

Ref: 2084 Date: 15/04/2026

Royal Botanic Gardens
Kew, Richmond
Surrey
TW9 3AE

Subject: Millennium Seed Bank, Wakehurst

Sustainability Statement:

The proposed work includes the replacement of the existing R404A refrigeration system, which has reached the end of its effective operational life span. R404A refrigerant systems are being phased out under current F gas regulations and as such, it will be replaced with a CO₂ system which matches the other existing refrigeration system already located on site. Its replacement is necessary to ensure the continued safe and reliable operation of the cold room's important refrigeration system. The new external unit has also been sized to serve 9No. cold rooms instead of the current 6No., so has allowed for future expansion of the site. Also, new CO₂ systems are typically 20-35% more energy efficient than older R404A plants in moderate or cool climates, leading to a decrease in annual energy costs.

The replacement external unit will be installed at ground level, nearby the small wooded area close to the internal plant. Compared to the existing external units being located on the roof, this allows for shorter, more direct pipework, reducing installation complexity, refrigerant charge, and energy losses. Locating the unit at ground level also removes vertical lift requirements, improving system efficiency by lowering compressor and pumping energy demand. In addition, more stable ambient conditions and reduced solar exposure compared to the existing rooftop location will enhance heat rejection performance. The ground level positions also improves access for maintenance, supporting efficient operation over the system lifecycle, and avoids the need for roof-mounted structural supports, reducing installation impact.

Overall, the proposal represents a like-for-like replacement in terms of function and location, but provides the room for expansion and the removal of the redundant R404A system.