WATER RESOURCE MANAGEMENT PLAN 19 ANNUAL REVIEW 2024







Leep utilities

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1. Executive Summary

The 2023 – 2024 year was wetter and warmer than average, with the 2023 calendar year being one of the five warmest on record. June 2023 was the hottest on record with an average mean temperature of 15.8°C, 0.9°C above the previous high. July and August were unsettled and stormy months, with September providing another period of fine weather. The above-average rainfall was in contrast to the 2022 – 2023 year and no conservation measures were required within the Company's zones.

PCC continues to vary considerably between sites, though we have previously noted that this is, in itself, not necessarily indicative of any issues with consumption. We have refined our approach to assumed unaccounted for water, applying predicted Underground Supply Pipe Leakage (USPL) and Distribution Input (DI) leakage according to the characteristics of the site.

We have installed 57 bulk loggers against a target of 50, giving us visibility of nightline consumption. We are continuing with our trial AMI programme in four zones with the same incumbent and the combination of this with the loggers at those sites will enable us to refine our approach to water balancing. We have identified the first 'urban' site to receive an AMI system and current plans indicate completion of this trial before the end of 2024.

Overall, we are comfortable with the status of the majority of the sites.

For completeness, Table 1 shows all sites granted to LNWL up to the end of March 2024. In accordance with the EA Technical Guidance issued in March 2024, only sites included within the published WRMP19 are considered in detail.

2. Introduction and Company Details

Leep Networks (Water) Ltd (LNWL) is a statutory water and sewerage provider operating in England & Wales under the New Appointments & Variations (NAV) policy as defined by the Water Services Regulation Authority (Ofwat). LNWL operates as a wholly owned subsidiary of Leep Utilities. LNWL was formerly SSE Water Ltd.

Each LNWL NAV considered here is a geographically discrete resource zone, subject to a bulk supply contract with the incumbent provider. Each new appointment is assigned a resource zone number. For WRMP24, we introduced a revised numbering system. The previous resource zone numbers were based on the identifiers used for our DWI reports. These identifiers are no longer suitable for use with the resource and drought plans and we adopted the new numbering for the 2023 review and continue it here.

LNWL has no abstraction licences, and no water treatment works in service and is an importer of bulk potable water.

3. Metering

As LNWL's sites have all been constructed since 2007, total household and non-household metering penetration is 100%. Since 2019, all new and replacement meters are AMR / AMI capable. An AMI metering trial commenced during 2023 and following assessment of the results, we now have four sites with AMI, all of which are urban apartments. Our first trial for an extra-urban site is to begin in 2024.

12% of our total connections are currently AMI metered and this will increase during 2024-2025.

We have also continued to install bulk meter loggers to give us real-time visibility of network performance, particularly nightlines to assist with assessing potential leakage.

We have not accounted for meter under or over registration in this review.

4. Void Properties

In our WRMP19 and in previous reviews we assumed that in any given year 3% of the properties will be Void and thus not contributing towards consumption. This figure is also in line with our financial assessment of a prospective site.

There are difficulties with using a flat percentage when assessing consumption, leakage & PCC, not least that a property may be void for only a short time. We have therefore denoted as void any properties where, at the end of March '24, we were addressing correspondence to 'The Occupier'. Overall, this has had the effect of reducing voids at most sites.

5. Leakage

Our original financial assessment for our proposed variations applies leakage at 3% with an assumed deterioration rate of 1.5% over a 20-year modelling period.

We identified in our WRMP that this assessment, although simple, could result in distortion of apparent leakage and we elected to apply an assumption of litres per property per day for distribution losses.

Following publication of our draft WRMP24 and the resulting feedback, for our 2023 review we adapted our leakage approach to take greater account of the differing types of sites and have continued to do so for this review. An industry-standard landscape urban development would typically have external supply pipes and around 7m of distribution main per property. For this review we have therefore applied Underground Supply Pipe Leakage (USPL) of 10 litres per property per day and distribution leakage of 5.4 litres per property per day, modified according to the relationship to the assumed standard. Hence, for sites with all or a high proportion of internal supply pipes – typically sites with high levels of apartment living – we have adjusted the leakage figures accordingly by removing the USPL leakage from the calculations. The Distribution Input (DI) leakage is modified by the percentage resulting from the comparison of the installed network to the assumed seven metres.

We have a 'Waste of Water' process, whereby communication is triggered if our Customer Operations team identifies unexpectedly high consumption. The trigger point is currently set to in excess of $1m^3$ per day, though this may be reduced if data supports such an action. A communication is sent to customers as a first step, with follow-up actions as required. During FY2023-2024 we have investigated 64 properties, 57 investigations have concluded leading to a saving of 158m3/day across our networks. 95% were as a result of internal leakage with 30% relating to boiler issues, 60% related to over flushing toilets and 5% related to miscellaneous leaks such as leaking pipes, showers or taps. 5% resulted from external leakage at the meter box.

In line with our commitment to engage with customers, we are developing new communications for all customers relating to using water wisely and, as demonstrated by our communications during the drought events of 2022, we are confident of reaching a high number of customers. We expect this to begin in FY24.

6. 2023 - 2024 Conditions

6.1.1. Weather

According to The UK Met Office Climate Summary for 2023, the year continued the trend to warmer and wetter weather, with more extreme rainfall. 2023 was the second warmest year since 1884. Rainfall was well above average generally, with England receiving around 120% of the 1991 – 2020 average. The provisional UK mean temperature was 9.97° C, 0.83° C above average and eight of the twelve months were above average.

