KIDBROOKE PARK ROAD

GREENWICH BUILDS

Sustainability

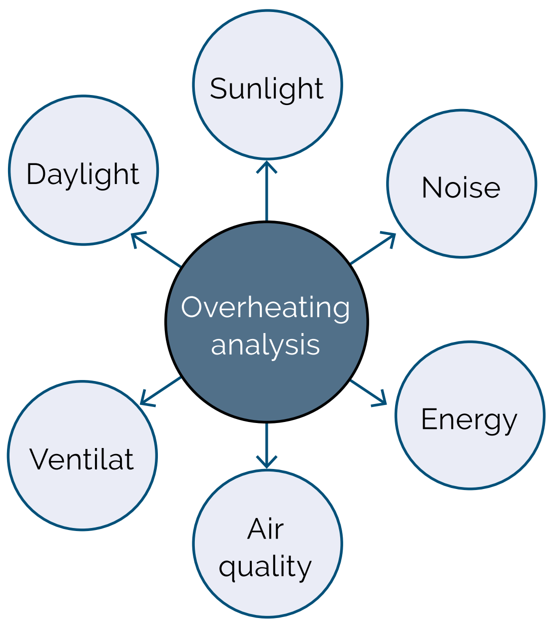
Operational energy

The proposed scheme intends to adopt a range of energy efficiency measures including good levels of insulation, the installation of high performance glazing and energy-efficient lighting to reduce the heating demand. A highly efficient MVHR system will be installed within each home.

A carbon reduction of at least 10% above Building regulations will be achieved through active and passive measures alone ('Be Lean' stage of the Energy Hierarchy). The overall performance will exceed the minimum target of 35%.

The following elements are being considered to maximise the efficiency of the scheme:

- Orientation
- Passive measures
- Improvement of U-values (with attention to the g-value)
- Highly performing glazing
- Size of openings, including frame of windows
- Low air tightness
- Reduction of the energy use intensity
- Highly performing systems for ventilation



Strategies have been designed by adopting an holistic approach to sustainability.

