

SUPPLEMENTAL INFORMATION

For the paper

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Projections of Domestic Water Demand over the Long-Term: A Case Study of London and the Thames Valley

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This document provides supplemental information for the published paper. Tables and Figures are referenced in the paper by numbers preceded by “S”.

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Table S1. Observed PHC (litres per day) for property types and WRZ by ethnicity and occupant number, Thames Water DWUS, 2006-2015

Property Type WRZ	Ethnicity Occupants	Other Ethnic						South Asian					
		1	2	3	4	5	6+	1	2	3	4	5	6+
Detached													
SWA		165	374	463	483	534	670		446	713	492	839	
London		172	357	452	495	590	787	567	474	539	754	1342	
Kennet Valley		202	339	423	487	618	916		399	284	519		
SWOX		204	378	474	479	702	628				630		
Guildford		216	362	478	448	477					518		
Henley		204	365	378	586	564	533						
<i>Average</i>		192	364	449	483	609	707	<i>567</i>	<i>451</i>	<i>561</i>	618	<i>1208</i>	
Semi-detached													
SWA		221	307	389	475	543	362	311	505	798	913	1511	1110
London		218	314	408	511	626	688	237	399	593	654	710	942
Kennet Valley		165	289	393	383	525	601	209	287	425	538	648	683
SWOX		188	311	389	469	530	537	182	234		316		
Guildford		252	298	350	462	651	464						
Henley		133	394	401	667								
<i>Average</i>		203	309	397	473	591	626	222	365	566	698	<i>968</i>	<i>869</i>
Terraced													
SWA		201	277	426	417	511	662	152	245	514	632	584	
London		199	300	427	487	541	824	310	575	725	849	943	889
Kennet Valley		190	299	359	415	630	795			328			565
SWOX		163	289	373	429	465	715		348	470	764		
Guildford		230	256	495	393	638					529	574	432
Henley		174	372	380	422								
<i>Average</i>		192	296	415	465	540	811	283	491	630	797	911	861
Flats													
SWA		166	273	546	538			95	610	473	448		
London		181	291	354	424	479	486	204	289	335	460	185	663
Kennet Valley		134	276	331					357				
SWOX		220	403	437	386			390	545	998	1290		
Guildford		197	332	215	352	237		195			267		
Henley													
<i>Average</i>		180	294	364	421	473	<i>486</i>	<i>218</i>	317	350	<i>472</i>	<i>185</i>	<i>663</i>
All Property Types													
SWA		196	308	438	463	532	650	151	397	586	691	1272	1110
London		190	306	405	490	569	767	259	458	550	768	902	900
Kennet Valley		167	305	393	426	575	675	209	342	386	532	648	651
SWOX		185	327	410	460	568	602	369	323	536	680		
Guildford		223	315	422	438	583	464	195			345	574	432
Henley		162	381	384	562	564	533						
<i>Average</i>		189	312	407	469	568	710	255	419	541	721	939	861