6.1.2. Connection Growth

During 2023 the number of appointments increased by 31. 5117 new residential connections were made during the year against 4001 made in 2022, equating to a 16% increase. 2092 connections were made at existing sites that were live and reported at the time WRMP19 was published, of which 21 were non-household.

7. Dry Year Demand

In our WRMP19, we assessed projected consumption against the Dry Year Annual Average (DYAA) as defined within each incumbent's supply zones. As LNWL has no deployable output, this assessment took the form of an increase in PCC over what would be expected and should be considered as 'sensitivity testing'. For these reviews, we are considering historical consumption, some of which has occurred in notably dry years. In our draft WRMP24, we noted

that it was not based on DYAA and in our response to the consultation we also noted that we now include 5% 'uncertainty' as well as 5% headroom to account for changes in demand.

8. All Resource Zones to March 2024

Water Resource Zone	Site Name	Location	AKA
WRZ001	Old Sarum	Salisbury	The Portway
WRZ002	Llanilid Park	Pontyclun	Valleywood
WRZ003	Hale Village	London N17	
WRZ004	Kennet Island	Reading	
WRZ005	Bromley Common	Bromley	
WRZ006	Park Views	Epsom	
WRZ007	Graylingwell Park	Chichester	
Water Resource Zone	Site Name	Location	AKA
WRZ008	Kingsmere	Bicester	
WRZ009	Great Western Park	Didcot	
WRZ010	New South Quarter	London CR0	
WRZ011	Barking Riverside	London IG11	
WRZ012	Farndon Road	Market Harborough	
WRZ013	Brewery Square	Dorchester	
WRZ014	Marine Wharf	London SE16	
WRZ015	Riverlight	London SW11	
WRZ016	Norwich Common	Wymondham	
WRZ017	Hills Farm Lane	Horsham	Highwood
WRZ018	Newlands	Waterlooville	Berewood
WRZ019	Heart of East Greenwich	London SE10	Greenwich Square
WRZ020	Embassy Gardens	London SW11	
WRZ021	Emerson's Green	Bristol	
WRZ022	Kingsbrook	Aylesbury	
WRZ023	Millharbour Central	London E14	Millharbour
WRZ024	RAM Quarter	Wandsworth	
WRZ025	Prince of Wales Drive	London SW11	Prince of Wales Gardens
WRZ026	White City	London W12	
WRZ027	Chatham Waters	Gillingham	
WRZ028	Media City	Salford M50	
WRZ029	No.1 Old Trafford	Salford M17	No. 1 Old Trafford
WRZ030	Castle Irwell	Salford M6	
WRZ031	Oxted Gardens	Oxted	

WRZ032	Queen Street	Salford M3	
WRZ033	D'urton Lane	Preston	
WRZ034	Worrall Street	Salford M5	
WRZ035	Wirral Waters	Birkenhead	
WRZ036	Dockers Club	Liverpool	
WRZ037	One Baltic Square	Liverpool	
WRZ038	Oldham Street	Manchester M1	
WRZ039	CITU	Leeds	Clarence Road
WRZ040	Redhill Way	Telford	
WRZ041	Liverpool John Lennon Airport	Liverpool	
WRZ042	Market Quarter	Rugby	
WRZ043	Heriot Street	Liverpool L5	
WRZ044	Station Road	Mickleover	
WRZ045	Gold Lane	Biddenham	Dandara Biddenham
WRZ046	Hallgate Lane	Pilsley	
WRZ047	Bridle Lane	Downham Market	
Water Resource Zone	Site Name	Location	АКА
WRZ048	Regent's Plaza	Salford M5	
WRZ049	Trafford Plaza	Manchester M16	
WRZ050	Conrad Road	Witham	
WRZ052	Element - The Quarter	Liverpool L6	
WRZ053	Barton Farm 2A	Winchester	Kings Barton
WRZ054	Roscoe Street	Liverpool	
WRZ055	Seashell Trust	Heald Green	
WRZ056	Sherdley Road	St. Helens	
WRZ057	Spencer's Park	Hemel Hempstead	
WRZ058	Anchorage	Manchester M50	
WRZ059	Stanton Cross	Wellingborough	
WRZ060	Golf Drive	Nuneaton	
WRZ061	Church Street	Braintree	
WRZ062	Twelvetrees Park	London E16	Stephenson's Street
WRZ063	Drakelow Park	Swadlincote	
WRZ064	Victoria Road	Warminster	
WRZ065	Woolavington Road	Somerset	
WRZ066	Victoria House	Manchester	
WRZ067	Viadux	Manchester	
WRZ068	Landmark X1	Salford	
WRZ069	Fiddington	Tewkesbury	
WRZ070	Landywood Lane	Great Wryley	