Thermal comfort

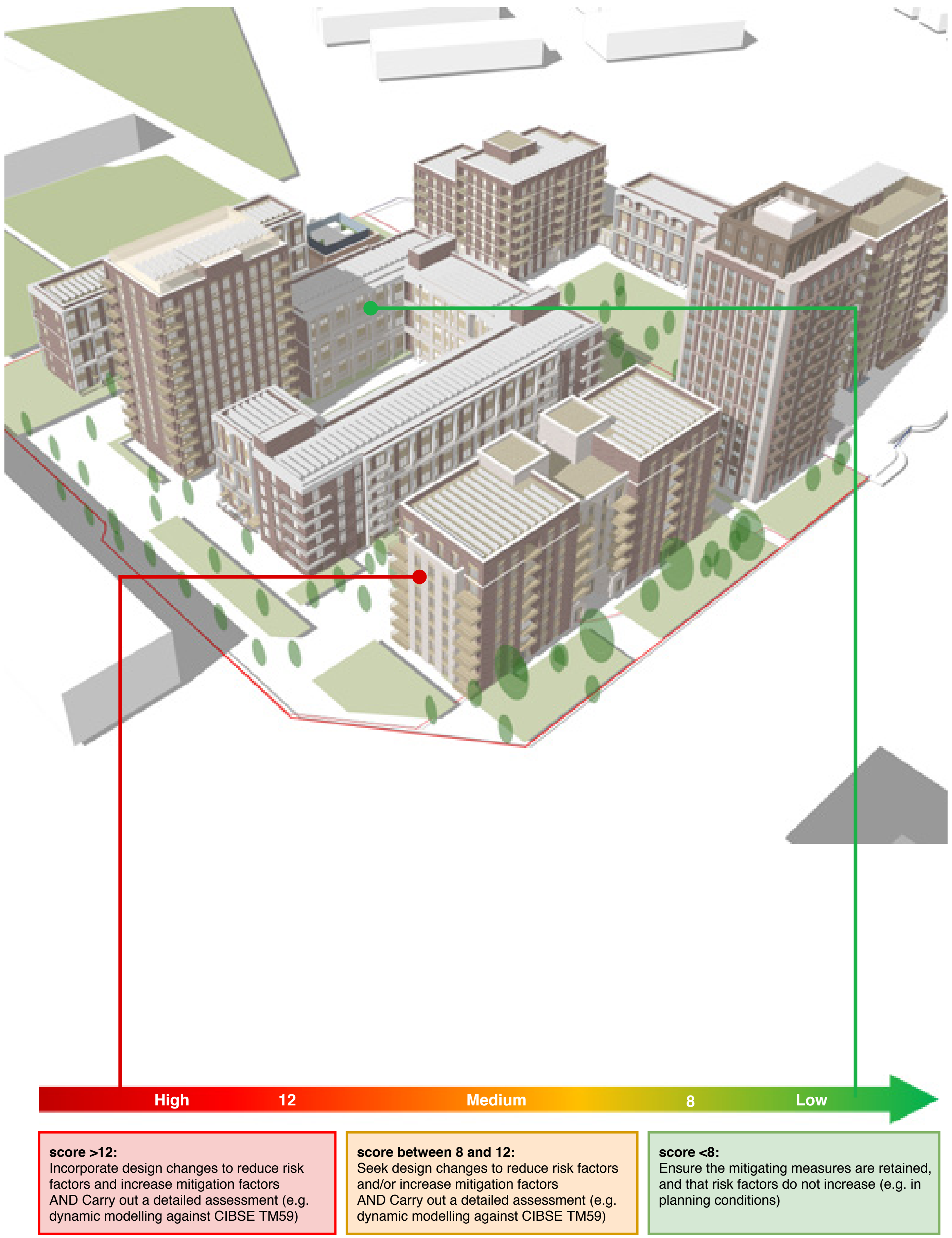
There is an intrinsic link between the acoustics, overheating and ventilation strategy and early modelling opens up opportunities for design. Initial thermal modelling studies have been conducted to ensure that the various technical issues are addressed and designed holistically.

Initial feedback on noise conditions on site is required to clarify the ventilation strategy.

While we do not expect particular restrictions due to noise and air quality across the masterplan, particular attention is required for the dwellings along Kidbrooke Park Road and Old Post Office Lane. The detailed overheating strategy will, therefore, take into consideration the noise generated by trains along the rail lines, the noise from the traffic along Kidbrooke Park Road and the 'A' category roads.
Current strategies which help tackle overheating are:

- Maximisation of dual aspect units which favour cross ventilation
- glazing with a low g-value,
- MVHR units with boost mode
- Recessed windows for shading.
- Maisonettes facing east and west have vertical fins which help reduce external solar gains

Considerations will been given to security and safety, particularly at ground floor.



Embodied Carbon

In the UK, buildings account for 40% of greenhouse gas emissions. Of the annual carbon emissions associated with buildings about 80% is associated with ongoing operational carbon emissions relating to the existing building stock.

The remaining 20% is related to the embodied impact of new construction. As buildings become more efficient, the operational carbon will reduce. This means that embodied carbon will represent a higher proportion of whole life carbon (WLC) than it used to. A Life Cycle Assessment (LCA) is, therefore, required to reduce the embodied carbon of materials.

- LCA analysis
- Option comparison
- Recycled materials
- Materials with recycled content
- Waste management plan

Existing configuration

- The site is currently empty
- There is no opportunity for refurbishment
- Similarly, there is no opportunity for reusing/ recycling materials from the current configuration. However, other circular economy principles can be applied.

