Method Statement: Demand Forecast

Consultation version

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Executive Summary

Water Resources South East (WRSE) is developing a multi-sector, regional resilience plan to secure water supplies for the South East until 2100.
We have prepared method statements setting out the processes and procedures we will follow when preparing all the technical elements for our regional resilience plan. We are consulting on these early in the plan preparation process to ensure that our methods are transparent and, as far as possible, reflect the views and requirements of customers and stakeholders.

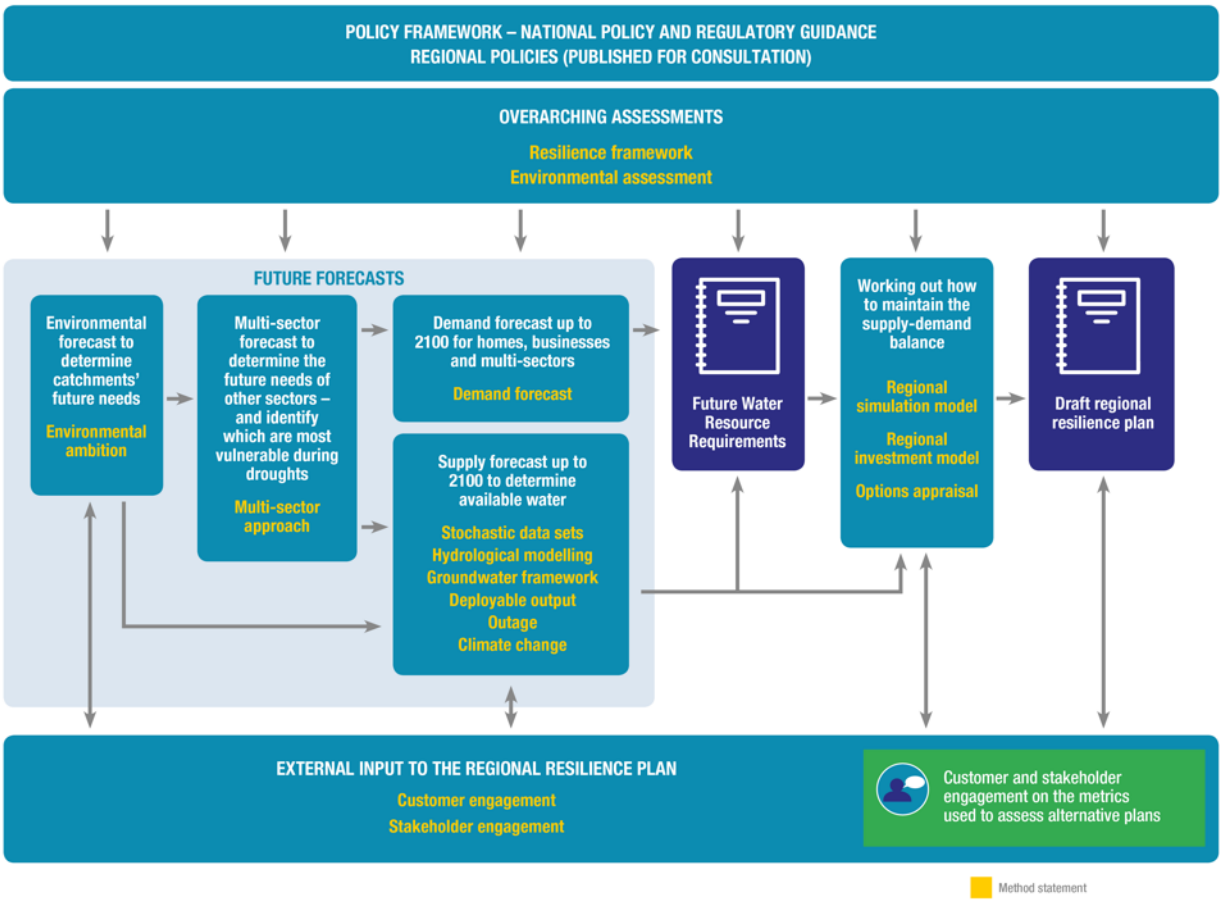
Figure ES1 illustrates how this demand forecast method statement will contribute to the preparation process for the regional resilience plan.

This document sets out the method by which we propose to work out the future demand for water – from households, businesses, industry and other sectors – across the WRSE region and across a range of different scenarios which account for external influences like climate change.