WRZ071	Poverty Lane	Liverpool	
WRZ072	Thickthorn	Kenilworth	
WRZ073	Main Road	Didcot	
WRZ074	Lapwing Drive	Hampton-in-Arden	
WRZ075	Rhodes Park	Sellindge	
WRZ076	Derwent Street	Manchester	
WRZ077	Broomhall Way	Worcester	
WRZ078	Oak Lane	Kingswinford	
WRZ079	Manor Road	Cheltenham	
WRZ080	Moorbridge Court	Maidenhead	
WRZ081	The Eight Gardens	London	
WRZ082	Coseley Park	Dudley	
WRZ083	Semington Road	Melksham	
WRZ084	Sundon Road	Harlington	
WRZ085	Twelve Acre Drive	Abingdon	
WRZ086	Perrybrook Farm	Gloucester	
WRZ087	Apedale Road	Newcastle-Under-Lyme	
WRZ088	Woodberry Down	Hackney	
Water			
Resource Zone	Site Name	Location	ΑΚΑ
Resource Zone WRZ089	Site Name Broadway	Location Maidenhead	AKA
Resource Zone WRZ089 WRZ090	Broadway Wirral Waters (legacy)	Location Maidenhead Birkenhead	AKA
Resource Zone WRZ089 WRZ090 WRZ091	Broadway Wirral Waters (legacy) Eady Drive	Location Maidenhead Birkenhead Market Harborough	AKA
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092	Site Name Broadway Wirral Waters (legacy) Eady Drive Milestone Road	Location Maidenhead Birkenhead Market Harborough Carterton	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092 WRZ093	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane	Location Maidenhead Birkenhead Market Harborough Carterton Crewe	AKA
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092 WRZ093 WRZ094	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2	Location Maidenhead Birkenhead Market Harborough Carterton Crewe London	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092 WRZ093 WRZ094 WRZ095	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane	Location Maidenhead Birkenhead Market Harborough Carterton Crewe London Wallingford	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092 WRZ093 WRZ094 WRZ095 WRZ096	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park	Location Maidenhead Birkenhead Market Harborough Carterton Crewe London Wallingford Bournemouth	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpe	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswich	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ092 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane	Location Maidenhead Birkenhead Market Harborough Carterton Crewe London Wallingford Bournemouth Scunthorpe Ipswich Newbury	
Resource Zone WRZ089 WRZ090 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane Liverpool International Business Park	Location Maidenhead Birkenhead Market Harborough Carterton Crewe London Wallingford Bournemouth Scunthorpe Ipswich Newbury Liverpool	
Resource Zone WRZ089 WRZ091 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099 WRZ091	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane Liverpool International Business Park Dunstall Farm	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswichNewburyLiverpoolMoreton-in-Marsh	
Resource Zone WRZ089 WRZ091 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099 WRZ100 WRZ101	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane Liverpool International Business Park Dunstall Farm Lotmead Villages	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswichNewburyLiverpoolMoreton-in-MarshSwindon	
Resource Zone WRZ089 WRZ091 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099 WRZ100 WRZ102 WRZ103	Site NameBroadwayWirral Waters (legacy)Eady DriveMilestone RoadFlowers LaneCanada Water A1&A2Winterbrook LaneCanford ParkYaddlethorpeSandyhill LanePinchington LaneLiverpool International Business ParkDunstall FarmLotmead VillagesChilsey Green Farm	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswichNewburyLiverpoolMoreton-in-MarshSwindonChertsey	
Resource Zone WRZ089 WRZ091 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099 WRZ100 WRZ101 WRZ103 WRZ104	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane Liverpool International Business Park Dunstall Farm Lotmead Villages Chilsey Green Farm	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswichNewburyLiverpoolMoreton-in-MarshSwindonChertseyWantage	
Resource Zone WRZ089 WRZ091 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ097 WRZ098 WRZ099 WRZ100 WRZ101 WRZ102 WRZ103 WRZ105	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane Liverpool International Business Park Dunstall Farm Lotmead Villages Chilsey Green Farm Kingsgrove Valley Park	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswichNewburyLiverpoolMoreton-in-MarshSwindonChertseyWantageDidcot	
Resource Zone WRZ089 WRZ091 WRZ091 WRZ093 WRZ093 WRZ094 WRZ095 WRZ096 WRZ096 WRZ097 WRZ098 WRZ099 WRZ100 WRZ101 WRZ102 WRZ103 WRZ105 WRZ106	Broadway Wirral Waters (legacy) Eady Drive Milestone Road Flowers Lane Canada Water A1&A2 Winterbrook Lane Canford Park Yaddlethorpe Sandyhill Lane Pinchington Lane Liverpool International Business Park Dunstall Farm Lotmead Villages Chilsey Green Farm Kingsgrove Valley Park Birchwood Lane	LocationMaidenheadBirkenheadMarket HarboroughCartertonCreweLondonWallingfordBournemouthScunthorpeIpswichNewburyLiverpoolMoreton-in-MarshSwindonChertseyWantageDidcotDerby	

Table 1 – All Resource Zones to March 2024

9. Zones considered in this review

For this review, we have considered all zones included in the published WRMP19. The zones are WRZ001 to WRZ026. Table 2 shows the Zones we have included in this review.