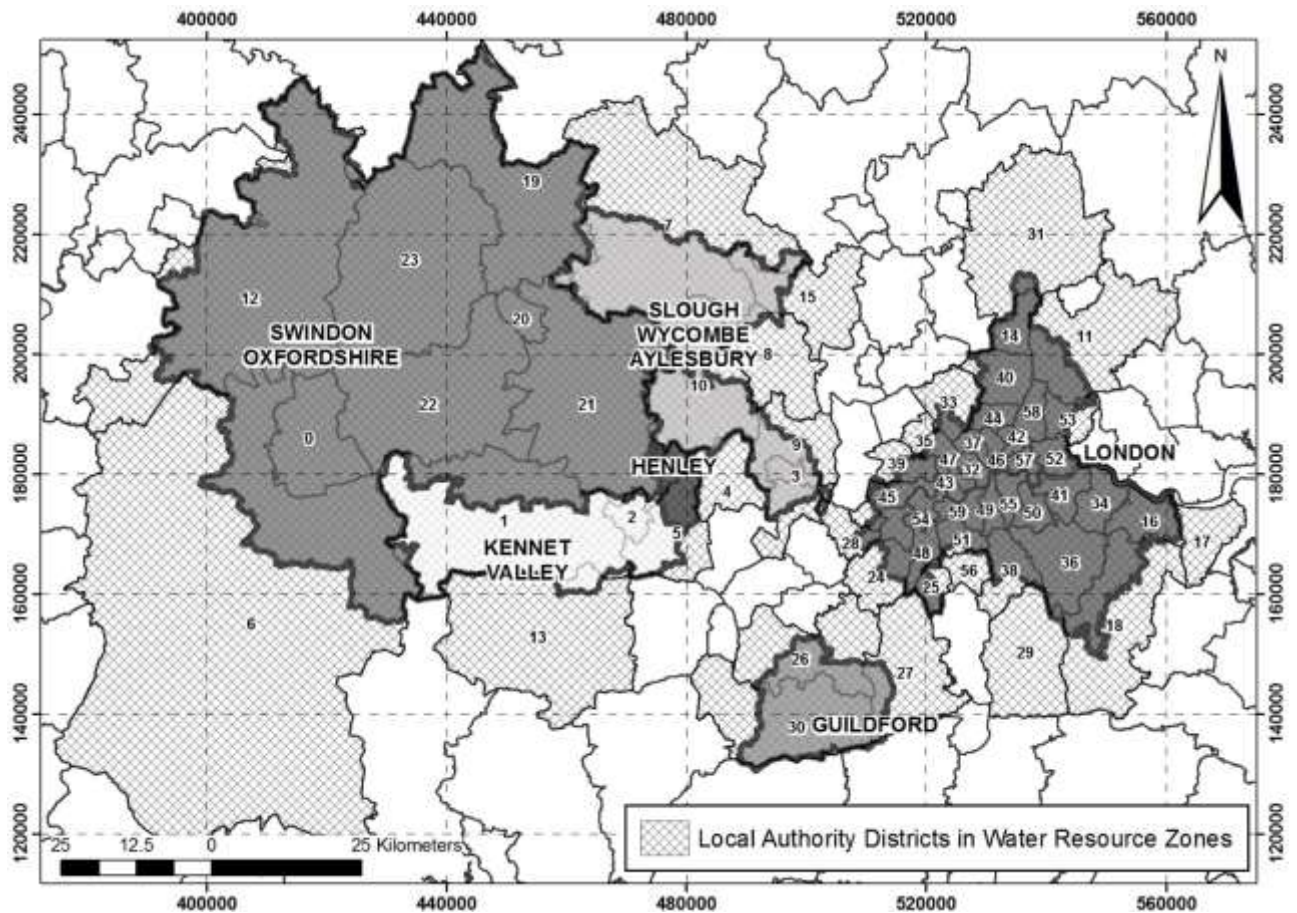
Notes:

1. PHC = Per Household Consumption, daily, averaged over 2006-2015.
 2. WRZ = Water Resource Zone. SWA = Slough Wycombe & Aylesbury, SWOX = Swindon & Oxfordshire.
 3. PHCs in **bold** are based on sample numbers ≥ 50 . Blank cells have no households in the sample.
- Source: Computed by the authors from Thames Water's Domestic Water User Survey (DWUS).

Table S2. Empirical prediction intervals (EPIs) for forecasts of domestic water consumption in millions of litres per day, Thames Water Region, by scenario, for selected years

Scenario	EPI	2011	2021	2041	2061	2081	2101
Business as Usual	90%		<i>1426</i>	<i>1868</i>	<i>2319</i>	<i>2659</i>	<i>2821</i>
	Mid	1225	1350	1708	2048	2271	2332
	10%		<i>1274</i>	<i>1548</i>	<i>1777</i>	<i>1882</i>	<i>1842</i>
Light Green	90%		<i>1411</i>	<i>1725</i>	<i>2072</i>	<i>2366</i>	<i>2502</i>
	Mid	1225	1336	1578	1830	2021	2068
	10%		<i>1260</i>	<i>1430</i>	<i>1588</i>	<i>1675</i>	<i>1634</i>
Dark Green	90%		<i>1399</i>	<i>1611</i>	<i>1875</i>	<i>2055</i>	<i>2166</i>
	Mid	1225	1324	1473	1656	1755	1790
	10%		<i>1249</i>	<i>1335</i>	<i>1437</i>	<i>1455</i>	<i>1414</i>

Note: The EPIs are computed for the projected populations for Water Resource Zones summed to a total for the Thames Water Region (Fig.M1). The derivation of the EPIs is described in Rees and Clark (2018), based on a set of historical projection errors for local authorities with small, medium and large populations reported in UKWIR (2015). A piece wise linear function was derived to relate EPIs to population size and a linear function used to relate projection error to length of the forecasting period. The EPIs estimate the uncertainty in water demand forecasts due to uncertainty in population and household forecasts.