Demand forecasting is a well-established process that follows regulatory guidance and industry best practice, with three components that, combined, give us the starting position on our demand forecast. These components are:

- Household demand. This comes from population and property forecasts and per capita consumption (pcc) and per household consumption (phc) forecasts
- Non-household demand. This comes from a range of other forecasts, including population and properties, climate and economic data
- Leakage – which includes both distribution losses (made up of losses on large water mains, service reservoirs, and smaller distribution mains) and supply pipe leakage

Figure ES1: Overview of the method statements and their role in the development of the WRSE regional resilience plan



The demand forecast is a key input to our Regional Simulation Model and our investment models, see Regional Simulation Model and Investment Programme Development and Assessment method statements. The way demand forecasts are calculated are likely to be influenced by Water Resource Planning guidance from the Environment Agency and so we will update our method statement to take that into account once the final guidance has been published.

1 Introduction

1.1 This document sets out the proposed methodologies that will be used to derive demand forecasts for the Water Resources South East (WRSE) group regional resilience plan from 2025 to 2100.

1.2 There are four components which are combined to derive a baseline forecast, as listed below.

i. Household Demand - which is derived from population and property forecasts and Per Capita / Household Consumption forecasts
ii. Non-Household Demand - which is derived from a range of other forecasts, including population and properties, climate and the economy
iii. Leakage - which includes both distribution losses and underground supply pipe leakage
iv. Minor components – including water taken unbilled and distribution system operational use

1.3 The combined demand forecast will then be modelled against climatic factors, using a Dynamic Demand modelling process, in order to produce forecasts under varying climatic scenarios.

1.4 Each company is to complete their demand forecast in accordance with the methodology in this document by the end of September 2020, to feed into the Regional Plan alongside the supply forecast. This will be updated to use the 2020/21 annual reported data as the base year for the revised plan.

1.5 Both the demand and supply forecasts will be fed into the Regional System Simulation Model. There is also a link between the baseline demand forecasts and the options appraisal work package since the development of demand management options for an area is dependent on what has already been promoted and delivered in the past e.g. areas which have been metered cannot be metered again. See Options Appraisal method statement.

Roles and Responsibilities

1.6 The Demand Forecast Sub-Group was made up of representatives from all six member water companies. All representatives are required to participate in the selection of consultancy support through a tendering process, attendance at meetings and workshops with the consultants and review reports and papers including this method statement.

1.7 Overall responsibility for approval of reports and documents is with Alison Murphy (SES Water), who is a member of the WRSE Project Management Board, supported by Faisal Butt (Southern Water).

1.8 Final sign-off of reports for publication is the responsibility of Meyrick Gough, WRSE Technical Director.

1.9 The Multi-sector group steering group will help develop the other sectors forecasts of water requirements for the future (see Multi-sector Approach method statement). The findings from the non-household demand forecast studies will be shared with the other sectors and combined with their own knowledge to develop a series of forecasts.

Maintenance of Method Statement

1.10 This is the draft version of the method statement which is being published in order to consult with the relevant stakeholders. It has been updated to include comments from WRSE members and the Quality Assurance appointed consultants for WRSE.

1.11 It is intended that this document will be updated as additional work is completed and as further guidance is issued by the Industry Regulators.

2 Demand Forecast Method

Household Demand – Population

2.1 It is recognised that having robust evidence of population growth and changes in demographics is critical to forming a household demand forecast.

2.2 The Water Resource Planning Guidelines (WRPG) emphasise the importance of using Local Plans as evidence in deriving a forecast. Where an alternative source of data is used, for example beyond the planning period of the Local Plan or where a Local Plan has not been published, the evidence used should be clearly set out and any assumptions clearly described.

