WATER RESOURCES MANAGEMENT PLAN

ANNUAL REVIEW 2015

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1 GENERAL

1.1 Introduction

The Water Act 2003 places a duty on all water companies to prepare a Water Resources Management Plan (WRMP). At each anniversary of this Plan the Company must review progress and send a statement to the Secretary of State.

Portsmouth Water published its Final Water Resources Management Plan 2009 in September 2011. Guidance published in September 2010 by the Environment Agency states that the review can be aligned with the "June Return" process and this has now been replaced with an "Annual Risk and Compliance Statement" (ARCS).

This is the last Annual Review of the Final WRMP 2009.

The Environment Agency Guidance specifically requires the review to include progress on actions agreed with the Agency and Defra when the Plan was finalised. For Portsmouth Water the key actions were:

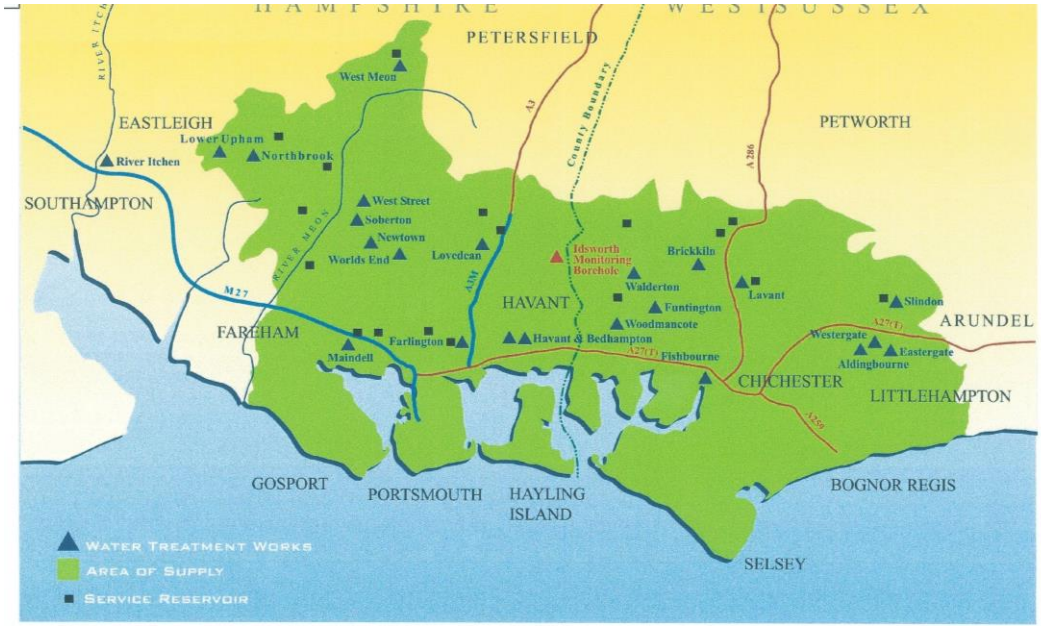
- A reassessment of the deployable output of all of the existing licensed sources together with the opportunities for improving outputs and optimising for conjunctive use benefits.
- The scale of the impacts upon both yield assessments and demand forecasts of revised "Levels of Service".
- The consideration of new resource options such as effluent re-use, desalination and winter storage reservoirs.
- The relationship of each option to the dry year annual average and critical period supply/demand balance.
- The consideration of the opportunities for the sharing of existing resources and future resource options with neighbouring companies.
- The development of a Sustainable Economic Level of Leakage including review of marginal cost across the planning period. This may have implications for baseline leakage and final planning options.

Portsmouth Water has completed this work and included the findings in the Final Water Resources Management Plan 2014 which was approved and published in August 2014.

The guidance requires the Annual Review to provide an overall summary of the supply demand balance for the financial year. This Annual Review document replaces Table 10B and the Environment Agency commentary previously provided in the June Return to Ofwat. The Annual Risk and Compliance Statement includes references to the Security of Supply Index.

1.2 Water Resources Zones

Portsmouth Water only included one Water Resources Zone in the Final Water Resources Management Plan 2014. The distribution systems includes a spine main and strategic treated water storage. The system ensures that all of Portsmouth Water's customers experience the same level of service.



The Company's boundary has not changed but some customers on new housing estates are supplied by inset appointments. These companies have not commented on Portsmouth Water's Final Water Resources Management Plan 2014 or on the Final Drought Plan 2013.

1.3 Levels of Service

During the preparation of the Final Water Resources Management Plan 2014 Portsmouth Water proposed a range of levels of service relating to unrestrained demand and drought scenarios.

- Temporary Bans 1 year in 20
- Ordinary Drought Orders 1 year in 80
- Emergency Drought Orders 1 year in 300

We would only expect to require to introduce domestic customer use restrictions (e.g. hosepipe bans) one year in 20. We would only expect commercial use restrictions and further domestic restrictions one year in 80. Emergency measures, such as standpipes in the street, would only be required one year in 300.

2 SUPPLY

2.1 Deployable Output

A full review of deployable output was carried out for the Final Water Resources Management Plan 2014 but this Annual Review is based on the 2009 yield assessment. The current yield has been adjusted for the revision to the River Itchen Licence.

Yield Assessment Summary

Source	Abstraction Licences (Ml/d)		Current Yield Assessment (Ml/d) 1 in 20	
	Average	Peak	Average (ADO)	Peak (PDO)
Northbrook and Lower Upham	20.51	31.50	20.51	31.50
West Meon	0.46	0.46	0.46	0.46
Soberton and Newtown	9.02	15.00	9.02	13.30
West Street	9.12	13.60	9.12	9.12
Maindell	6.83	8.00	3.00	6.50
River Itchen	45.50	45.50	35.40	41.10
Worlds End	22.73	25.20	12.00	16.00
Lovedean	11.37	13.64	11.37	12.10
Havant and Bedhampton	98.00	137.00	53.00	75.00
Walderton Group	65.04	94.60	62.20	78.20
Eastergate Group	28.38	41.00	22.50	41.00
Company Total	**316.96**	**425.50**	**238.50**	**324.80**

It has also be adjusted to take account of long term outages at Woodmancote and Westergate for water quality reasons. The tables at the end of this report are based on the current yield.