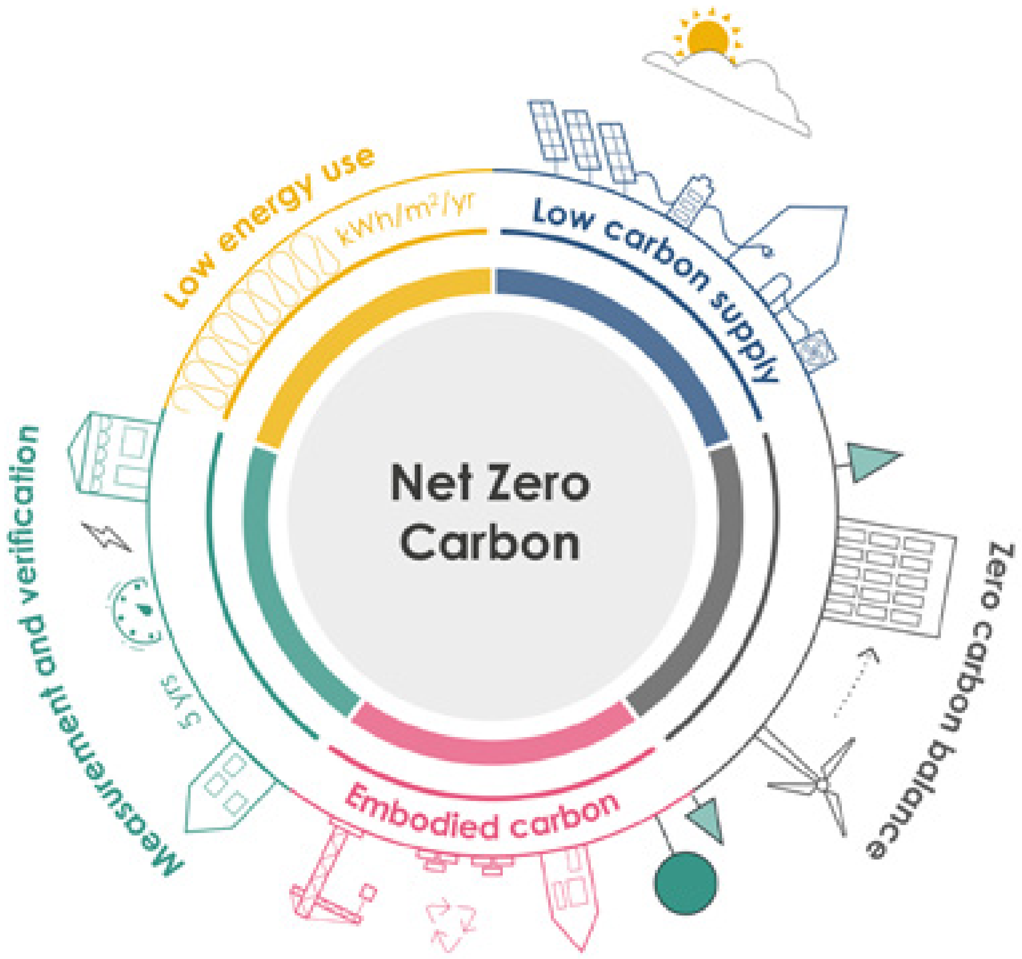


Image adopted from RIBA sustainable outcomes guide and LETI 2019

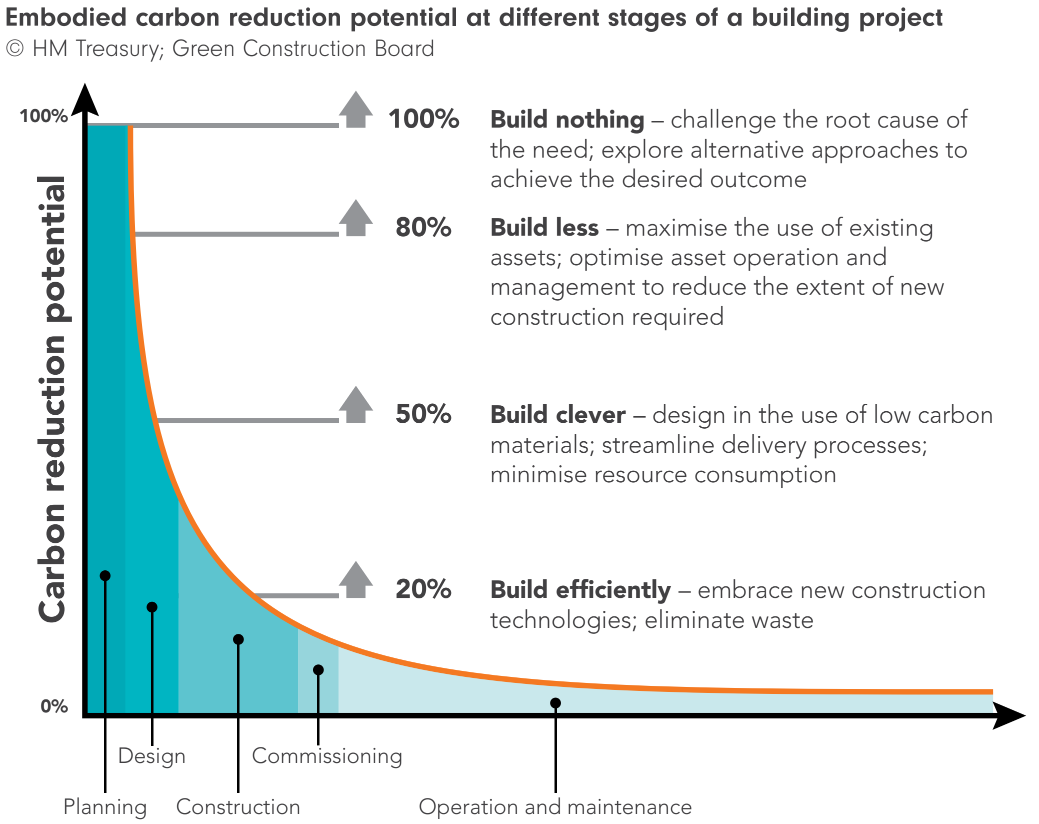


Image from the UKGBC Net Zero Carbon Buildings framework
https://www.ukgbc.org/

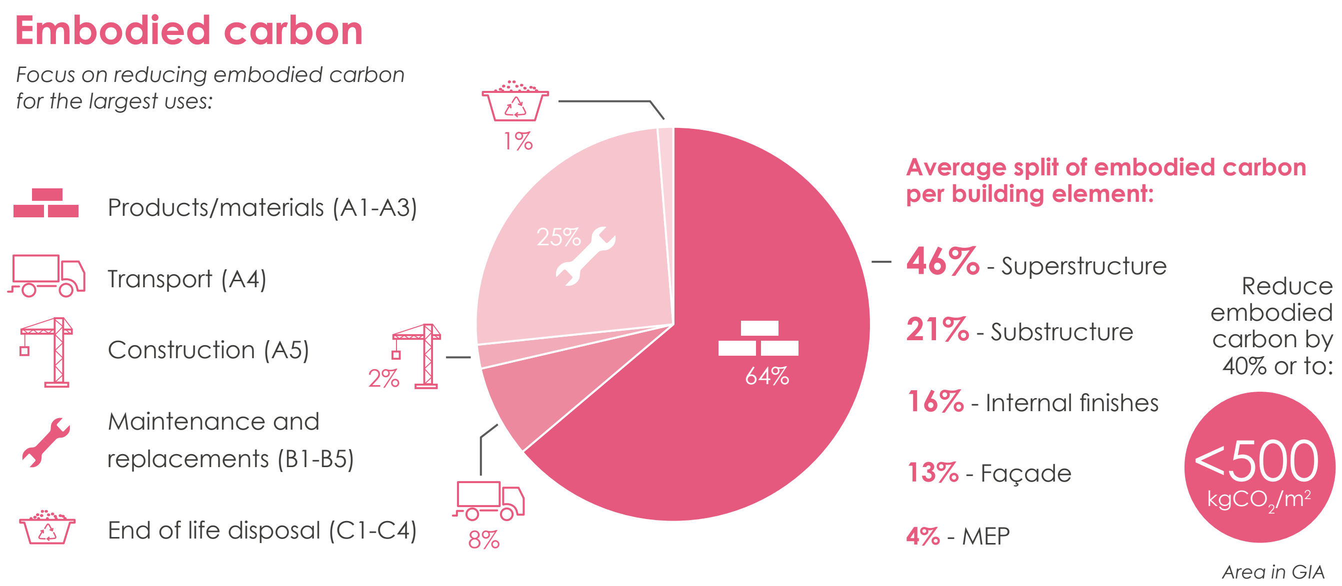


Image from the LETI Guide - Medium scale housing
https://www.ukgbc.org/

Circular Economy

We need a radical change in the way we think about constructing, equipping, using, maintaining, altering and renewing our built environment.