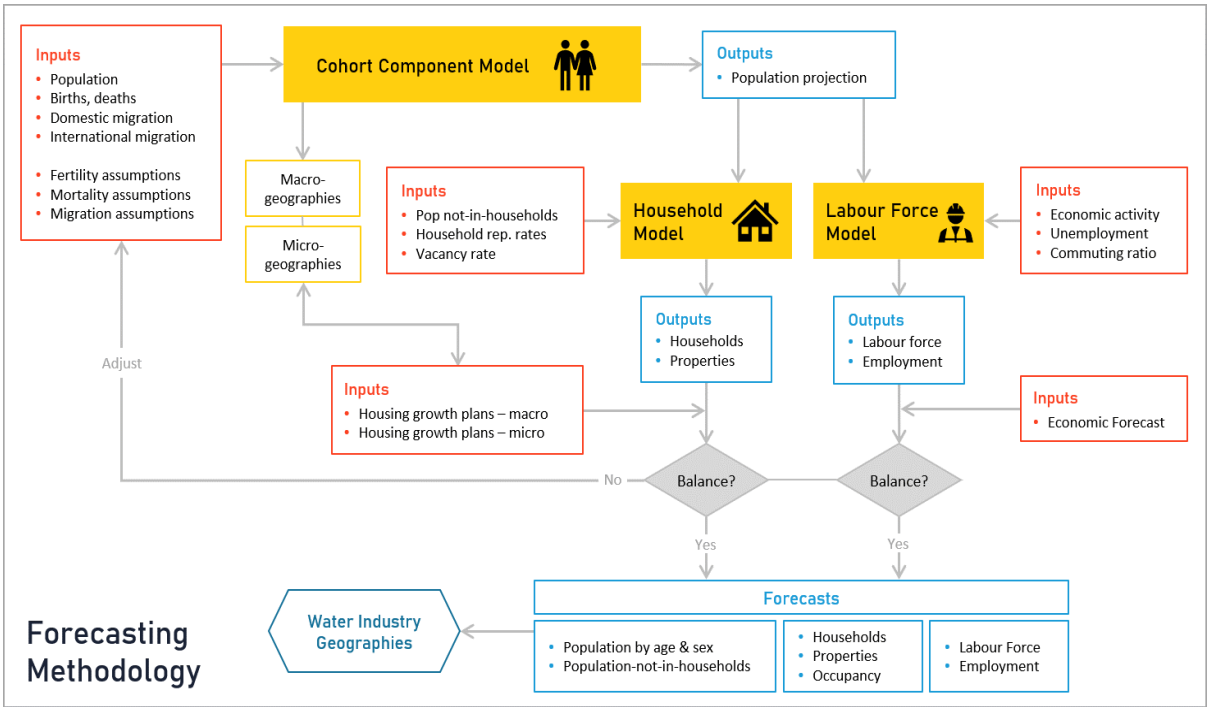
2.3 WRSE commissioned Edge Analytics to complete both population and property forecasts for all the Water Resource Zones in the region using the latest available Local Plan and Office for National Statistics (ONS) trend based data, as well as other sources including that from the Greater London Authority (GLA) (Population & Property Forecasts - Methodology and Outcomes). Forecasts for household, non-household and hidden & transient categories were produced in May 2020 using the latest available data. A separate forecast for the Oxford-Cambridge (OxCam) area was also produced to assess the potential impact of this proposed housing plan. The process for the methodology is summarised in Figure 1.

2.4 This work involved producing forecasts for a wide range of scenarios, by using a combination of trend, housing-led (incorporating housing need, housing requirements and actual planned) and employment-led forecasts, to account for the considerable uncertainty in the projections. Forecasts were produced under 19 main scenarios up to 2050 with three further projections (Principal, High and Low) for each scenario up to 2100. There are therefore 57 projections for each Water Resource Zone (WRZ).

2.5 From the range of scenarios, there is a need to adopt one as a baseline growth forecast for population and properties, supported by a selected number of additional growth projections to account for uncertainty. The preference is that the same growth forecast and additional growth scenarios are used across the region, however it is recognised that this may not be possible if different factors are driving differences in the upper and lower forecasts between each WRZ.

2.6 The Housing Plan based projections have been developed using two approaches: a 'top down' approach and a 'bottom-up' approach. The 'top-down' forecasts allocate growth based on location of existing housing stock, i.e. growth continues in locations where houses have already been built. The 'bottom-up' housing-plan forecasts take account of areas or sites where housing is identified for delivery in the future, not just where it currently exists. WRSE has adopted 'bottom-up' figures for the housing plan values as they represent a more realistic view of the locations of new growth and allocate growth to WRZs more accurately.