There are limited opportunities for “conjunctive use” in Portsmouth Water’s area of supply because of the characteristics of the chalk aquifer. The Company has no raw water storage and cannot manage sources in the winter to provide more water in the summer.

Five licences were the subject of Post Implementation Monitoring Work which is required by the Environment Agency’s National Environment Programme to enable amendments, resolutions or confirmation as required by the Habitats Regulations. The outcome from these investigations was included in the Final Water Resources Management Plan in 2014.

2.2 Outage

The Annual Review tables are based on the outage figures calculated for the Final Water Resources Management Plan 2009. The analysis was based on recorded data and a Monte Carlo simulation with up to 1,000 iterations. This risk

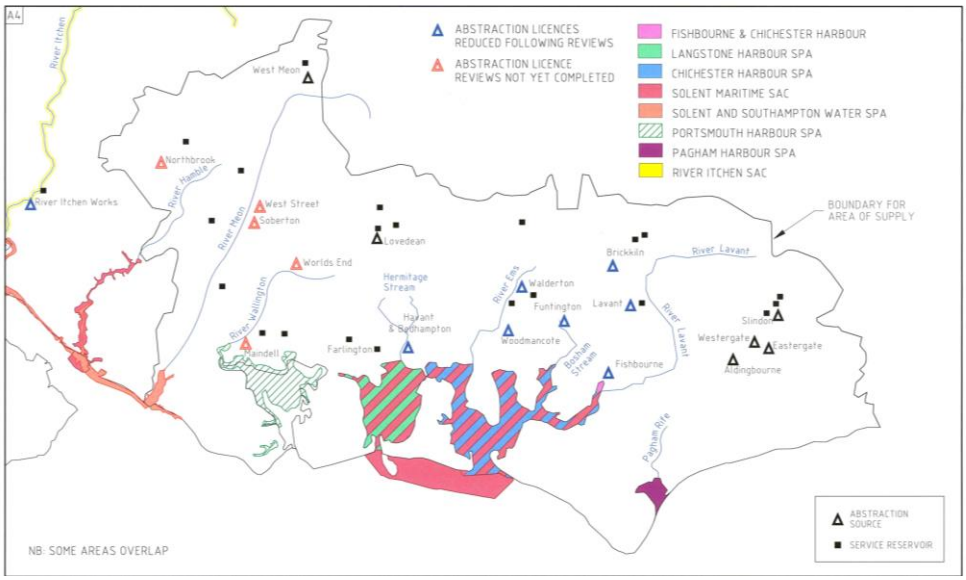
based approach assumes that no outage events last longer than 90 days and that the peak week occurs during June or July.

2.3 Bulk Supplies

Portsmouth Water has a single bulk supply to Southern Water Services. This supplies water from Slindon to Whiteways Lodge and on to Hardham Water Treatment Works. The system has a capacity of 15 Ml/d with a sweetening flow of 1.0 Ml/d required at all times. The original agreement, which expired in 2014, allowed for a peak supply of 15.0 Ml/d and an average supply of 4.45 Ml/d. The bulk supply is still available on an informal basis until a new agreement is reached.

The Final Water Resources Management Plan 2014 assumes that the Bulk Supply Agreement will be renewed with an average supply of 10.0 Ml/d.

2.4 Sustainability Reductions



Portsmouth Water's area of supply includes numerous protected rivers, harbours and coastlines. The Company has complied with all previous sustainability reductions and voluntarily reduced abstraction licences.

The following sections set out progress on the current National Environmental Programme which is due to be completed by March 2018. This is a company commitment. The legal requirement is March 2021.

2.4.1 The River Ems Restoration Scheme

Portsmouth Water has undertaken to carry out a river restoration scheme on the River Ems. This scheme includes revisions to the abstraction licence in relation to the volume and location of the river augmentation. The original restoration scheme, as proposed by the Environment Agency, has been modified to reflect the ecology found on site. An off-line pond has been de-silted to enhance water vole habitat and high flows diverted to the main river to enhance the chalk stream habitat. With downstream modifications this section should be suitable for migratory fish.

In September 2015 an upstream section of the main river will be improved by the formation of a more sinuous channel with pools and ripples. Cattle poaching will also be reduced by the provision of fencing and a cattle crossing.

2.4.2 The River Hamble Restoration Scheme

The brief for the River Hamble scheme has only just become available and no work was completed in 2014/15. The project now requires the restoration of three reaches with cattle fencing and flow control with woody debris. A start has now been made on ecological monitoring and an ecological survey. Landowners have been contacted and the Arun and Rother Rivers Trust are acting as our agents. Other options for this catchment were determined to be "Disproportionately Expensive".