Label	Local Authority District Name	Label	Local Authority District Name
0	Swindon	30	Waverley
1	West Berkshire	31	East Hertfordshire
2	Reading	32	City of London and Westminster
3	Slough	33	Barnet
4	Windsor and Maidenhead	34	Bexley
5	Wokingham	35	Brent
6	Wiltshire	36	Bromley
7	Aylesbury Vale	37	Camden
8	Chiltern	38	Croydon
9	South Bucks	39	Ealing
10	Wycombe	40	Enfield
11	Epping Forest	41	Greenwich
12	Cotswold	42	Hackney
13	Basingstoke and Deane	43	Hammersmith and Fulham
14	Broxbourne	44	Haringey
15	Dacorum	45	Hounslow
16	Dartford	46	Islington
17	Gravesham	47	Kensington and Chelsea
18	Sevenoaks	48	Kingston upon Thames
19	Cherwell	49	Lambeth
20	Oxford	50	Lewisham
21	South Oxfordshire	51	Merton
22	Vale of White Horse	52	Newham
23	West Oxfordshire	53	Redbridge
24	Elmbridge	54	Richmond upon Thames
25	Epsom and Ewell	55	Southwark
26	Guildford	56	Sutton
27	Mole Valley	57	Tower Hamlets
28	Spelthorne	58	Waltham Forest
29	Tandridge	59	Wandsworth

Fig. S1 The water resource zones of Thames Water and overlapping local authority districts

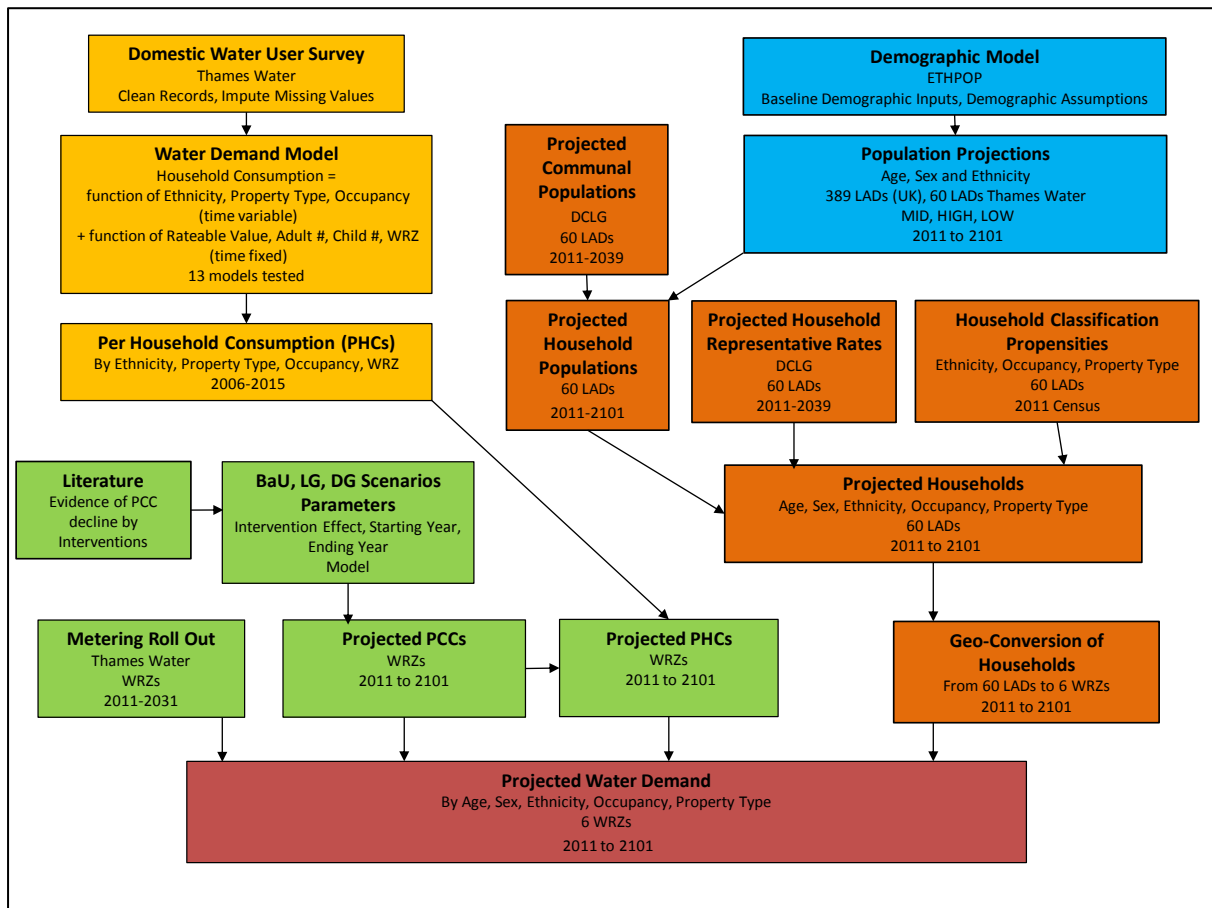


Fig. S2 The framework for projecting domestic water demand

Notes: DCLG = Department of Communities and Local Government

PCC = Per Capita Consumption, PHC = Per Household Consumption (both in litres per day)