Figure 1: Edge Analytics Forecasting Methodology



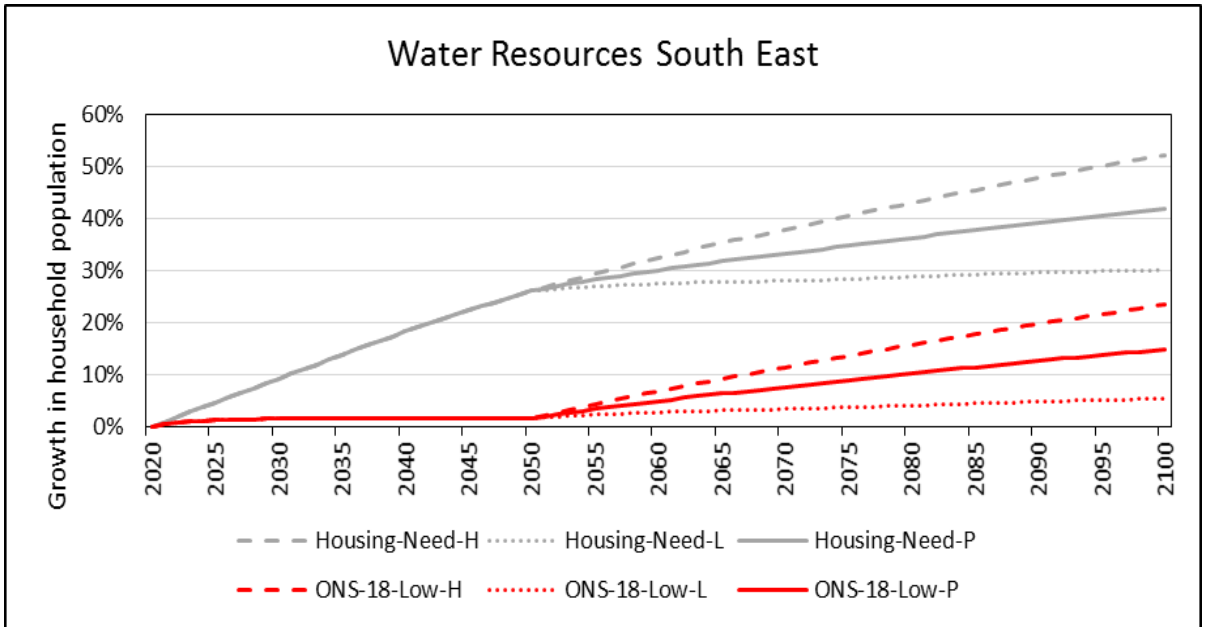
2.7 There is also a decision to be made on whether the forecast is based on population or household properties (dwellings). Population growth, particularly household population growth, is likely to be the main driver behind future demand in most WRZs where demand is forecast on a Per Capita Consumption (PCC) basis rather than a Per Household Consumption (PHC) basis. The rate of growth for new properties primarily impacts household occupancy which also has an impact on PCC, since average PCC typically decreases with an increase in average occupancy.

2.8 From the 57 projections, the minimum and maximum increase in total population at the WRSE level by 2050 are 2% and 26% respectively; the corresponding figures for 2100 are 5% and 52% respectively (Table 1). The full set of projections (Principal, High and Low) for the two scenarios in Table 1 is shown in Figure 2. The main difference in the Principal, High and Low projections is due to the assumed trajectory post 2050 which is mainly linked to the predicted level of net international migration.

Table 1: Range in WRSE Population

Measure	By 2050	By 2100	Projection
Minimum increase	2%	5%	ONS-18-Low-L
Maximum increase	26.3%	52%	Housing-Need-H
Average increase	17.2%	32.0%	All projections

Figure 2: Range in WRSE household population for the Housing-Need and ONS-18 scenarios under Principal (P), High (H) and Low (L) projections



2.9 However, at WRZ level, there is considerable variation around this average with the minimum growth to 2100 ranging from -6% to 13% and the maximum growth from 16% to 46% for the same period. There is also a wide variation on which growth forecast produces the upper and lower boundaries of the range, with a choice of two scenarios for the minimum forecast and a five different scenarios providing the maximum forecast across the zones. This is detailed in Table 2.

2.10 Based on data and recommendations from Edge Analytics and the current Water Resource Planning Guideline (WRPG) WRSE has decided to use the Housing Plan Principal (P) scenario as the baseline growth forecast. This is also consistent with the draft WRPG for the 2024 plans.

2.11 The group considered the option of using the 'r' version of the Housing Plan scenario, whereby it is assumed that there would be a return to high household growth rates by 2039 and therefore

higher growth. Evidence from recent actual and short-term forecast housing completions and availability of sites showed that this scenario was less likely and therefore it was rejected in favour of the standard Housing Plan scenario.

2.12 In its Price Review determinations in 2019, Ofwat used historic trend rather than plan-based growth forecasts. Therefore, it was concluded it would be useful to include the Completions-5Y scenario as a proxy for trend-based projection within the modelling.

