

Water Supply Plan

Wakehurst Conservation and Research Nursery

Rev 01

March 2026

PERMISSION

REFERENCE: DM/25/2774

Condition 15

Prior to the commencement of any development above ground/slab level, a Water Supply Plan shall have been submitted to and approved in writing by the local planning authority. The Plan shall set out details about how the proposal accords with Policy DP42 of the District Plan in respect of the water supply that will serve the development. The development shall proceed in accordance with the approved

details. Reason: To ensure that there is adequate water supply to serve the development and to accord with Policy DP42 of the District Plan.

Water Supply Plan: Wakehurst Conservation and Research Nursery (WCRN)

Revision: 02 | Date: March 2026

1. Introduction & Policy Accordance

This Water Supply Plan is submitted to discharge Condition 15. It demonstrates how the development of the Wakehurst Conservation and Research Nursery (WCRN) accords with Policy DP42 of the District Plan.

The strategy focuses on Water Neutrality by prioritizing large-scale rainwater harvesting for horticultural production, thereby ensuring that the development does not place an undue or unsustainable demand on the local mains water infrastructure.

2. Primary Irrigation Supply: Rainwater Harvesting (RWH)

The horticultural demand is satisfied primarily through a high-capacity RWH system, see details at Appendix A.

2.1 Catchment and Storage Infrastructure

Rainwater is gravity-collected from the glasshouse roofs into two 98,000-liter storage tanks (total capacity: 196,000 Liters).

- **Glasshouse 1:** 1,120m² roof catchment.
- **Glasshouse 2:** 448m² roof catchment.
- **Glasshouse 3:** 640m² roof catchment.
- **Total Active Catchment:** 2,208m².

Note: Glasshouse 4 is not utilized for harvesting due to its remote proximity from the harvesting tanks.

2.2 Irrigation Demand & Replenishment Analysis

The system serves a total watering footprint of 3,498m² (Glasshouses 1-4, Polytunnels 1-2, and a 1,300m² external standout area).

- **Peak Monthly Demand:** 160,000 Liters.
- **Meteorological Data Source:** Calculations utilize Met Office 1991–2020 climate averages for South East England, which indicate a mean rainfall of 55mm per month during the growing season.

- **Operational Resilience:** This rainfall provides an average monthly "recharge" of **109,296 Liters** (2,208m² x 0.055m x 0.9 run-off coefficient).
- **Sufficiency Statement:** In a standard month, the net draw on stored water is only 51,000L. The 196,000L tanks therefore provide a 3.8-month buffer under average conditions and a **1.2-month buffer** under total drought conditions (zero rainfall).
- **Attenuation benefit:** A Dual Benefit arises from harvesting from 2,208m² of roof which means we are effectively removing that entire surface area from the site's surface water drainage system. The 196,000L storage capacity acts as significant on-site attenuation. By capturing 100% of the run-off from Glasshouses 1-3, the development reduces the hydraulic loading on local drainage infrastructure during peak storm events.

2.3 Application & Treatment

To satisfy Policy DP42's efficiency requirements, watering is planned to be conducted via hand-watering. This precision method ensures water is only applied to plants showing biological need, eliminating the 20-30% wastage common in automated "blanket" irrigation.

All harvested water is treated via filters and UV sterilization prior to use.

3. Potable Supply: Domestic & Laboratory Efficiency

Mains water is reserved for essential welfare and research functions. General efficiency is delivered through the following Fittings Schedule:

Area	Fitting Type	Specification
Welfare	2x Gender-Neutral Toilets and WHB	Dual-flush (4.5/3L). Aerated flow-restricted tap (<5L/min).
Tea Point	1x Sink Tap	Aerated flow-restricted tap (<5L/min).
Labs (GH3/4)	2x Lab Sinks	Precision flow-control laboratory taps.
Potting (GH1/3)	4x General-use Sinks	Standard Pillar Taps. Usage managed via operational protocols to ensure taps are not left running during equipment cleaning.
Horticulture	Mechanical Potwash	500L recirculating tank; refilled once per week.

4. Infrastructure Adequacy & Protection

4.1 Existing Mains Sufficiency

The site connects to an existing 90mm mains supply currently serving the Millennium Seedbank (current use: 106m³/month).

- **Commentary:** The new domestic demand (toilets, tea point, and weekly Potwash refill) is estimated at less than 5m³ per month. This represents an increase of less than 5% over current usage. A 90mm main is vastly over-sized for this combined volume, ensuring that WCRN has adequate supply without any detrimental impact on local water pressure or the operations of the Millennium Seedbank.

4.2 Technical Backflow Prevention (Category 5)

In accordance with Water Supply (Water Fittings) Regulations, a **Type AB air gap** (Category 5 protection) will be utilized for the mains-to-tank top-up. This ensures a permanent, non-mechanical physical break between the mains supply and the harvested rainwater, providing the highest level of protection against back-siphonage or cross-contamination."

5. Management & Future Resilience

- **Maintenance:** Gutters and filters will be cleared/serviced quarterly to ensure maximum catchment efficiency.
 - **Leak Detection:** Staff will perform weekly visual inspections of all potting sinks and irrigation outlets and raise request for repairs via our maintenance helpdesk system.
 - **Future Resilience:** The project includes provision for a future secondary non-mains connection to the Wakehurst lakewater system, further insulating the development from future water stress.
 - **Monitoring and Reporting:** The Kew Sustainability team will maintain a log of mains water meter readings compared to estimated RWH usage. This data will be used to optimize the system and ensure the development continues to accord with both Kew's water reduction targets and the water-reduction targets of Policy DP42 throughout its operational life of Policy DP42 throughout its operational life."
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Declaration: The development shall proceed in accordance with these approved details to ensure compliance with Policy DP42.

Appendix A: Irrigation Schematic 6787-CHOK-00-GF-DR-I-0850-001

General Tolerances:
Dim to no DP = +/-1mm
Dim to 1 DP = +/-0.5mm
Dim to 2 DP = +/-0.1mm



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General Notes:

- Mains Cold Water Services (MCWS)
- Boosted Cold Water Services (BCWS)
- Boosted Irrigation Water
- Rainwater Re-circ
- Lake Water(future)
- Drain - Under Pressure
- GH3 - Prep Area CAT5 Supply
- Drain - Gravity (onto floor outside) (Plant Room only)
- Underground Services
- Isolation Valve
- Solenoid Valve - 24v Ac
- Non Return Valve
- Pressure Gauge
- Differential Pressure Switch
- pH Sensor
- Flow Switch
- Temp Sensor
- Pump
- Variable Speed Drive Pump
- Filter
- Water Meter
- Fire Hydrant
- Hand Watering Point (Irrigation water)
- Hand Watering Point - CAT5 BCWS

E	12-02-26	Updated to reflect comments	AB	TH
D	05-01-26	Glasshouse 1 x HWP removed, notes added.	EL	TH
C	05-12-25	Acid tank changed, notes added.	EL	TH
B	25-11-25	RW tank size changed.	EL	TH
A	30-09-25	First issue.	EL	AB

Rv	Date	Description	Drm	Chk
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Client
Kew Wakehurst

Project
Kew Landsdown Conservation

Drawing Title
Irrigation Schematic

Scale	Date	Drawn	Checked
NTS	30-09-25	EL	AB

Drawing No
6787-CHOK-00-GF-DR-I-0850-001

Drawing Status
Preliminary

Rev
E

