

National Railway Museum: Central Hall Sustainability Statement P03: December 2021

- Operational energy demand is being reduced through:
 - **High performance fabric efficiencies** and passive design measures.
 - **Mixed mode ventilation** that allows natural ventilation in the summer months.
 - **MVHR with heat recovery.**
- Overheating analysis has taken place to ensure the building will be thermally comfortable with the combination of daytime and night-time ventilation paths.
- Separate **Air Source Heat Pumps** are proposed for heating and hot water to allow the electrification of heat. Very low GWP refrigerants have been selected for the ASHPs and leak detection will be provided.
- The project is targeting **RIBA 2030 performance levels for energy use.**
- Internal daylighting analysis of the Central Hall and existing surrounding buildings has **informed glazing ratios** in wall fenestration and roof design, including rooflight layout. This will optimise natural daylight within the spaces for improved health and wellbeing, utilise solar gains in winter months and avoid overheating in the summer months.
- Embodied carbon will be reduced as timber/steel frames are inherently low carbon with the choice to expose the structure as much as possible eliminating finishing materials.
- Material choices, especially on the external surfaces, will be selected for durability and resilience to climate change.
- The project is targeting **RIBA 2030 performance level for embodied carbon.**
- Water consumption reductions will go beyond the BREEAM excellent requirements and will be met through **water efficient fittings, water meters and leak detection systems.** This will create at least a 40% water reduction over baseline water consumption.
- Surface water shall be restricted to provide a 30% betterment of the previously developed surface water runoff rate, before discharging to the public sewer. This will be achieved through the installation of **below ground attenuation tank** and (where feasible) **permeable paving.**
- Sustainable waste management will be promoted by encouraging waste **prevention, reuse, recycling, and energy recovery.**
- Ecology opportunities limited on site but will include:
 - Bat boxes.
 - Bird boxes.
 - Swift Bricks.
 - Specification of appropriate tree and shrub planting as part of the proposed landscaping scheme.
- Target 10% improvement in net gain.
- **LED lighting** fittings throughout achieving >100 lumens/watt coupled with lighting strategy incorporating sensors.
- Intention to **report operational energy consumption and embodied carbon** of the building with an aspiration to achieve UKGBC Net Zero Carbon Verification.
- **BREEAM Pre-Assessment** has indicated the project is capable of achieving an **Excellent** rating.