WRZ	Site
WRZ001	Old Sarum
WRZ002	Llanilid Park
WRZ003	Hale Village
WRZ004	Kennet Island
WRZ005	Bromley Common
WRZ006	Park Views
WRZ007	Graylingwell Park
WRZ008	Kingsmere
WRZ009	Great Western Park
WRZ010	New South Quarter
WRZ011	Barking Riverside
WRZ012	Farndon Road
WRZ013	Brewery Square
WRZ	Site
WRZ WRZ014	Site Marine Wharf
WRZ WRZ014 WRZ015	Site Marine Wharf Riverlight
WRZ WRZ014 WRZ015 WRZ016	Site Marine Wharf Riverlight Norwich Common
WRZ WRZ014 WRZ015 WRZ016 WRZ017	Site Marine Wharf Riverlight Norwich Common Hills Farm Lane
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018	Site Marine Wharf Riverlight Norwich Common Hills Farm Lane Newlands
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019	Site Marine Wharf Riverlight Norwich Common Hills Farm Lane Newlands Heart of East Greenwich
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019 WRZ020	SiteMarine WharfRiverlightNorwich CommonHills Farm LaneNewlandsHeart of East GreenwichEmbassy Gardens
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019 WRZ020 WRZ021	SiteMarine WharfRiverlightNorwich CommonHills Farm LaneNewlandsHeart of East GreenwichEmbassy GardensEmersons Green
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019 WRZ020 WRZ021 WRZ022	Site Marine Wharf Riverlight Norwich Common Hills Farm Lane Newlands Heart of East Greenwich Embassy Gardens Emersons Green Kingsbrook
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019 WRZ020 WRZ020 WRZ021 WRZ022 WRZ022 WRZ023	SiteMarine WharfRiverlightNorwich CommonHills Farm LaneNewlandsHeart of East GreenwichEmbassy GardensEmersons GreenKingsbrookMillharbour Central
WRZ WRZ014 WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019 WRZ020 WRZ020 WRZ021 WRZ022 WRZ023 WRZ024	Site Marine Wharf Riverlight Norwich Common Hills Farm Lane Newlands Heart of East Greenwich Embassy Gardens Emersons Green Kingsbrook Millharbour Central RAM Quarter
WRZ WRZ014 WRZ015 WRZ016 WRZ017 WRZ018 WRZ019 WRZ020 WRZ021 WRZ022 WRZ023 WRZ025	SiteMarine WharfRiverlightNorwich CommonHills Farm LaneNewlandsHeart of East GreenwichEmbassy GardensEmersons GreenKingsbrookMillharbour CentralRAM QuarterPrince of Wales Drive

Table 2 – Included Zones

10. Levels of Service

The level of service is a company's measure of the reliability of supply and denotes the likelihood of reductions in supply or restrictions of use due to drought. The bulk contracts LNWL has agreed with the supplying companies guarantee the maximum volume of water to be delivered in a year, which theoretically means that the level of service should be 100%. However, the contracts also contain a requirement that should the bulk supplier find it necessary to bring in restrictions, LNWL will mirror those restrictions. Table 3 shows the levels of service in the zones considered in this review and has been updated to reflect the current levels of service shown in our draft WRMP24.

LNWL Resource Zone	Site	Bulk Supplier	Supplier's Resource Zone	Temporary Use Ban (L2)	Non- essential Use Ban (L3)	Rota Cuts, Standpipes (L4)
WRZ001	Old Sarum	Wessex Water	Single Zone	1 in 100 / 1%	1 in 150 / 0.67%	1 in 200 / 0.5%
WRZ002	Llanilid Park	Dwr Cymru Welsh Water	Tywi Gower	1 in 20 / 5%	1 in 40 / 2.5%	1 in 200 / 0.5%
WRZ003	Hale Village	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ004	Kennet Island	Thames Water	Kennet Valley	1 in 10 / 10%	1 in 20 / 5%	1 in 500 / 0.2%
WRZ005	Bromley Common	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ006	Park Views	Sutton & East Surrey Water	Single Zone	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ007	Graylingwell Park	Portsmouth Water	Single Zone	1 in 20 / 5%	1 in 80 / 1.25%	1 in 200 / 0.5%
LNWL Resource Zone	Site	Bulk Supplier	Supplier's Resource Zone	Temporary Use Ban (L2)	Non- essential Use Ban (L3)	Rota Cuts, Standpipes (L4)
WRZ008	Kingsmere	Thames Water	SWOX	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ009	Great Western Park	Thames Water	SWOX	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ010	New South Quarter	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ011	Barking Riverside	Essex & Suffolk Water	London	1 in 150 / 0.66%	1 in 200 / 0.5%	1 in 200 / 0.5%
WRZ012	Farndon Road	Severn Trent Water	Strategic Grid	1 in 33 / 3%	1 in 33 / 3%	1 in 200 / 0.5%
WRZ013	Brewery Square	Wessex Water	Single Zone	1 in 100 / 1%	1 in 150 / 0.67%	1 in 200 / 0.5%
WRZ014	Marine Wharf	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ015	Riverlight	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ016	Norwich Common	Anglian Water	Norwich and the Broads	1 in 10 / 10%	1 in 40 / 2.5%	1 in 200 / 0.5%
WRZ017	Hills Farm Lane	Southern Water	West Sussex	1 in 10 / 10%	1 in 10 / 10%	1 in 100 / 1%

WRZ018	Newlands	Portsmouth Water	Single Zone	1 in 20 / 5%	1 in 80 / 1.25%	1 in 200 / 0.5%
WRZ019	Heart of East Greenwich	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ020	Embassy Gardens	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ021	Emersons Green	Bristol Water	Single Zone	1 in 15 / 6.7%	1 in 33 / 3%	1 in 200 / 0.5%
WRZ022	Kingsbrook	Thames Water	Slough Wycombe Aylesbury	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ023	Millharbour Central	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ024	RAM Quarter	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ025	Prince of Wales Drive	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%
WRZ026	White City	Thames Water	London	1 in 10 / 10%	1 in 20 / 5%	1 in 200 / 0.5%

Notes on Levels of Service

Table 3 – Levels of Service

- 1. L1 is an advice-only condition, where customers are requested to reduce consumption. It is not included in the table.
- 2. L2 is a temporary use ban (formerly a hosepipe ban)
- 3. L3 is a non-essential use ban, which will affect businesses as well as containing the measure in L2
- 4. L4 is a response to an extreme drought and may include rota cuts or standpipes for residential supplies.

