demand balance benefit

The negative number entered is attributable to replacing old meters, as aged meters will tend to under-report. Replacing them gives more accurate results which in turn increases reported measured consumption.

Greenhouse gas emissions

GHG emission source	2020/21		2019/20	
	Gross (tCO$_2$e)	**Intensity (kgCO$_2$e/Ml)**	Gross (tCO$_2$e)	Intensity (kgCO$_2$e/Ml)
Scope 1	**5,003**	**14.3**	8,811	25.4
Fuel combustion	**683**	**1.9**	1,679	4.8
Process and fugitive emissions	**2,420**	**6.9**	5,198	15.0
Vehicle fleet	**1,900**	**5.4**	1,934	5.6
Scope 2	**52,200**	**149.1**	58,350	168.2
Purchased electricity	**52,200**	**149.1**	58,350	168.2
Statutory total (scope 1 & 2)	**57,203**	**163.4**	67,161	193.6
Scope 3	**7,198**	**20.6**	5,018	14.5
Business travel in other vehicles	**81**	**0.2**	33	0.1
Outsourced activities	**2,627**	**7.5**	31	0.1
Electricity- transmission and distribution	**4,490**	**12.8**	4,954	14.3
Total gross emissions	**64,401**	**183.9**	72,179	208.1
Net emissions Green tariff electricity purchased	**(25,200)**	**N/A**	-	N/A
Total annual net emissions	**39,201**	**112.0**	72,179	208.1

The net operational emissions this year were 39,201 tCO2e, compared to 72,179 in 2019/20, which is a 45.68% reduction due to 25,200 tCO2e attributed to green tariff electricity purchased, the gross is a 10.77% reduction, as shown in the graph below:

Total Gross Emissions (tCO₂e)
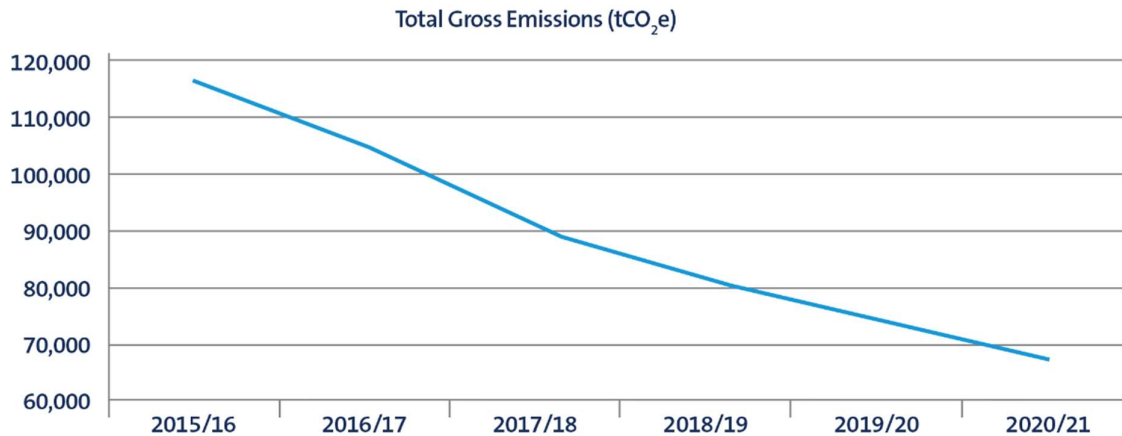
The Covid-19 pandemic developed rapidly in 2020 resulting in an increased demand for water we supply due to the impact of the virus and the hot summer of 2020. The way we operate also had to change, with the majority of office-based staff working from home, and just a small number of employees at our office locations. Our front-line delivery teams have continued to work at our operational sites and in the community.

We are currently piloting ways to reduce whole life emissions (both operational and embodied) of several large capital projects. There is significant evidence that to evaluate a project through a carbon lens finds efficiencies in both carbon and costs which we aim to achieve thought the use of the PAS2080 standard. We are also finding opportunities for wider benefits such as environmental net gain through our carbon reduction projects.

Our plans include moving to a greener vehicle fleet, to develop significant renewable energy and to be part of the water industry's commitment to plant 11 million trees. In addition to this we are working closely with our supply chain partners to reduce carbon emissions (scope 3) from our daily activities and planned investment, both from the materials and energy we use.

This year has seen a decrease of 10.8%, of our gross greenhouse gas emissions compared to last year. Scope 1 Direct Emissions have reduced from 8,811 tCO2e in the prior year to 5,003 tCO2e in 2020/21.

There has been a reduction of 3.4% in natural gas usage from last year. This is due to consumption data being supplied which facilitated in more accurate billing of consumption and work was done to reduce consumption outside normal operating times.

There has been a decrease in gas oil consumption against prior year of 30.6%, due to a reduction in projects at sites requiring generators for standby power.

Electricity usage for pumping and treating water accounts for 87.3% of our gross emissions.

Electricity consumption and emissions from outsourced activities, IT services, administration services and courier mileage have been included and in line with the Ofwat net zero road map, it is envisaged this will continue to expand.

There has also been a reduction in the conversion factors for grid electricity and transmission and distribution.

The water distributed input has increased by 3.6%, which is used in the intensity measure (kgCO2e/Ml). We used the WKWIR CAWv15 to calculate emissions.

There has been a 0.2% increase in petrol and diesel consumption relating to transport owned by the company, which contributes to our total emissions, due to an increase in petrol consumption, but a small reduction in emissions due to changes in reporting factors of 1.8%.

This compares to an increase in emissions from transport by public transport and private vehicles, this is 0.2% of our total net emissions. This was due to a decrease of 88.2% in air travel. There was also a dramatic drop in the kilometres travelled by national rail of 99.2%. Governance rules for claiming mileage expenses have changed, and expenses must now be claimed in the month they occur, eliminating tardy claims, which in the prior year resulted in an impression at the time of a reduction. There has been an overall reduction in mileage claimed of 53.5% on the 2019/20 mileage.

We have also included in our scope 3 emissions:

- Water treatment waste recycled to land;
- Water treatment waste sent to landfill; and
- Other wastes including scrap metals, plastics, cardboard and glass.

During 2020/21 we replaced a number of our borehole, booster and high lift pumps. We have also been optimising one of our main water treatment works to use the most efficient sources where possible. We have also installed new pumps at four of our sites and refurbished the high lift pumps at a further two sites to improve efficiency. At another of our main water treatment works we have completed ozone upgrades which has reduced the ozone demand thereby reducing the power consumption of the generators.

We have employed microthermal pump monitoring at three of our pump sets to identify the real time pump efficiency and to ensure that we are running in the most energy efficient way. Energy savings of 2-4% have been achieved and we are looking to continue the roll out of these to other sites.

Additionally, by working with Datumpin, we have been able to make better use of the data that we have on our sites, to identify the impact of small changes on the operation of the site. The energy savings of this work are less easy to quantify but is has led to reduced chemical consumption during ion exchange regeneration and a lower waste volume needing to be taken away.