Table 2: Maximum and minimum increase in dwellings projected for 2100 at the WRZ level

Company / WRZ	Minimum growth	Minimum growth scenario	Maximum growth	Maximum growth scenario
Affinity Water	**18%**	**ONS-18-Low-L**	**78%**	**Housing-Need-r-H**
Colne	16%	ONS-18-Low-L	83%	Housing-Need-H
Dour	38%	ONS-18-10Y-L	76%	Housing-Req-r-H
Lee	18%	ONS-18-Low-L	76%	Housing-Need-r-H
Misbourne	15%	ONS-18-Low-L	66%	Housing-Need-r-H
Pinn	17%	ONS-18-Low-L	91%	Housing-Need-r-H
Stort	28%	ONS-18-Low-L	84%	Housing-Plan-H
Wey	7%	ONS-18-Low-L	63%	Housing-Req-H
Portsmouth Water	**22%**	**ONS-18-Low-L**	**60%**	**Housing-Need-r-H**
SES Water	**20%**	**ONS-18-Low-L**	**73%**	**Housing-Need-H**
South East Water	**25%**	**ONS-18-Low-L**	**70%**	**Housing-Need-r-H**
Ashford	36%	ONS-18-Low-L	83%	Housing-Plan-r-H
Bracknell	9%	ONS-18-Low-L	58%	Housing-Req-r-H
Cranbrook	41%	ONS-18-Low-L	87%	Housing-Plan-H
Eastbourne	34%	Completions-5Y-L	80%	Housing-Need-r-H
Farnham	16%	ONS-18-Low-L	62%	Completions-5Y-H
Haywards Heath	29%	ONS-18-Low-L	80%	Housing-Need-r-H
Maidstone	34%	ONS-18-Low-L	77%	Completions-5Y-H
Tunbridge Wells	28%	ONS-18-Low-L	75%	Housing-Need-r-H
Southern Water	**24%**	**ONS-18-Low-L**	**68%**	**Housing-Need-r-H**
Hampshire Andover	18%	ONS-18-Low-L	77%	Completions-5Y-H
Hampshire Kingsclere	12%	ONS-18-Low-L	75%	Housing-Req-H
Hampshire Rural	29%	ONS-18-Low-L	90%	Completions-5Y-H
Hampshire Southampton East	13%	ONS-18-Low-L	61%	Completions-5Y-H
Hampshire Southampton West	16%	ONS-18-Low-L	54%	Housing-Req-H
Hampshire Winchester	20%	ONS-18-Low-L	67%	Housing-Plan-r-H
Isle of Wight	25%	ONS-18-10Y-L	59%	Housing-Plan-r-H
Kent Medway East	28%	ONS-18-Low-L	82%	Housing-Plan-r-H
Kent Medway West	23%	ONS-18-Low-L	92%	Housing-Plan-P
Kent Thanet	36%	Completions-5Y-L	85%	Housing-Req-H
Sussex Brighton	15%	ONS-18-Low-L	66%	Housing-Need-r-H
Sussex Hastings	24%	ONS-18-Low-L	61%	Housing-Need-H
Sussex North	28%	ONS-18-Low-L	76%	Completions-5Y-H
Sussex Worthing	35%	ONS-18-Low-L	85%	Housing-Need-H

Thames Water	**18%**	**ONS-18-Low-L**	**71%**	**Housing-Need-r-H**
Guildford	4%	ONS-18-Low-L	63%	Housing-Plan-r-H
Henley	22%	ONS-18-Low-L	77%	Completions-5Y-H
Kennet Valley	7%	ONS-18-Low-L	58%	Completions-5Y-H
London	20%	ONS-18-Low-L	75%	Housing-Need-r-H
SWA	13%	ONS-18-Low-L	69%	Housing-Need-r-H
SWOX	16%	ONS-18-Low-L	71%	Completions-5Y-H
Oxford Cambridge Arc	**20%**	**ONS-18-Low-L**	**72%**	**Completions-5Y-H**
Water Resources South East	**20%**	**ONS-18-Low-L**	**71%**	**Housing-Need-r-H**

2.13 For the remaining alternative scenarios, to account for the differences in the upper and lower forecasts between WRZs, it is proposed to use the maximum, median and minimum growth projections as additional scenarios unless these are already covered by one of the scenarios identified above. If the lowest projection shows a growth of less than 10% by 2100 then a projection showing at least 10% growth should be used instead. This means there would be a minimum of 3 and a maximum of 6 scenarios per WRZ.

2.14 A summary of the list of scenarios are given in Table 3.

Table 3: List of Scenarios per Water Resource Zone

Number	Scenario	Notes
1	Housing-Plan-P (bottom-up)	Baseline Forecast
2	Maximum growth projection	
3	Median growth projection	
4	Minimum growth projection	Unless less than 10% in which case the projection closest to 10% growth by 2100 should be used
5	Completions-5Y-P projection	Unless it is covered by the one of the projections above
6	Housing-Need-H projection	Unless it is covered by one of the projections above

2.15 It is proposed to use the same scenarios for dwellings (I.e. household properties) growth.

2.16 In cases where the maximum, median and minimum growth projections for household population and dwellings are represented by different scenarios, the occupancy figures will vary from the individual projections.