11. Drought Events 2023

2023 was wetter and warmer than average. Many parts of the country saw rainfall well in excess of that expected, leading to flooding in some areas. The wet weather ensured that groundwater, rivers and reservoirs were at or over capacity. There were no restrictions enforced within LNWL's resource zones.

12. Consumption & Supply Demand Balance

Table 4 shows the water available for use (WAFU) taken from the bulk contracts and the resulting supply – demand balance (SDB).

Resource Zone	Site Name	WAFU m3/annum	SDB
WRZ001	Old Sarum	126000	11350
WRZ002	Llanilid Park	29403	-1465
WRZ003	Hale Village	283500	21598
WRZ004	Kennet Island	115882	-1254
WRZ005	Bromley Common	90200	4377
WRZ006	Park Views	100000	52746
WRZ007	Graylingwell Park	94900	27175
WRZ008	Kingsmere	268800	8610
WRZ009	Great Western Park	420800	4616
WRZ010	New South Quarter	54750	10154
WRZ011	Barking Riverside	1398000	1063918
WRZ012	Farndon Road	79900	18263
WRZ013	Brewery Square	100000	46788
WRZ014	Marine Wharf	71148	14011
WRZ015	Riverlight	101640	27808
WRZ016	Norwich Common	50700	10131
WRZ017	Hills Farm Lane	120100	30743
WRZ018	Newlands	317900	167988
WRZ019	Heart of East Greenwich	94626	5227
WRZ020	Embassy Gardens	276700	87382
WRZ021	Emerson's Green	325000	51748
WRZ022	Kingsbrook	323800	134033
WRZ023	Millharbour Central	124500	23344
WRZ024	RAM Quarter	90900	45917
WRZ025	Prince of Wales Drive	115300	40921
WRZ026	White City	254000	148343

Table 4 - SDB

12.1. Deficits

In our annual review of 2023, we reported deficits at resource zones WRZ003 (Hale Village), WRZ004 (Kennet Island), WRZ002 (Llanilid Park) and WRZ019 (Heart of East Greenwich). We have agreed increases in the bulk contracts for the affected sites, except for Llanilid Park, as noted below.

We have also agreed increases at a number of other sites where the SDB did not reflect our WRMP24 objective of aiming for 5% headroom. The sites are WRZ008 (Kingsmere), WRZ009 (Great Western Park), WRZ010 (New South Quarter) and WRZ014 (Marine Wharf).

WRZ004 (Kennet Island):

This zone was in slight deficit in 2022 – 23 and we agreed an increase in the bulk supply. The distribution input for 2023 – 24 has increased by 6% over the 2022 – 23 year. As the site has been complete for some time, the reason for the increase is not yet clear. A bulk supply logger was fitted in June '23. Telemetry shows that the nightline peaks at around 1.12 l/s and there has been no significant change since June 2023. Although the nightline is not a cause for concern on a site with 960 properties, some 57% of the connections are internal supply pipes and mains length is 3.28m per property, just under half normal, meaning that USPL and DI leakage should be lower than assumed.

During the year our Waste of Water programme identified and addressed a number of properties in this Zone with internal leakage. We will assess the impact of this work on the consumption in the Zone prior to taking further steps with regard to either the distribution network or determining if a reduction in the trigger level for investigating customer-side leakage should be reduced from the current $>1m^3$ / day.

WRZ002 (Llanilid Park):

This zone comprises 242 residential properties with no commercial. The original appointment was for a much larger area, with plans for around 2,500 properties and significant commercial space. Subsequently, the incumbent Welsh Water (DCWW) successfully applied for a variation to its appointment to take over much of the original area, meaning that there would be no additional properties added to LNWL's current build. There is no signed contract for the site hence the WAFU is a notional value based on that which would have been considered had a contract been signed.

During 2023, LNWL and DCWW concluded discussions relating to the remaining properties and LNWL agreed to provide a letter of consent to DCWW. DCWW has now applied to Ofwat to reintegrate the site into their area. The application is in progress and we expect the variation to both LNWL and DCWW's appointments to conclude in 2024. For that reason we are no longer discussing a formal bulk contract with DCWW.

13. PCC

In our development of WRMP19 we assumed an occupancy of 2.3 people with an annual consumption of 110m³ per household, which suggested a PCC of 131 l/day. The latest Office of National Statistics advice is that occupancy is now an average of 2.4 people per residence, and we will use this number in this review. Using 2.4 provides a nominal PCC of 125.6 l/h/d for the same annual consumption.

In our 2023 review, we used billed volumes to calculate PCC where the resulting annual consumption was within + / - 10% of the imported volume as recorded on the bulk meter/s. In other cases, we used the imported value. For this review, we have revised our approach and where we have confidence in the imported values, we will use those as they represent actual Distribution Input, which will improve alignment with the EA reporting tables. We will then derive residential consumption by removing commercial billed volumes and distribution leakage. Where we have limited import data we will use billed volumes as before. Table 5 shows the imported volumes, delivered volumes and the application to each site.