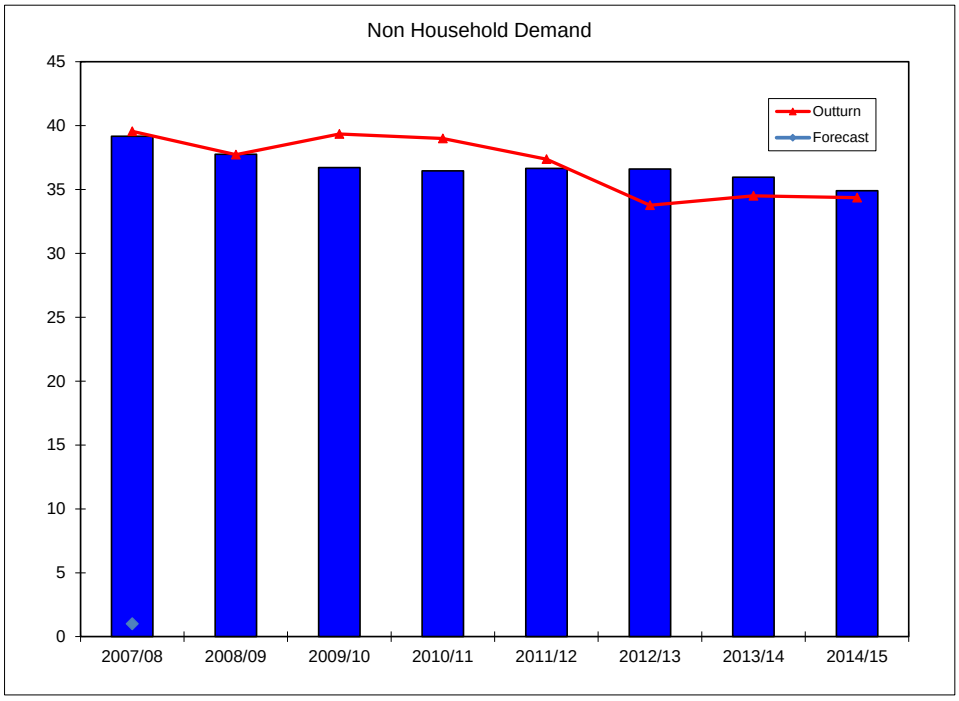
3 DEMAND

3.1 Demand Forecast

Portsmouth Water produced "normal year", "dry year" and "peak week" demand forecasts for the Final Water Resources Management Plan 2014. Normal year forecasts are used for revenue forecasting and it is the dry year forecast which is used for the supply demand balance. The population forecast was set in 2014 and will remain unchanged for each Annual Review. The only adjustment made is to the outturn household numbers which come from the billing system for the mid-year.

The dry year forecast was based on separate micro components and this is consistent with the additional water that is used for personal washing, clothes washing and garden use in warmer weather. The peak week forecast assumes demand based on a return period of 1 in 20 years (5% risk of failure). Fifty years outturn data was "normalised" and then statistics were used to calculate the household consumption with a 5% risk of exceedance. Non-Household demand and leakage were then added to give the overall peak demand.

Non-Household demand is based on econometrics and the outturn data over the last eight years has been very close to the 2009 forecast with a gradual reduction in demand. Non-Household demand in 2014/15 was 34.3 Ml/d prior to adjustments for meter under registration and the MLE.



A revised Non Household forecast has been produced for the Final WRMP 2014. This uses a similar approach to Water Resources Management Plan 2009 with outturn data, GDP, weather data and regression analysis. The results are not materially different to the previous forecast.

3.2 Per Capita Consumption

Portsmouth Water use an individual household monitor to estimate unmeasured per capita consumption. In 2014/15 there were 812 properties which gave valid consumption data. This produced an occupancy adjusted per capita consumption of 160 l/h/d excluding supply pipe leakage.

Properties with consumptions above 453 l/h/d were excluded from the calculations because they are either likely to be leaking or to have changed occupancy. Properties with consumptions below 75 l/h/d are likely to be holiday homes, or to have been occupied for only part of the year, and they have been excluded from the calculations.

The outturn per capita consumption for measured properties comes from the billing system. For 2014/15 the overall measured pcc was 114 l/h/d and this is lower than expected. The majority of measured customers are meter optants the measured pcc reflects this group of "low users". In 2014/15 measured consumption was 29% lower, on average, than unmeasured consumption.

Per capita consumption is subject to the MLE adjustment carried out as part of the overall supply demand balance. This is covered in more detail in Section 6.

3.3 Optional Metering

Metering policy remained unchanged in 2014/15 with customers offered "free" optional meters as part of the baseline provision. The Final Water Resources Management Plan 2014 does not contain any proposals to introduce compulsory metering. Portsmouth Water is planning to promote optional metering to customers on change of occupancy. This will not be "Change of Occupier Metering" but a voluntary decision based on the potential to save water and save money. Occupancy and rateable value will be considered along with the potential cost of sewerage services.

The baseline provision for metering was as follows:

	2010/11	**2011/12**	**2012/13**	**2013/14**	**2014/15**
Ofwat Target	5,000	5,000	5,000	5,000	5,000
Optional Meters Installed	3,604	4,046	4,857	4,873	3,544

Portsmouth Water publicises optional metering with billing inserts and the Company's website used to stress the benefits of metering to the customer and the Company. There was a significant reduction in the number of meter optants.

New houses constructed since April 2005 have been fitted with a meter and wall mounted boxes are now used. The recovery from recession in the building industry means that the number of new houses added to the billing system is higher than last year. The outturn figure for 2014/15 was 2,229 and this is close to the forecast included in the Water Resources Management Plan 2009, after being lower in each of the last four years.

3.4 Leakage

Ofwat's leakage target for 2014/15 is 30.0 Ml/d. The outturn leakage figure for 2014/15 was 29.6 Ml/d and this decreased to 28.9 Ml/d following the MLE adjustment.

Portsmouth Water achieved an average level of leaks of 28.9 Ml/d for the reporting year, against a target of 30 Ml/d. The reduction of leakage over the reporting year has been delivered by further optimisation of pressure management, improved detection of leaks and reduced repair times of leaks. Over the winter period we experienced two sharp rises in leakage which were reduced through the deployment of additional resource. Work has continued to refine the data and introduce 'best practice' for the assessment of leakage and further work is planned for the 2015/16 reporting year.

3.5 Water Efficiency

Portsmouth Water has an Ofwat Base Service Water Efficiency Target (SBWE) of 0.29 Ml/d per year based on a saving of 1 litre per property per day. The outturn figure for 2014/15 was 0.25 Ml/d which was below the target but the five year total was above the overall target.

	2010/11	2011/12	2012/13	2013/14	2014/15	Total
Ofwat Target	0.29	0.29	0.29	0.29	0.29	1.45
Savings Achieved	0.25	0.36	0.35	0.32	0.25	1.53

Hard measures, such as distributing water saving devices, made up the majority of the total with a smaller allowance for soft measures. Promotion of the Free Water Saving Pack provides the biggest saving and is run in conjunction with the "Save Water Save Money" website.

4 CLIMATE CHANGE

The Annual Review is based on outturn data and so is not affected by climate change forecasts.

