

7. Level 5 Terrace and Garden: Constraints and requirements

Balancing plant health and human comfort



Princess of Wales Conservatory (Zone 1), Royal Botanic Gardens Kew

The controlled environment in the internal garden will create conditions to enable subtropical plants that are not hardy in our local climate to grow. Rather than to raise internal temperatures significantly to accelerate plant growth, the aim is to even out the troughs and peaks of our local climate and to keep the plants just above dormancy.

This will mean maintaining the average ambient temperature within 18-22°C with natural ventilation through openings in the glazing. Temperatures will be lowered (by the same passive ventilation) by approximately 5°C each night, and will not generally fall below 10°C.

HSE guidance recommends a minimum of 16°C, or 13°C if employees are doing physical work. Although there is no maximum temperature given by HSE, the CIBSE guide states that 'indoor operative temperatures over 28°C for long periods will result in increased dissatisfaction and reduced productivity.' The target temperature range for the subtropical garden will fit comfortably within these recommendations.

Relative humidity will be maintained at 60% minimum, with additional fogging applied to dissipate excess heat during warmer months if internal temperatures rise above 25°C. These levels will be similar to external monthly average humidity levels in London (approx. 60-80%). Furthermore, where fogging will be used for evaporative cooling purposes, the fine particle sizes will allow the vapour to dissipate into the air before landing on surfaces or people, so the effect will not be wet or damp.

Taken as a whole, the internal conditions will create a warm and pleasant refuge from the cold, wet winters and a comfortable, shady and well ventilated space during the summer.

Zone 1 of the Princess of Wales conservatory (central shadier zone) provides the closest comparison to the New City Court garden as regards temperature and humidity, though NCC will be slightly less humid than the lily pond area in the summer. The POW often heats up in the morning until the vents are opened, but without sunlight from above, NCC will not be subject to the same levels of solar gain.

By contrast, the Palm House at Kew is maintained to a higher minimum temperature of 18°C, with vents opened at 28°C for human comfort, and a higher relative humidity of 75% minimum. Whereas the Palm House can feel rather warm and steamy to visitors, the internal garden at New City Court will feel pleasant all year round.