2.17 For the Ox-Cam 'Arc' area, which covers both the WRSE and Water Resources East (WRE) regions, the housing projections are taken from a specific housing projection with four scenarios based on two different levels of house building and two different geographical distributions (New Settlement and Expansion). These result in a large step change in the Local Plan projections, involving close to 1 million new homes by 2050 in the upper house building level scenario, although there is considerable uncertainty in the timing of the housing delivery. We have discussed the projections with WRE in order to co-ordinate on the selection of the scenarios to be included in the demand forecast. Since all four scenarios are equally likely, it is not possible to select any one as a more likely forecast. Therefore all four projections will be modelled in both the WRSE and WRE assessments as additional 'alternative' scenarios.

2.18 It is not intended that the population and property forecasts will be updated for the regional plan in January 2022 other than to re-base the start year using the 2020/21 reported figures. However, due to the impact of the lockdown this position will be reviewed as it is important that we get an accurate representation of the baseline requirements for the different industries and household demand. Any additional sources of data, for example from census releases by the ONS, will be reviewed and an assessment of materiality in terms of the impact on the forecasts undertaken.

Household Demand – Per Capita / Household Consumption (PCC/PHC)

2.19 The second component of household demand is the level of consumption measured on either a per person (capita) or household basis. The method should be aligned with the approach taken on growth, and will be based on a bottom-up method consistent with the EA WRPG.

2.20 The approach taken for the region is to align the policies, assumptions, assurance and framework for calculating PCC / PHC in order to have a broadly consistent method between companies, but without using the same model. This is a step change from previous regional plans whereby companies used their own assumptions and methods for estimating consumption, although most companies utilised similar datasets including the use of household consumption monitors, surveys and industry research. The introduction of the Ofwat consistent methodology approach in 2020/21 will lead to some convergence of methods but differences will remain in some areas.

2.21 Whilst companies have made commitments on reducing PCC in the long term, for the purposes of the baseline forecast only those measures which are in the current period, and therefore funded in the Price Review 2019 process, are included, i.e. those from 2020 to 2025. This is consistent with draft WRPG for 2024, but it will be reviewed and updated, if necessary, once the guidance has been finalised.

2.22 One key area which affects the forecast is the extent to which external interventions outside of the control of the companies, including changes in government policy, will influence household consumption. For example, studies have shown that consumption from white goods would significantly reduce if mandatory water labelling was introduced, and leakage from toilets which is estimated to occur in around 5% of toilets could also be minimised if a combination of amendments to current regulations and practices were introduced.

2.23 It is considered that the assumptions used in the baseline forecast also need to align with the benefits calculated from demand management options, including both consumption and leakage options. This would ensure that there is no double-counting nor any gaps in the quantification of savings. As part of the Options Appraisal workstream (see Options Appraisal method statement) WRSE will carry out an analysis of the level of alignment on the assumptions, assurance and framework utilised by each company and make recommendations on how companies should adapt their approach for the demand forecast and options appraisal stages of the regional plan, or, if this is not possible, how the plan can account for these differences. It is recognised that further steps may need to be taken in the next planning cycle where these cannot be practically taken given the short timescale available.

Non-Household Demand

2.24 Whilst non-households account for a much smaller proportion of demand than households, it is influenced by a range of factors which need to be assessed and modelled to produce a robust forecast that also accounts for a reasonable uncertainty range.

2.25 WRSE commissioned Ovarro to review current methods employed by member companies and compare this to the draft WRPG and the recently published National Framework to form a preferred approach (Review of Non-Household Demand Forecast Methods – Final Report). They also assessed trends in non-public water supply needs over the planning period.

2.26 Their overall conclusion is that all companies are in reasonable alignment with the preferred approach. Where there are areas of divergence, such as accounting for climate effects, these are relatively minor in terms of the proportional effect on the forecast.

2.27 The preferred approach involves the stratification of non-household properties into five sectors:

i. Agriculture and other weather-dependant industries
ii. Non-service industries (excluding Agriculture)
iii. Service industries – population driven
iv. Service industries – economy driven
v. Unclassified

2.28 Companies can use Standard Industrial Classification (SIC) codes, or equivalent classification systems, to assign properties to each of these sectors. Since market separation in 2017, SIC codes are held in the Central Market Operating System (CMOS). There are significant gaps in the

CMOS data. Companies need to account for these gaps in the datasets to be able to utilise this data for forecasting purposes.