5 HEADROOM

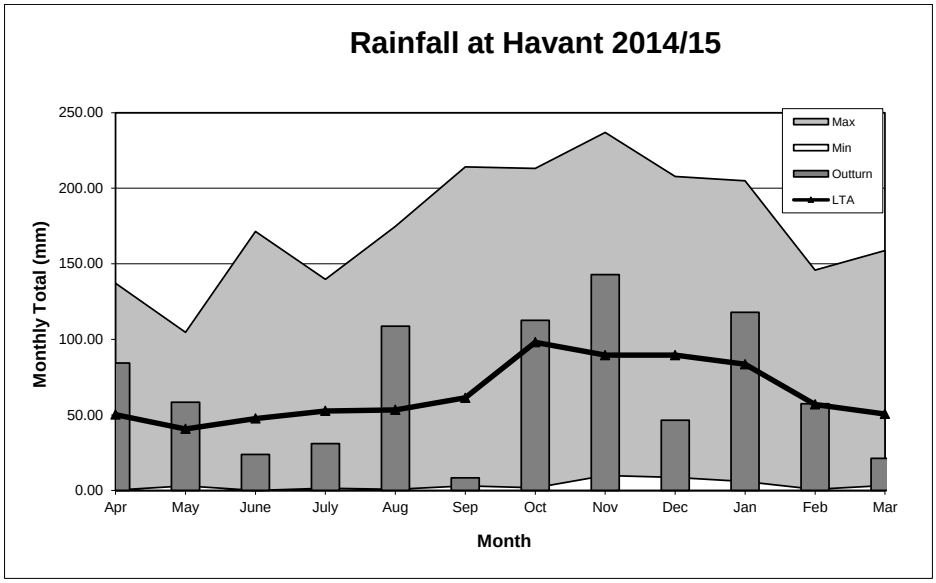
Portsmouth Water's current headroom methodology is set out in its Final Water Resources Management Plan 2014. It is a risk based methodology and in an outturn year all the water balance figures are known and there is no risk of failing the Level of Service.

6 SUPPLY DEMAND BALANCE

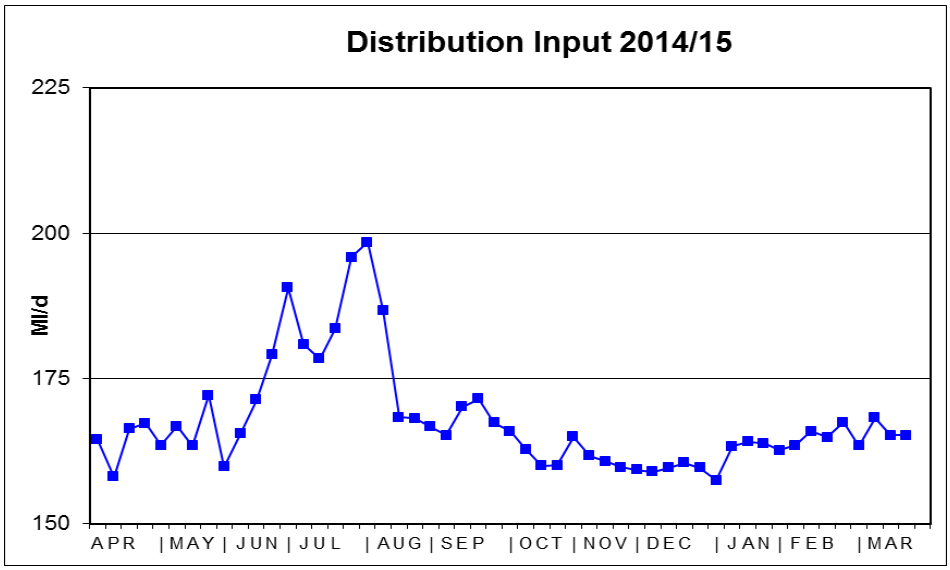
The Ofwat June Return was based on outturn data and reflected the supply demand balance for the financial year. This "Annual Review" follows the same approach with end of year volumes and mid year property numbers.

6.1 Outturn Data

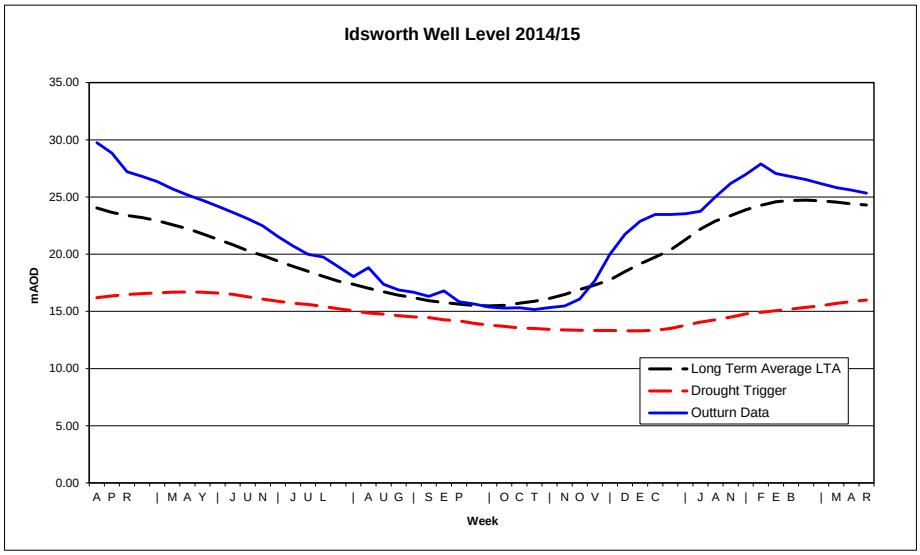
The weather during 2014/15 was normal with 105% of the Long Term Average (LTA) rainfall. There were periods of drier weather namely June, July, September and December.



The dry weather produced a peak in demand at the end of July.



Groundwater levels are an indication of the water available to Portsmouth Water from the chalk aquifer. 2014/15 started with groundwater levels above the long term average but the dry summer resulted in levels below the long term average in the autumn. There was a rapid recovery in the winter due to heavy rainfall.



A dry spring meant that the groundwater levels at the end of 2014/15 were just above the long term average.

The Bulk Supply to Southern Water normally runs with a "sweetening" flow of 1.0 Ml/d. In 2014/15 the bulk supply ran slightly above this level and the annual average was 1.51 Ml/d.

6.2 Water Balance Reconciliation

For the outturn year the "macro components" of demand do not add up exactly to the Distribution Input. The Ofwat June Return required this imbalance to be "reconciled" using the Maximum Likelihood Estimation (MLE) methodology. A confidence grade is assigned to each volume depending on the source of the data and the accuracy of the readings.

6.2.1 Unmeasured Household Demand

Unmeasured demand is estimated from per capita consumption (see Section 3.2) and population. This means that it can not have a high confidence grade and the MLE calculation is based on ± 10% so B3 is appropriate. The outturn per capita consumption (pcc) was 160 l/h/d and this fell to 154 l/h/d following the reconciliation.