Blue = Demographic modules, Fawn = Household modules, Yellow = Water demand prediction modules

Green = Water demand projection modules, Purple = Projected water demand

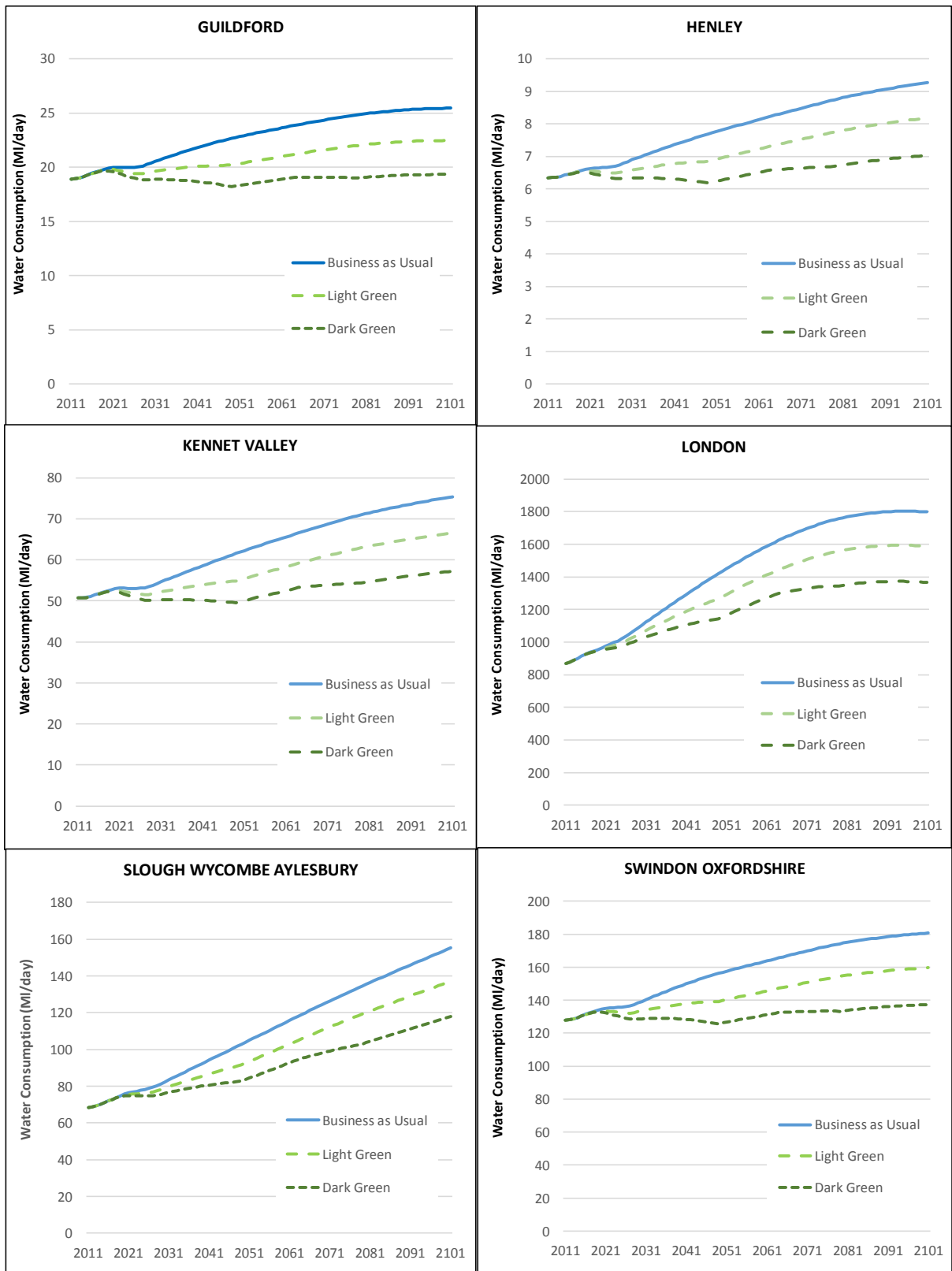


Fig. S3 Total domestic water consumption in the six water resource zones, by scenario, 2011-2101