WRZ	Site	Total billed (m3)	Total imported (m3)	Difference (m3)	Difference %	Figure used in review
WRZ001	Old Sarum	119400	114650	4750	4.1%	Imported
WRZ002	Llanilid Park	31207	30868	339	1.1%	Imported
WRZ003	Hale Village	279813	261902	17910	6.8%	Imported
WRZ004	Kennet Island	137269	117136	20133	17.2%	Imported
WRZ005	Bromley Common	94587	85823	8764	10.2%	Imported
WRZ006	Park Views	47254	42734	4520	10.6%	Billed
WRZ007	Graylingwell Park	65827	67725	-1899	-2.8%	Imported

WRZ008	Kingsmere	271703	260190	11512	4.4%	Imported
WRZ009	Great Western Park	429311	416184	13127	3.2%	Imported
WRZ010	New South Quarter	50100	44596	5505	12.3%	Imported
WRZ011	Barking Riverside	334082	184270	149812	81.3%	Billed
WRZ012	Farndon Road	81593	61637	19956	32.4%	Imported
WRZ013	Brewery Square	53212	48056	5156	10.7%	Billed
WRZ014	Marine Wharf	72239	57137	15101	26.4%	Imported
WRZ015	Riverlight	93411	73832	19579	26.5%	Imported
WRZ016	Norwich Common	40569	41720	-1151	-2.8%	Billed
WRZ017	Hills Farm Lane	89357	85775	3582	4.2%	Billed
WRZ018	Newlands	149912	182891	-32979	-18.0%	Billed
WRZ019	East Greenwich	133453	89399	44054	49.3%	Imported
WRZ020	Embassy Gardens	215836	189318	26518	14.0%	Imported
WRZ021	Emersons Green	323533	273252	50281	18.4%	Imported
WRZ022	Kingsbrook	196900	189767	7133	3.8%	Imported
WRZ023	Millharbour	131596	101156	30441	30.1%	Imported
WRZ024	Ram Quarter	47378	44983	2395	5.3%	Imported
WRZ025	Prince Of Wales Drive	69161	74379	-5219	-7.0%	Imported
WRZ026	White City	110713	105657	5056	4.8%	Imported
	Totals	3669416	3245038	424377	13.3%	

Table 5

The "Total billed" comprises residential and commercial billing direct to customers plus commercial billing from other retailers in the non-household market, taken from the Central Market Operating System. A positive number indicates that we have billed more than we have apparently imported. Differences are not unexpected as customer billing cycles do not align with bulk billing and there will be an element of estimation in customer bills. Some of the figures for the imported volumes are based on limited actual meter readings, extrapolated over the year for accrual purposes. Further, consumption taken from the non-household market system is reliant on meter readings entered by other retailers.

WRZ	Site	Net residential consumption (m3/day)	Residential Population (excl voids)	PCC @2.4 persons/prop (litres/day)
WRZ001	Old Sarum	289.7	1918	151.1
WRZ002	Llanilid Park	82.5	576	143.2
WRZ003	Hale Village	377.0	2966	127.1
WRZ004	Kennet Island	317.7	2206	144.0
WRZ005	Bromley Common	205.1	1586	129.3
WRZ006	Park Views	126.9	792	160.2
WRZ007	Graylingwell Park	172.9	1454	118.9
WRZ008	Kingsmere	637.7	4058	157.1
WRZ009	Great Western Park	1083.5	8225	131.7
WRZ010	New South Quarter	121.6	886	137.3
WRZ011	Barking Riverside	856.2	6434	133.1
WRZ012	Farndon Road	158.9	1397	113.8
WRZ013	Brewery Square	70.4	821	85.8
WRZ014	Marine Wharf	152.3	1315	115.8
WRZ015	Riverlight	174.8	1886	92.6
WRZ016	Norwich Common	109.2	775	140.9
WRZ017	Hills Farm Lane	183.5	1673	109.7
WRZ018	Newlands	368.1	2976	123.7
WRZ019	Heart of East Greenwich	202.2	1637	123.5
WRZ020	Embassy Gardens	456.1	3578	127.5
WRZ021	Emersons Green	602.9	6038	99.8
WRZ022	Kingsbrook	431.8	4001	107.9
WRZ023	Millharbour Central	274.9	2074	132.6
WRZ024	RAM Quarter	95.5	778	122.8
WRZ025	Prince of Wales Drive	195.1	2203	88.6
WRZ026	White City	282.6	2734	103.4
	Total / average	8028.8	64987	123.5

Table 6 figures in bold italics are derived using billed volumes. Red shading indicates PCC above 125.6 l/h/d.

Table 6 – PCC 2023 - 2024

Detailed below are activities completed or activities planned for sites where PCC is significantly exceeding forecasted values:

WRZ001 Old Sarum – Retrospective meter fitting is underway to install AMI metering and is due to conclude in 2024. This will provide better insight into consumption patterns, and should PCC continue to be a concern then customer engagement activities will be delivered to encourage water efficiency and understand actual occupancy.

Waste of water was established at the following sites, all of which have now been resolved and monitoring is in progress to assess the anticipated water efficiencies:

WRZ004 Kennet Island

WRZ006 Park Views

WRX008 Kingsmere

WRZ011 Barking Riverside

WRZ016 Norwich Common

Bulk loggers are also now in situ at all sites with the exception of Park Views to enable real time monitoring of consumption aligned to our WRMP24 commitments.

Table 7 shows PCC when compared with the 2023 annual review.