6.2.2 Measured Household Demand

Measured household demand is taken from the outturn billing data and there is an adjustment for meter under registration. The confidence grade is A2 and the MLE calculation uses ± 5%. The outturn measured per capita consumption was 114 l/h/d (see Section 3.2). This fell to 112 l/h/d following the reconciliation. The majority of measured households are meter optants who will on average be low users.

6.2.3 Unmeasured Non Household Demand

Unmeasured non-household demand is uncertain and is based on comparable measured non-households. Measured ½" meters use, on average 773 litre/property/day and the same consumption has been assumed for the unmeasured properties. An accuracy of ± 25% has been set and this gives a confidence grade of B4. The volume of demand decreases from 1.28 Ml/d to 1.17 Ml/d and then gives a consumption of 734 l/p/d after the reconciliation.

6.2.4 Measured Non-Household Demand

Measured non-household demand is taken from the billing system with an adjustment for meter under registration. With an accuracy of ± 5%, and a confidence grade of A2, the outturn water delivered of 35.67 Ml/d decreases to 35.07 Ml/d following the reconciliation. This is close to the non-household demand forecast included in the Final Water Resources Management Plan 2014.

6.2.5 Distribution Losses

In Table 10 Ofwat separated Distribution Losses from Underground Supply Pipe Leakage (USPL). The leakage target is set for "Total Leakage" and leakage control does not make a distinction between distribution leaks and larger supply pipe leaks. In Table 10B the leakage total was also separated into distribution losses and USPL. The outturn figure for distribution losses is 21.08 Ml/d and this decreases to 20.37 Ml/d following the reconciliation.

An accuracy of ± 10% gives a Confidence Grade of A3.

6.2.6 Distribution System Operational Use (DSOU)

Operational use is a small part of the overall water balance and has a low confidence grade of B4 due to the number of assumptions made.

6.2.7 Water Taken Unbilled

By definition water taken unbilled can only be an estimate and the initial figure of 2.5 Ml/d represents less than 2% of Distribution Input. With a confidence grade of B4 the outturn figure decreases to 2.29 Ml/d following reconciliation.

6.2.8 Distribution Input

The outturn figure for 2014/15 was based on meter readings from reservoirs and pumping stations and this represents more than 95% of the Company's area of supply. This means that the confidence grade can be high with an accuracy of ± 5.0% with a confidence grade of A2 for the overall balance. Distribution Input was increased by the MLE process from 167.63 Ml/d to 168.76 Ml/d.

6.2.9 Overall Water Balance

The overall Water Balance is unlikely to have a confidence grade of 'A' because of the extensive monitoring systems that this would require. Portsmouth Water has allocated an accuracy of ± 10% with a confidence grade of B3 for the overall balance.

The error in the initial water balance was 6.71 Ml/d and this represents 3.8 % of the outturn distribution input. This is within Ofwat's allowable band for the use of the MLE methodology which is up to 5%.

6.3 Final Water Balance

The final water balance figures were used to populate the table supplied by the Environment Agency (see Section 10).

6.4 Peak Week Water Balance

The table represents an estimate of the water balance in the peak week of 2014/15. The peak week can be the critical period for the supply/demand balance.

The peak week balance can only be an estimate because many of the "macro components" of demand are not measured on a weekly basis. Data is available for Distribution Input, Leakage and the Bulk Supply. Several of the smaller items, such as DSOU and water taken illegally are assumed to be the same as the average balance. The peak week occurred in July and the outturn volume was 201.99 Ml/d. This gives an outturn peaking factor of 1.20 which is the normal year figure.

If the measured household peaking factor is assumed to be 5% less than the unmeasured and the unmeasured non-household factor is assumed to be 15% less then it is possible to estimate what the other peaking factors would have been:

Unmeasured Household	1.28
Measured Household	1.22
Unmeasured Non-Household	1.09
Measured Non-Household	1.09
Distribution Losses	1.00
Water Taken Unbilled	1.00
Overall Factor	1.20

This assumption gives an unmeasured pcc of 201 l/h/d and a measured pcc of 131 l/h/d during the peak week.

During the peak week the bulk supply transferred 1.1 Ml/d to Southern Water.

7 PROGRESS ON OPTIONS

The Final Water Resources Management Plan 2014 contained the following key feasible options:

- Farlington Washwater Recovery
- Havant Thicket Winter Storage Review
- Bulk Supply from South East Water
- Relocating the River Itchen Abstraction
- Worlds End Group Licence
- Portsmouth Harbour Desalination
- Budds Farm Effluent Re-Use
- Compulsory Metering
- Water Efficiency

The Final Determination 2014 did not include any of these options because there was no overall supply/demand deficit.

As part of the development of the Water Resources Management Plan 2014 and the Business Plan 2014 Portsmouth Water reviewed the option selection process. An unconstrained list of options was developed and discussed with the

Environment Agency and other Stakeholders. A Strategic Environmental Assessment (SEA) was carried out and the Environmental Report was included with the published Plan.

7.1 Farlington Washwater Recovery

Washwater recovery is being implemented at Farlington as part of a Water Quality scheme.

7.2 Havant Thicket Winter Storage Reservoir

Since the Final Water Resources Management Plan 2014 was published in August 2014 the Local Councils have confirmed the reservoir site as a "Strategic Location". This does not pre-judge the Water Resources Management Plan process, but does preserve the site from other developments. The SEA process indicated that Havant Thicket Reservoir would have a low overall impact on the environment with some negatives impacts and some positive impacts.

7.3 Worlds End Boreholes

The provision of additional boreholes at the existing Worlds End Water Treatment Works was included in the range of options for the Final Water Resources Management Plan 2014.

The WFD Investigation concluded that more water could be abstracted from the confined chalk at this location. The existing licence would have to be varied to include satellite boreholes but the licensed volume would not need to be increased.

7.4 Other Options

The Portsmouth Desalination Option was considered to have "significant" negative impacts on the environment but was included in the 2014 WRMP range of options to satisfy the regulators.

Budds Farm Effluent re-use scheme was also considered to have "significant" impacts on the environment but was included in the 2014 WRMP range of options.

Compulsory metering is not possible in Portsmouth Water's area of supply history because the area is not "Seriously Water Stressed".