2.29 For each of these sectors a different forecasting approach is required which takes into account the main explanatory factors that influence demand in that sector. These include climate, population growth (as derived from the household demand forecast), employment and Gross Value Added (GVA). These factors will be compared with consumption data for that sector, preferably at a daily level in order to correlate the relationships. Due to the limitations of the CMOS data this will only be available for a selected group of properties, such as those which are logged for leakage monitoring purposes. The detailed approach to be taken will be determined through the next stage of the non-household demand analysis work. The aim is to produce a central (baseline) forecast for each WRZ which is relatively consistent across the companies as well as adhering to the planning guidelines.

2.30 Non-standard customers with high demand requirements, such as airports, will be treated separately if there is justification for doing so.

2.31 It is proposed that a baseline level of water efficiency should be applied to the forecast in line with the National Framework low demand scenario of a reduction of 4% by 2050. Currently there is limited evidence that the introduction of Open Water has driven a reduction in consumption above the historical trends, but the wholesalers continue to work jointly with retailers and track consumption of properties and sectors.

2.32 As with the household demand forecast, additional scenarios need to be tested to account for uncertainty in the datasets. This is detailed in Section 6 of the Ovarro report (Review of Non-Household Demand Forecast Methods – Final Report). For sectors driven by population growth, these scenarios will align with those referred to in the Household Demand section above. Where the sector is predominantly driven by economic factors, usage during historic employment / unemployment or GVA metrics can be used to derive an upper and lower forecast, alongside the central forecast. It is noted that both Brexit and Covid-19 have the potential to affect the economy in a similar way as the 2008/09 recession, and therefore the scenarios need to take this into account.

2.33 The advantages and disadvantages of modelling non-household demand using a joint regional model or individual company models were assessed, with no overall preference to either method. As with household demand, the group considered that the focus should be on aligning assumptions and the model framework as much as possible. As a result, we have now commissioned a region-wide assessment of non-household demand to ensure that we achieve the greatest level of consistency in the forecasts.

2.34 Forecasting demand from the non-public water supply sector is considerably more challenging given the availability of data. Whilst the impact on overall demand is relatively small, at a current level of around 150 million litres per day in comparison to an overall demand of 5 billion litres per day, the WRSE member companies intend to work together with the Environment

Agency and other stakeholders to better understand the locations and volumes associated with non-public consumptive abstraction of water and in particular any future changes to permitted direct abstraction, as well as identify if abstractors are more likely to use public supplies in future, for example due to climate change.

2.35 We have set out our multisector approach in our method statement and we will work with the multisector stakeholder group to develop an improved understanding of their requirements over the planning horizon by combining their knowledge of their business with the forecast information we gain from the non-household demand forecast.

Leakage and Minor Components

2.36 The regional group has taken the same approach with forecasting leakage as with PCC/PHC. Only those measures in the current Business Plan up to 2025 are included in the baseline forecast.

2.37 The introduction of the Ofwat consistent methodology will require companies to broadly align in their methods. However, there will remain areas where companies could take slightly different approaches which could affect the outcome. Therefore the group has commissioned a gap analysis to be carried out by Mott MacDonald as part of the review of Demand Management assumptions, assurance and framework, to assist with the baseline forecast and options appraisal. This will include an assessment of external factors which could affect leakage such as the introduction of supply pipe adoption by water companies.

2.38 Minor components include water taken unbilled and distribution system operational use including process water for treatment works. Companies will provide forecasts by applying their existing methodology since it is not considered that any differences will have a material impact on the forecasts.

Dynamic Demand (Modelling Climatic Factors)

2.39 The final component of the demand forecast is to assess the impact of weather on demand, as measured by distribution input, by analysing historic trends and modelling them against a range of factors including population, leakage level, meter penetration, mains length and demand restrictions. This allows a 'normalised' demand to be derived which can be used for the baseline demand forecast.

2.40 The method used to model demand dynamically was completed for WRSE by WRc (Dynamic Demand Modelling for WRSE) . To align with the other forecasts, the analysis was conducted at the WRZ level. Key points from the methodology report are described below.

2.41 A weather series for each WRZ was created using HadUK 1km data points of minimum and maximum temperature and rainfall from 1981 to 2018, thus including a range of droughts including those where usage restrictions have been applied.