WRZ	Site	PCC 2023	PCC 2024	% Change
WRZ001	Old Sarum	139.3	151.1	8%
WRZ002	Llanilid Park	167.6	143.2	-15%
WRZ003	Hale Village	121.3	127.1	5%
WRZ004	Kennet Island	118.4	144.0	22%
WRZ005	Bromley Common	110	129.3	18%
WRZ006	Park Views	124.3	160.2	29%
WRZ007	Graylingwell Park	162.7	118.9	-27%
WRZ008	Kingsmere	163.6	157.1	-4%
WRZ009	Great Western Park	125.6	131.7	5%
WRZ010	New South Quarter	131.7	137.3	4%
WRZ011	Barking Riverside	133.5	133.1	0%
WRZ012	Farndon Road	126.4	113.8	-10%
WRZ013	Brewery Square	56.8	85.8	51%
WRZ014	Marine Wharf	111.2	115.8	4%
WRZ015	Riverlight	107.2	92.6	-14%
WRZ016	Norwich Common	135	140.9	4%
WRZ017	Hills Farm Lane	106.3	109.7	3%
WRZ018	Newlands	116.3	123.7	6%
WRZ019	Heart of East Greenwich	119.9	123.5	3%
WRZ020	Embassy Gardens	127.6	127.5	0%
WRZ021	Emersons Green	106.3	99.8	-6%
WRZ022	Kingsbrook	119.5	107.9	-10%
WRZ023	Millharbour Central	119.8	132.6	11%
WRZ024	RAM Quarter	135.8	122.8	-10%
WRZ025	Prince of Wales Drive	94.8	88.6	-7%
WRZ026	White City	66.1	103.4	56%

Table 7 – PCC 2023 - 2024 vs PCC 2022 - 2023

Of sites where increases of greater than 10% are seen:

- WRZ025 (Prince of Wales Drive) and WRZ026 (White City) are high-rise central London apartments, where occupancy may be low or only part-year. Both are still well below the nominal PCC of 125.6 l/h/d. In this review, both are considered to have effectively zero USPL and DI leakage.
- WRZ013 (Brewery Square) has a very high percentage of non-household consumption and the initial residential phase is characterised by apartments, which may have lower occupancy. The site has historically had very low PCC. Telemetry on the bulk supply indicates a consistent nightline of around 0.6 l/s.

- WRZ006 (Park Views) shows an unexpected increase. We do not have a company logger fitted at this site and the incumbent logger data is not currently available. The site has been flagged as requiring further investigation.
- WRZ004 (Kennet Island) has shown an increase in imported water, though the site is complete. Telemetry does not indicate any obvious distribution leakage. A review of our Waste of Water activities will be carried out as it may indicate significant internal leakage in customer premises.
- WRZ005 (Bromley Common) shows a 17% increase, though the previous figure of 110 l/h/d is considered low. Although the logger at the site requires servicing, the most recent reliable data suggests a nightline of 0.5 l/s.

For sites where a significant reduction has been recorded:

- WRZ007 (Graylingwell Park) the volume imported has reduced over 2022 23, hence the significant and welcome drop in PCC. We now have a logger fitted at this site and the nightline suggests a low of 1.32 l/s, which is in line with other sites of a similar size and nature.
- WRZ024 (RAM Quarter) is predominantly apartments and has very limited distribution network and no external supply pipes. The nightline drops to zero. Recent investigations identified unaccounted for non-household consumption, which may have had an impact on previous assessments of PCC.
- WRZ015 (Riverlight) is predominantly apartments and has regularly demonstrated a lower than average PCC.

Occupancy is a key factor in determining PCC and in Table 8 we show the effect of increased occupancy on PCC.

WRZ	Site	Nett residential consumption (m3/day)	Residential Population (excl voids)	PCC @ 2.4 persons/prop (litres)	PCC @ 2.75 persons/prop (litres)
WRZ001	Old Sarum	289.7	1918	151.1	131.8
WRZ002	Llanilid Park	82.5	576	143.2	125.0
WRZ003	Hale Village	377.0	2966	127.1	110.5
WRZ004	Kennet Island	317.7	2206	144.0	125.7
WRZ005	Bromley Common	205.1	1586	129.3	112.8
WRZ006	Park Views	126.9	792	160.2	139.8
WRZ007	Graylingwell Park	172.9	1454	118.9	103.8
WRZ008	Kingsmere	637.7	4058	157.1	137.1
WRZ009	Great Western Park	1083.5	8225	131.7	115.0
WRZ010	New South Quarter	121.6	886	137.3	119.9
WRZ011	Barking Riverside	856.2	6434	133.1	116.1
WRZ012	Farndon Road	158.9	1397	113.8	99.3
WRZ013	Brewery Square	70.4	821	85.8	74.8
WRZ014	Marine Wharf	152.3	1315	115.8	101.0
WRZ015	Riverlight	174.8	1886	92.6	80.8
WRZ016	Norwich Common	109.2	775	140.9	123.0
WRZ017	Hills Farm Lane	183.5	1673	109.7	95.7
WRZ018	Newlands	368.1	2976	123.7	107.9
WRZ019	Heart of East Greenwich	202.2	1637	123.5	107.8
WRZ020	Embassy Gardens	456.1	3578	127.5	111.2
WRZ021	Emersons Green	602.9	6038	99.8	87.1
WRZ022	Kingsbrook	431.8	4001	107.9	94.2
WRZ023	Millharbour Central	274.9	2074	132.6	115.7
WRZ024	RAM Quarter	95.5	778	122.8	107.2
WRZ025	Prince of Wales Drive	195.1	2203	88.6	77.3
WRZ026	White City	282.6	2734	103.4	90.2
		8028.8	64999	123.5	107.8

Table 8 – Effect of Occupancy on PCC

14. Review

Our bulk contracts include a total maximum demand calculated to ensure that account for uncertainty and provide headroom. Unlike a full-service company with abstraction, treatment and storage, most NAVs import all their potable supplies. This means that there is no physical volume of water held in NAV-owned reservoirs or identified in abstraction licences. For this reason, an apparent deficit in any single Zone does not have an immediate impact on customers.