Water efficiency activity is included in our Business Plan and the demand forecast in the 2014 plan assumes a fall in overall per capita consumption from 157 l/h/d in 2015/16 to 149 l/h/d in 2039/40.

8 DROUGHT PLANNING

Portsmouth Water did not impose any customer use restrictions in 2014/15.

It was the Company's intention to carry out further work on deployable output in 2014/15. This was to inform the next Drought Plan and Water Resources Management Plan. (WRMP 2014 Section 2.2.12). It is now clear that the next Drought Plan will be produced in 2019 alongside the next WRMP. Portsmouth Water has decided to wait for the revised WRMP Guidance to be published before starting any reassessment of deployable output.

9 ABSTRACTION INCENTIVE MECHANISM (AIM)

As part of the Business Planning process Ofwat proposed an incentive mechanism to encourage the sustainable use of water but this was not progressed to the final methodology. A financial reward would have been awarded if companies changed their behaviour at times when the river levels were low. Data for two sites were collected for the Business Plan and a table published with results for six years from 2007/08 to 2012/13. Data has now been added for 2013/14 and 2014/15.

AIM Summary Table

Abstraction Q95 (Ml)

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Walderton	0	0	591	480	267	0	0	0
Northbrook	0	0	0	0	66	0	65	0

Abstraction Q70 (Ml)

	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Walderton	150	0	2185	1478	4026	51	2011	944
Northbrook	200	0	968	1646	3045	1543	2596	114

Portsmouth Water has made a commitment to report AIM annually. 2014/15 was a “normal” year with no significant low flow periods.

Both the source works abstracted some water when flows were below Q70. In the case of the Northbrook Source, which affects the River Hamble, a sustainability scheme has already been completed. The Hoe Source Works was closed in 2003 and a replacement source opened at Lower Upham. This reduced overall abstraction and moved some of the remaining impact to the more sustainable confined chalk.

In the case of the Walderton Source, which is on the River Ems, an NEP Scheme has already been agreed and will be implemented in 2017/18. The scheme includes revisions to the abstraction licence and a river restoration scheme.

Neither source works abstracted water when flows were below Q95. This was partly because the Walderton licence contains an augmentation clause. Water is discharged into the River Ems before flows reach Q95.

10 CONCLUSION

Portsmouth Water draws the following conclusions from the Annual Review 2015:

- 2014/15 was a normal year.
- A healthy surplus was retained.

- A Security of Supply Index (SOSI) of 100 was maintained at average and peak demand.
- The bulk supply to Southern Water was used despite the agreement running out.
- Measured per capita consumption is consistent with prior years.
- Total leakage of 28.9 Ml/d is below the target of 30.0 Ml/d.

11 TABLES

The Environment Agency tables have the same format as last year. The individual line definitions are not included in the EA guidance but the lines are similar to the ones covered by the former Ofwat guidance for Tables 7, 10 and 10B.

The EA tables are based on outturn data which has been adjusted using the MLE process to achieve a water balance. For this “Annual Review" tables have been provided for average or peak conditions. A full set of confidence grades has been included to help explain the MLE process and the accuracy of the “macro components” of demand.

Further table commentaries are provided to explain individual lines.

Annual Average Water Balance Components 2014/15

Row numbering	DESCRIPTION	UNITS	DP	Company Total	Confidence Grade
	SUPPLY				
A	**Resources**				
1_{AR}	Raw water abstracted	Ml/d	2dp	172.76	A2
2_{AR}	Raw water imported	Ml/d	2dp	0.00	AX
3_{AR}	Potable water imported	Ml/d	2dp	0.00	AX
4_{AR}	Raw Water Losses and Operational Use	Ml/d	2dp	0.00	AX
5_{AR}	Raw water exported	Ml/d	2dp	0.00	AX
5.1_{AR}	Non potable water supplied	Ml/d	2dp	0.00	AX
6_{AR}	Potable water exported	Ml/d	2dp	1.51	A2
7_{AR}	Deployable output	Ml/d	2dp	238.50	B3
B	**Process Losses**				
9_{AR}	Treatment works losses and operational use	Ml/d	2dp	2.49	B3
10_{AR}	Outage Allowance	Ml/d	2dp	14.16	B3
	DEMAND				
11_{AR}	Distribution input	Ml/d	2dp	168.76	A2
C	**Consumption**				
19_{AR}	Measured non household water delivered	Ml/d	2dp	35.07	A2
20_{AR}	Unmeasured non household water delivered	Ml/d	2dp	1.17	B4
21_{AR}	Measured household water delivered	Ml/d	2dp	17.66	A2
22_{AR}	Unmeasured household water delivered	Ml/d	2dp	91.79	B3
23_{AR}	Measured non household - consumption	Ml/d	2dp	34.78	A2
24_{AR}	Unmeasured non household - consumption	Ml/d	2dp	1.12	B4
25_{AR}	Measured household - consumption	Ml/d	2dp	16.21	A2
26_{AR}	Unmeasured household - consumption	Ml/d	2dp	85.39	B3
29_{AR}	Measured household - pcc	l/h/d	0dp	112.21	B2
30_{AR}	Unmeasured household - pcc	l/h/d	0dp	154.24	B3
31_{AR}	Average household - pcc	l/h/d	0dp	145.54	B3
32_{AR}	Water taken unbilled	Ml/d	2dp	2.29	B4
33_{AR}	Distribution system operational use	Ml/d	2dp	0.41	B3
D	**Leakage**				
34_{AR}	Measured non household - uspl	Ml/d	2dp	0.29	B3
35_{AR}	Unmeasured non-household - uspl	Ml/d	2dp	0.05	B3
36_{AR}	Measured household - uspl	Ml/d	2dp	1.45	B3
37_{AR}	Unmeasured household - uspl	Ml/d	2dp	6.40	B3
38_{AR}	Void properties - uspl	Ml/d	2dp	0.29	B4
39_{AR}	Distribution Losses	Ml/d	2dp	20.35	A3
40_{AR}	Total leakage	Ml/d	2dp	28.85	A3
41_{AR}	Total leakage	l/prop/d	2dp	92.58	A3
	CUSTOMERS				
E	**Properties**				
43_{AR}	Unmeasured household - properties	000's	3dp	213.419	A2
42_{AR}	Measured household - properties	000's	3dp	72.358	A2
46_{AR}	Unmeasured non household - properties	000's	3dp	1.595	A2
45_{AR}	Measured non household - properties	000's	3dp	14.663	A2
44_{AR}	Void household - properties	000's	3dp	7.056	B3
47_{AR}	Void non households - properties	000's	3dp	2.52	B3
48_{AR}	Total properties	000's	3dp	311.61	A2
F	**Population**				
50_{AR}	Unmeasured household - population	000's	3dp	553.609	B3
49_{AR}	Measured household - population	000's	3dp	144.458	B3
52_{AR}	Unmeasured non household population	000's	3dp	1.416	B3
51_{AR}	Measured non household - population	000's	3dp	13.021	B3
53_{AR}	Total population	000's	3dp	712.504	B3
G	**Occupancy**				
55AR	Unmeasured household - occupancy rate	h/pr	2dp	2.59	A2
54AR	Measured household - occupancy rate	h/pr	2dp	2.00	A2
H	**Metering**				
56AR	Total Household Metering penetration (excl. voids)	%	2dp	25%	A2
57AR	Total Household Metering penetration (incl. voids)	%	2dp	25%	A2

