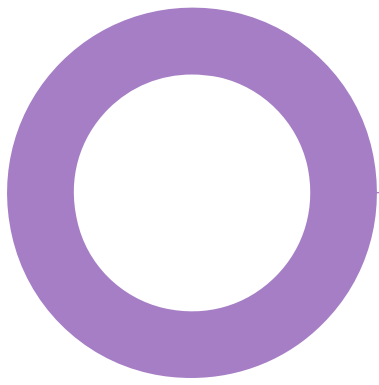




RBG Kew Wakehurst Research and Conservation Nursery
Updated Ventilation & Extraction Statement
Royal Botanic Gardens Kew

Ventilation & Extraction Statement
P01
S3, S73 Documentation update
25/05/2025

Wakehurst

Royal Botanic Gardens
Kew



Document History

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1.0 Introduction

Hoare Lea has been instructed to update the existing Ventilation & Extraction Statement produced in 2022 by Pick Everard for the Research and Conservation Nursery (RACN) on the Wakehurst site of the Royal Botanic Gardens Kew. The purpose of this brief is to demonstrate how the current development proposals plan to address the local planning policy strategic objectives.

The proposed Nursery will replace existing facilities primarily located within the walled Garden at Kew and consolidate a modern and expanded facility on Havelock Farm which Kew acquired in 2012. A detailed design has been generated reflecting the areas, adjacencies and services solutions agreed.

The new facilities will be purpose built to provide a range of environs required for the various research and horticultural projects being undertaken by Kew. This will include a number of large span greenhouses which will have varying levels of compartmentalisation and control for growing conditions. Additionally, a series of support spaces such as areas for logistics and deliveries, potting, outdoor growing spaces (field trials and standoff areas) and support offices and staff welfare facilities.

It should be noted that the learning and development areas and dispatch areas are no longer part of the scheme. This document should be read in conjunction with the Bridge drawings and Hoare Lea Drawings.

2.0 Ventilation Proposals

Ventilation proposals for the development seek to optimise natural ventilation potential and energy efficient ventilation design as far as reasonably and practically possible. This is to include a range of passive measures implemented to reduce the demand for energy throughout the site.

These will include consideration and integration of the following measures:

Natural Ventilation Potential – Optimising natural ventilation opportunity, with the use of actuated natural ventilation openings both in the Glasshouse environments and within auxiliary spaces that have window & rooflight provisions.

These are proposed to operate in a hybrid strategy of operation, that favours natural ventilation to dissipate the CO₂ and raising temperatures within internal spaces, prior to switching to mechanical ventilation and temperature conditioning.

The hybrid proposals shall interlink natural vent actuated systems with the mechanical HVAC systems, to ensure optimum internal space conditioning.

Heat Recovery Technology – Where mechanical ventilation is essential for the operational space, Heat recovery will be implemented from extract air on the ventilation systems, to pre-heat the fresh air supplies serving occupied building areas.

The following clauses summarise the strategy of ventilation for each defined operational area of the site buildings.

For an overview of the systems provided please refer to Hoare Lea drawing

0104349-HLEA-XX-XX-SM-M-057002 and Bridge Ventilation proposals

2.1 Glasshouses (General) - No change to the 2022 proposed ventilation strategy

All glasshouses shall be provided with natural ventilation provision via roof openings. These shall be controlled by room CO₂ sensors and temperature sensors to maintain internal environmental conditions required by the respective growing spaces.

Natural ventilation shall be operated as appropriate for the glasshouse spaces and be able to be closed to fully seal the environment, should the grow conditions require more of a controlled internal temperature and humidity (This will then be delivered via specialist horticultural specific ventilation and conditioning systems).

Process related circulation fans will also be provided as necessary for growing conditions within the Glasshouse compartments. These are to be re-circulation / destratification fans only, with no exhaust to atmosphere.

2.2 Glasshouses (Science High Spec & Quarantine) - No change to the 2022 proposed ventilation strategy

In addition to general provisions of 2.1, specialist horticultural specific mechanical ventilation and conditioning systems shall be provided to maintain the required internal temperature and humidity ranges for the Science High Spec & Quarantine Glasshouse environments. Currently these are identified within Glasshouses 3 & 4 and information is contained within the Bridge documentation.

These areas also require specific filtration and pressurisation regimes for the air flow, which is to be met via mechanical ventilation provisions. Supply & discharge air shall be ducted via weatherproof façade louvres within the Glasshouse compartments.

2.3 Auxiliary Areas - Staff Offices & Facilities – minor change to 2022 document

These auxiliary areas are to be provided with a hybrid strategy of natural ventilation with mechanical ventilation and/or comfort cooling supplementing as necessary.

To optimise natural ventilation potential, windows & rooflights in these spaces are proposed to include actuators (or a system of occupant indication) and passive stack mounted ventilation with solar extract boost has been integrated. There is no mechanical cooling in the areas with passive stack ventilation which is the main horticultural staff offices.

Supplemented Mechanical Ventilation shall be via high level / ceiling void mounted Heat Recovery (MVHR) units within each individual space. Fresh air shall be supplied at 10 l/s/p based on occupancy. MVHR Units shall be controlled via room-based CO2 monitors, with fresh air rate increasing as CO2 levels within the room increase. Supply & discharge air shall be ducted via weatherproof façade louvres.

For the Staff mess kitchenette facilities, local extract shall be provided at an extract rate in compliance with approved document F via a high level extract fan. The extract canopy shall be installed directly above the hob surface, complete with a washable grease filter and be recirculation only. This shall be controlled manually by the user via ON/OFF switch.

2.4 Auxiliary Areas – WCs & Cleaners Stores - No change to the 2022 proposed ventilation strategy

Extract shall be provided at 6 ACH within all WC areas and Cleaners Stores. Extract fans shall be controlled via local PIR sensor for boost operation with setback trickle rate continuous background ventilation. Discharge air shall be ducted via external weatherproof façade louvres.

2.5 Auxiliary Areas – Process Areas & Stores

Where possible, these auxiliary areas are to be provided with a hybrid strategy of natural ventilation with mechanical ventilation and/or comfort cooling supplementing as necessary.

To optimise natural ventilation potential, windows & rooflights in these spaces are proposed to include actuators (or a system of occupant indication) to close the windows when the internal heat gains are too great to dissipate naturally. The hybrid strategy will then switch to mechanical conditioning, either for the rest of the day or until internal temperatures / CO₂ levels are back to an acceptable level.

Mechanical Ventilation shall be via high level / ceiling void mounted Heat Recovery (MVHR) units within each individual space. Fresh air shall be supplied at 10 l/s/p based on occupancy. MVHR Units shall be controlled via room-based CO₂ monitors, with fresh air rate increasing as CO₂ levels within the room increase. Supply & discharge air shall be ducted via weatherproof façade louvres.

For specific operational facilities such as ‘Laboratory, Workshop, Mixing Areas, Seed Cleaning and Pot Washer’, general ventilation local extract shall be provided at exhaust rates as agreed with horticultural specialists and as indicated on the Hoare Lea and Bridge proposals. Systems to be controlled manually by the user via Boost switch with setback trickle rate continuous background ventilation. Discharge air shall be ducted via external weatherproof façade louvres. No process ventilation is included on the Hoare Lea drawings.

2.6 Auxiliary Areas – Dispatch & Arrival

These Areas are no longer part of the scheme

2.7 Learning & Engagement Areas

These Areas are no longer part of the scheme