2.42 The modelling looked at both multi-year trends and within-year seasonal factors to explain the differences in demand. Most variables correlate with demand in a linear way, and the model showed that this form of modelling was able to produce good results in around two-thirds of WRZs. By applying a more complex type of modelling (involving machine learning), the results, as measured through a range of statistical metrics, produced a predicted demand that was good or excellent in the majority of cases, and adequate in all zones. An online modelling tool was provided to allow companies to use the datasets and algorithms to produce their own demand series under a range of weather-related variables.

2.43 The outputs from the Dynamic Demand assessment have also been modelled using stochastic climatic datasets to produce demand under different drought severities. These were matched with the climate scenarios used in the supply forecasts, thus creating a consistent series of potential supply-demand balances which will be used in the hydrological modelling of supplies (see Hydrological Modelling method statement). A timeseries of minimum and maximum temperature rainfall was produced using the HadUK gridded weather data and same 48-year stochastic series. A matrix is produced for each WRZ from which a predicted and normalised demand value can be calculated.

Planning Scenarios

2.44 In addition to producing a range of demand forecasts to account for population growth (3-6 scenarios) and non-household demand (3 scenarios), there will be a number of planning scenarios to consider.

2.45 As a minimum, for each WRZ an assessment of demand expressed as Normal Year Annual Average (NYAA) and Dry Year Annual Average (DYAA) will be needed. In most cases a Dry Year Critical Period (DYCP) or a Dry Year Peak Week (DYPW) scenario will also be required, to account for peak demand. An assessment of historical constraints including recent prolonged cold weather and hot weather periods (such as those experienced in 2018) will be taken into account in determining the period required for the peak demand assessment.

2.46 For those WRZ where the autumn groundwater levels are assessed separately in the supply forecasts, an assessment of demand in a minimum deployable output (MDO) scenario should also be included.

3 Summary

3.1 WRSE will forecast a range of demand scenarios to account for the reasonable level of uncertainty across the planning period. An initial demand forecast is required for the draft Regional Plan in September 2020. This will be updated to reflect the base year 2020/21 for the revised plan.

3.2 For population growth, between three and six scenarios will be calculated using both local authority housing plans and ONS trend data in order to assess demand needs across high to low growth scenarios. At a region level, population forecasts vary between 5% and 52% by 2100. As each WRZ has differing levels of past and projected housing growth, as well as different demographics, the scenarios selected will vary across the region to reflect this.

3.3 For the Ox-Cam housing forecast, which affect both the WRSE and WRE regions, all four scenarios of housing growth will be tested as alternative scenarios to the central forecast. This approach is the same as that to be taken by WRE.

3.4 Household consumption will be calculated using an aligned set of assumptions, including those based on external factors. This is to reduce inconsistencies in the household demand forecast over the region and assist with the assessment of the benefit of demand options at a further stage in the overall plan.

3.5 Non-household demand will be forecast by categorising properties into one of five sectors using the Standard Industrial Classification code or other similar classification system. For each sector a different forecasting approach will be applied using the most dominant factor(s), with a central forecast produced alongside an upper and lower demand level.

3.6 Leakage will be forecast using the Ofwat consistent methodology, with an alignment of assumptions used across companies wherever practicable. Demand from minor components will be based on existing individual company models.

3.7 To account for weather effects, historical recent demand has been modelled dynamically to determine the effect of both weather and a number of other variables. This allows a normalised demand level to be calculated from which the baseline forecast can be derived, and also the effect of stochastically modelled drought frequencies.

3.8 Demand will also be modelled against a range of planning scenarios, including normal year and dry years, and also peak period and minimum deployable output where relevant to that zone.

4 Next steps

4.1 We are consulting on this method statement from 1st August 2020 to 30th October 2020. Details of how you can make comments can be found here consultation website

4.2 We will take into account the comments we receive during this consultation process, in updating the Method Statement. Alongside this, the Environment Agency will shortly be publishing its Water Resource Planning Guidelines (WRPG) on the preparation of regional resilience plans. We may need to update parts of our method statements in response to the WRPG. We have included a checklist in Appendix 1 of this method statement which we will use to check that our proposed methods are in line with guidance where applicable.

4.3 If any other relevant guidance notes or policies are issued then we will review the relevant method statement(s) and see if they need to be updated.

4.4 When we have finalised our Method Statement, we will ensure that we explain any changes we have made and publish an updated Method Statement on our website.

Appendix 1 Checklist of consistency with the Environment Agency WRMP24 Checklist

The Environment Agency published its WRPG on XXXXXX 2020, including the WRMP24 Checklist. The following table identifies the relevant parts of the checklist relating to this Method Statement, and provides WRSE's assessment of its consistency with the requirements in the Checklist.

No.	Action or approach	Method Statement ref:	WRSE assessment of consistency