TABLE COMMENTARY

Annual Average Outturn

Supply

Rows 1 - 7 Resources (A)

Raw Water Abstracted

2014/15 was a “normal” year with abstraction well below the deployable output

Raw Water Exported/Imported

There were no raw water exports or imports.

Potable Water Exports

Potable water exported represents the Bulk Supply to Southern Water.

Deployable Output

Deployable Output is calculated for "'dry" conditions and has no direct link to the outturn year water balance. An allowance has been made for the loss of the Woodmancote Source in 2014/15 and the partial loss of the Westergate Source.

Rows 9 - 10 Process Losses (B)

Treatment Works Operational Use

Treatment Works Operational use is related to backwash water at works which is not recycled.

Outage Allowance

Outage is now based on a full statistical analysis of recorded data including Monte Carlo simulation with up to 1,000 iterations. This risk based approach assumes that no outage events last longer than 90 days and that the peak demand period occurs during June or July.

Demand

Rows 11 - 33 Consumption (C)

Distribution Input

Distribution Input has been derived from the total measured flow minus the Bulk Supply to Southern Water.

Measured Non-Household Consumption

Measured non-household consumption is taken from the billing system with an adjustment for meter under-registration and supply pipe leakage. The outturn figure is close to the forecast included in the Water Resources Management Plan 2009.

The final adjusted figure is 35.07 Ml/d.

Water Taken Unbilled

This volume represents water taken illegally in properties that Portsmouth Water believes are "void" but are actually occupied. In addition, a small amount of water is taken legally unbilled for firefighting and fire practice. It is not possible to measure these volumes so estimates are used.

Unmeasured Household Per Capita Consumption

The unmeasured per capita consumption is based on the Company's own Consumption Monitor which contains 812 individual properties. The main text explains that the results for 2014/15 have been adjusted to exclude a number of properties with very low per capita consumptions. The outturn per capita consumption of 160 l/h/d is reduced by the MLE process to 154 l/h/d.

All figures used in the per capita consumption calculation are assumed to be excluding supply pipe leakage but include an allowance of 2.9% for meter under-registration.

Measures Household Per Capita Consumption

Overall Measured Household per capita consumption is lower than unmeasured household per capita consumption. This is due to the influence of meter optants who on average use less water and have a financial incentive to change to the measured tariff. There are measured domestic properties with an outturn per capita consumption of 114 l/h/d based upon an occupancy of 2.0 and an underground supply pipe leakage allowance of 20 litre/property/day. Measured pcc is consistent with 2013/14.

Unmeasured Non-Household Consumption

Unmeasured Non-Household Consumption is based on the measured consumption of non-household properties with ½" meters.

Distribution System Operational Use (DSOU)

Distribution System Operational Use represents water taken from hydrants for things like flushing to maintain water quality. DSOU has a low confidence grade (B3) because it is based on estimates.

Rows 34 - 41 Leakage (D)

Distribution Losses

Distribution losses are subjected to the MLE process and have fallen from 21.08 Ml/d to 20.37 Ml/d.

Total Leakage

Total Leakage has been adjusted to remove summer legitimate use and has been subjected to the MLE process. The figure of 28.9 Ml/d is below the Ofwat target of 30.0 Ml/d.

Customers

Rows 43 - 48 Properties (F)

Properties

The property data shown is for the mid-year but it is based on end of year data from the billing system. The number is rising gradually as new properties are added.

Rows 50 - 53 Population (G)

Population

Total population was re-calculated for the Final WRMP 2014 and the number used in the Annual Review matches the new forecast.

The WRMP 2014 forecasts are based on the higher population estimates and this gives higher demands in the early years.

Rows 54 - 55 Occupancy (G)

Occupancy

Occupancy will vary from year to year and this reflects changing housing trends such as more young adults staying in the parental home.

Measured occupancy is expected to increase as new properties make up a greater proportion of the total.

Rows 56 - 57 Metering (H)

Meter Penetration

Meter penetration continues to increase as customers opt for a 'free' meter and new properties are added to the system. The current figure is 25% as shown in the tables.