There are two zones showing a deficit, WRZ002 (Llanilid Park) and WRZ004 (Kennet Island) and these are examined in 'Deficits'.

PCC has, on average, remained broadly constant across the four reviews from 2021 to 2024.

Table 9 shows the changes in PCC across those years.

Water Resource Zone	Site	PCC 2021	PCC 2022	PCC 2023	PCC 2024
WRZ001	Old Sarum	172	156	139	151
WRZ002	Llanilid Park	174	154	168	143
WRZ003	Hale Village	133	124	121	127
WRZ004	Kennet Island	136	123	118	144
WRZ005	Bromley Common	132	121	110	129
WRZ006	Park Views	156	147	124	160
WRZ007	Graylingwell Park	109	118	163	119
WRZ008	Kingsmere	160	172	164	157
WRZ009	Great Western Park	133	139	126	132
WRZ010	New South Quarter	170	156	132	137
WRZ011	Barking Riverside	155	148	133	133
WRZ012	Farndon Road	144	133	126	114
WRZ013	Brewery Square	76	63	57	86
WRZ014	Marine Wharf	124	120	111	116
WRZ015	Riverlight	81	129	107	93
WRZ016	Norwich Common	131	133	135	141
WRZ017	Hills Farm Lane	117	111	106	110
WRZ018	Newlands	127	124	116	124
WRZ019	Heart of East Greenwich	99	124	120	124
WRZ020	Embassy Gardens	82	124	128	127
WRZ021	Emersons Green	120	113	106	100
WRZ022	Kingsbrook	131	121	120	108
WRZ023	Millharbour Central	90	131	120	133
WRZ024	RAM Quarter	96	109	136	123
WRZ025	Prince of Wales Drive	49	50	95	89
WRZ026	White City	23	38	66	103
	Average	117.0	121.0	120.0	123.6
	Overall Average	120.4			

Table 9 – Four-year average

WRZ007 (Graylingwell Park) shows a decrease from the previous year and appears to be returning to normal. In our previous review we posited that the excess may have been due to construction use. It is notable that standpipe licences were issued during the year for previously unaccounted for site consumption.

WRZ008 (Kingsmere) has high PCC and although it has fallen back during FY23, is broadly consistent. There are three separate bulk supplies at Kingsmere, with two small meters supplying separate 'pockets' unconnected to the main site. Telemetry shows that the two smaller sites generate a nightline of 0.16 l/s to 0.67 l/s, whereas the main site runs at around 1.72 l/s. The main site is significantly larger, leading to a correspondingly higher rate of 'legitimate' night use and also, possibly, a more likely incidence of internal leakage.

WRZ024 (RAM Quarter) has reduced since 2023, which may be the effect of accounting for previously unaccounted-for commercial consumption.

It is notable that Zones 15, 20 and 23 to 26 have all shown a general trend upwards since 2021. These Zones are all central urban apartments and the change likely demonstrates increasing occupancy over initially high connection numbers

14.1. AR Reporting Table

We have tried in this review to ensure that our method agrees with the expected approach in the WRMP AR Table as supplied by the Environment Agency. This has led us to the previously mentioned approach to consumption, whereby we assess each site based on either billed or imported volume, according to an assessment of the veracity of each figure. Imported volume directly equates to Distribution Input (11AR). Where we have used billed volumes we have considered these as distribution input, though the relationship is not so clear. We will also assess this review to ensure that it aligns with the Company Annual Return, due in July.

With regard to specific parts of the Reporting Table, we would like to comment as follows:

1. QA Check Household Metering returns erroneous results. This appears to be because the formula uses only 45AR as the numerator but the denominator is 45AR plus 45.7AR.

15. Next steps

Following our review in 2023, we committed to undertaking certain actions to assist in refining our understanding of consumption and unaccounted for water. These commitments were:

- 1. Develop & enhance our approach to demand prediction and measurement
- 2. Review and revise our customer communications
- 3. Improve our operational understanding of our asset health
- 4. Engage with incumbents to understand their approach to demand management
- 5. Improve our understanding of occupancy at our sites

We continue to follow these basic principles and have specifically incorporated them into our WRMP24 as core company policies. A summary of the progress is below.

- 1. We have now installed AMI at four sites, comprising c4,200 meters.
- 2. We have installed our new billing system and expect improved understanding of consumption from FY24 onwards.
- 3. We have installed 57 bulk loggers against a target of 50.
- 4. The INA Water Sub Committee (INAWSC), of which LNWL is a member continues to engage with incumbent companies. LNWL has elected to represent the INAWSC at Water Resources South East.
- 5. We continue to use an average occupancy of 2.4 persons per household, though we recognise that for some sites this figure may not apply. Our on-boarding procedure now specifically requests occupancy details for new customers.

The Board of LNWL remains committed to understanding consumption and driving efficiency. We currently are experiencing a meter-reading level of 95% and the company objective is to maintain this efficiency.

LNWL

28 June 2024