Peak Week Water Balance Components July 2014

Row numbering	DESCRIPTION	UNITS	DP	Company Total	Confidence Grade
	SUPPLY				
A	**Resources**				
1_{AR}	Raw water abstracted	Ml/d	2dp	208.90	A2
2_{AR}	Raw water imported	Ml/d	2dp	0.00	AX
3_{AR}	Potable water imported	Ml/d	2dp	0.00	AX
4_{AR}	Raw Water Losses and Operational Use	Ml/d	2dp	0.00	Ax
5_{AR}	Raw water exported	Ml/d	2dp	0.00	AX
5.1_{AR}	Non potable water supplied	Ml/d	2dp	0.00	AX
6_{AR}	Potable water exported	Ml/d	2dp	1.10	A2
7_{AR}	Deployable output	Ml/d	2dp	324.80	B3
B	**Process Losses**				
9_{AR}	Treatment works losses and operational use	Ml/d	2dp	5.81	B3
10_{AR}	Outage Allowance	Ml/d	2dp	16.45	B3
	DEMAND				
11_{AR}	Distribution input	Ml/d	2dp	201.99	A2
C	**Consumption**				
19_{AR}	Measured non household water delivered	Ml/d	2dp	38.27	A2
20_{AR}	Unmeasured non household water delivered	Ml/d	2dp	1.28	B4
21_{AR}	Measured household water delivered	Ml/d	2dp	20.37	A2
22_{AR}	Unmeasured household water delivered	Ml/d	2dp	117.84	B3
23_{AR}	Measured non household - consumption	Ml/d	2dp	37.98	A2
24_{AR}	Unmeasured non household - consumption	Ml/d	2dp	1.23	B4
25_{AR}	Measured household - consumption	Ml/d	2dp	18.92	A2
26_{AR}	Unmeasured household - consumption	Ml/d	2dp	111.44	B3
29_{AR}	Measured household - pcc	l/h/d	0dp	130.97	B2
30_{AR}	Unmeasured household - pcc	l/h/d	0dp	201.30	B3
31_{AR}	Average household - pcc	l/h/d	0dp	186.74	B3
32_{AR}	Water taken unbilled	Ml/d	2dp	2.29	B4
33_{AR}	Distribution system operational use	Ml/d	2dp	0.41	B3
D	**Leakage**				
34_{AR}	Measured non household - uspl	Ml/d	2dp	0.29	B3
35_{AR}	Unmeasured non-household - uspl	Ml/d	2dp	0.05	B3
36_{AR}	Measured household - uspl	Ml/d	2dp	1.45	B3
37_{AR}	Unmeasured household - uspl	Ml/d	2dp	6.40	B3
38_{AR}	Void properties - uspl	Ml/d	2dp	0.29	B4
39_{AR}	Distribution Losses	Ml/d	2dp	20.37	A3
40_{AR}	Total leakage	Ml/d	2dp	28.85	A3
41_{AR}	Total leakage	l/prop/d	2dp	92.58	A3
	CUSTOMERS				
E	**Properties**				
43_{AR}	Unmeasured household - properties	000's	3dp	213.419	A2
42_{AR}	Measured household - properties	000's	3dp	72.358	A2
46_{AR}	Unmeasured non household - properties	000's	3dp	1.595	A2
45_{AR}	Measured non household - properties	000's	3dp	14.663	A2
44_{AR}	Void household - properties	000's	3dp	7.056	B3
47_{AR}	Void non households - properties	000's	3dp	2.52	B3
48_{AR}	Total properties	000's	3dp	311.61	A2
F	**Population**				
50_{AR}	Unmeasured household - population	000's	3dp	553.609	B3
49_{AR}	Measured household - population	000's	3dp	144.458	B3
52_{AR}	Unmeasured non household population	000's	3dp	1.416	B3
51_{AR}	Measured non household - population	000's	3dp	13.021	B3
53_{AR}	Total population	000's	3dp	712.504	B3
G	**Occupancy**				
55AR	Unmeasured household - occupancy rate	h/pr	2dp	2.59	A2
54AR	Measured household - occupancy rate	h/pr	2dp	2.00	A2
H	**Metering**				
56AR	Total Household Metering penetration (excl. voids)	%	2dp	25%	A2
57AR	Total Household Metering penetration (incl. voids)	%	2dp	25%	A2

TABLE COMMENTARY

Peak Week Outturn

Supply

Rows 1 - 7 Resources (A)

Raw Water Abstracted

2014/15 was a “normal” year and the peak week occurred in July when the recreational use of water is higher. The amount of raw water abstracted reflects this.

Raw Water Exported/Imported

There were no raw water exports or imports.

Potable Water Exports

Potable water exported represents the Bulk Supply to Southern Water.

Deployable Output

Deployable Output is calculated for "dry" conditions and has no direct link to the outturn year water balance. A re-assessment of source yields was included in the Final WRMP 2014.

Rows 9 - 10 Process Losses (B)

Treatment Works Operational Use

Treatment Works Operational use is related to backwash water at works which is not recycled.

Outage Allowance

Outage is now based on a full statistical analysis of recorded data including Monte Carlo simulation with up to 1,000 iterations. This risk based approach assumes that no outage events last longer than 90 days and that the peak demand period occurs during June or July.

Demand

Rows 11 - 33 Consumption (C)

Distribution Input

Distribution Input has been derived from the total measured flow minus the Bulk Supply to Southern Water.

Measured Non-Household Consumption

Measured non-household consumption is taken from the billing system with an adjustment for meter under-registration and supply pipe leakage.

Water Taken Unbilled

This volume represents water taken illegally in properties that Portsmouth Water believes are "void" but are actually occupied. In addition, a small amount of water is taken legally unbilled for fire-fighting and fire practice. It is not possible to measure these volumes so estimates are used.

Unmeasured Household Per Capita Consumption

This line is based on an estimate of the peak week per capita consumption. The figure of 201 l/h/d is consistent with a “normal” summer with increased recreational water use.

All figures used in the per capita consumption calculation are assumed to be excluding supply pipe leakage but include an allowance of +2.9% for meter under-registration.

Measured Household Per Capita Consumption

The peak week per capita consumption of 131 l/h/d is consistent with a “normal” summer.

Unmeasured Non-Household Consumption

Unmeasured Non-Household Consumption is based on the measured consumption of non-household properties with ½" meters.

Distribution System Operational Use (DSOU)

Distribution System Operational Use represents water taken from hydrants for things like flushing to maintain water quality. It has a low Confidence Grade (B3) because it is based on estimates.

Rows 34 - 41 Leakage (D)

Distribution Losses

It should be noted that the Total Leakage figure has a Confidence Grade of A3. This means that the estimate is only accurate to ± 10%.

Total Leakage

Leakage was 28.85 Ml/d during the peak week following the application of an adjustment for legitimate night-time use.

Customers

Rows 43 - 48 Properties (F)

Total Properties

Property numbers are based on end of year billing data but represent a mid-year calculation.

Rows 50 - 53 Population (G)

Total Population

Total population was re-calculated for the Final WRMP 2014 and the number used in the Annual Review matches the forecast.

Rows 54 - 55 Occupancy (G)

Occupancy

Given the fixed population forecast and the outturn property numbers, the occupancy will vary from year to year. This reflects changing housing trends such as more young adults staying the parental home.

Rows 56 - 57 Metering (H)

Meter Penetration

Meter penetration continues to increase as customers opt for a 'free' meter and new properties are added to the system.