We need a transition from a linear to a circular economy.
This means that we need to avoid or reduce waste and add value:

- Low maintenance
- High quality materials with extended lifespan
- Buildings designed to be used for as long as possible (build to last, build to adapt to changing social, physical and economic environments)
- Adaptability
- Re-purposing
- Recycle construction, demolition an excavation waste
- Recycle at least 65% of municipal waste

Mechanical systems will also need to consider circular economy strategies which will help reduce embodied carbon:

- Avoid over provision of plant (undertake a load assessment)
- Fewer and simpler systems
- Reduce duct runs
- Design for deconstruction and recycling (MEP is replaced 2-3 times during the lifespan of a building)

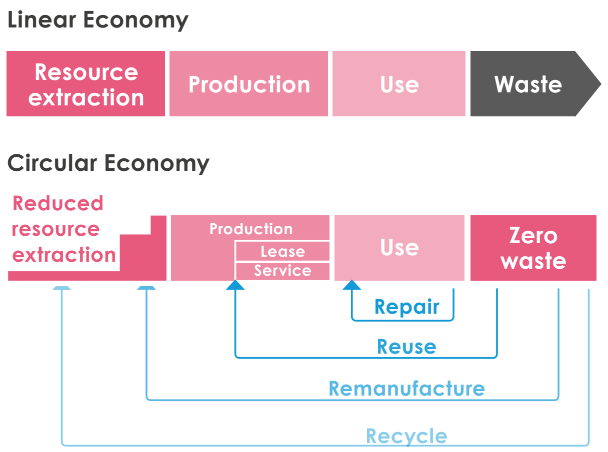
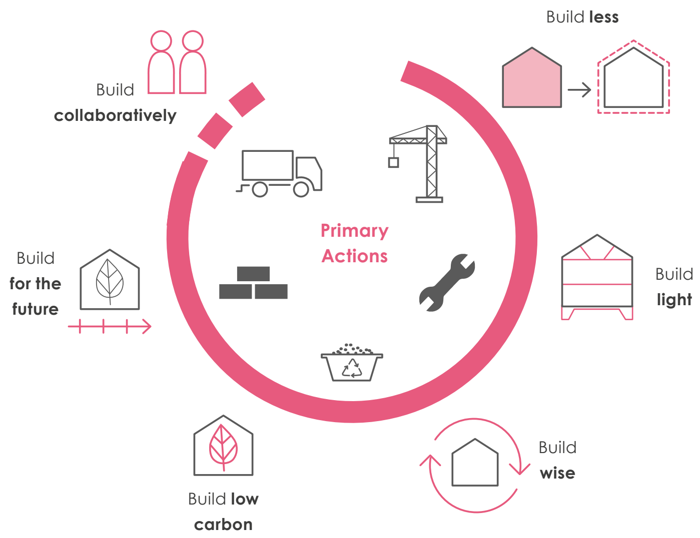


Image from the LETI Embodied Carbon Primer
https://www.leti.london/ecp



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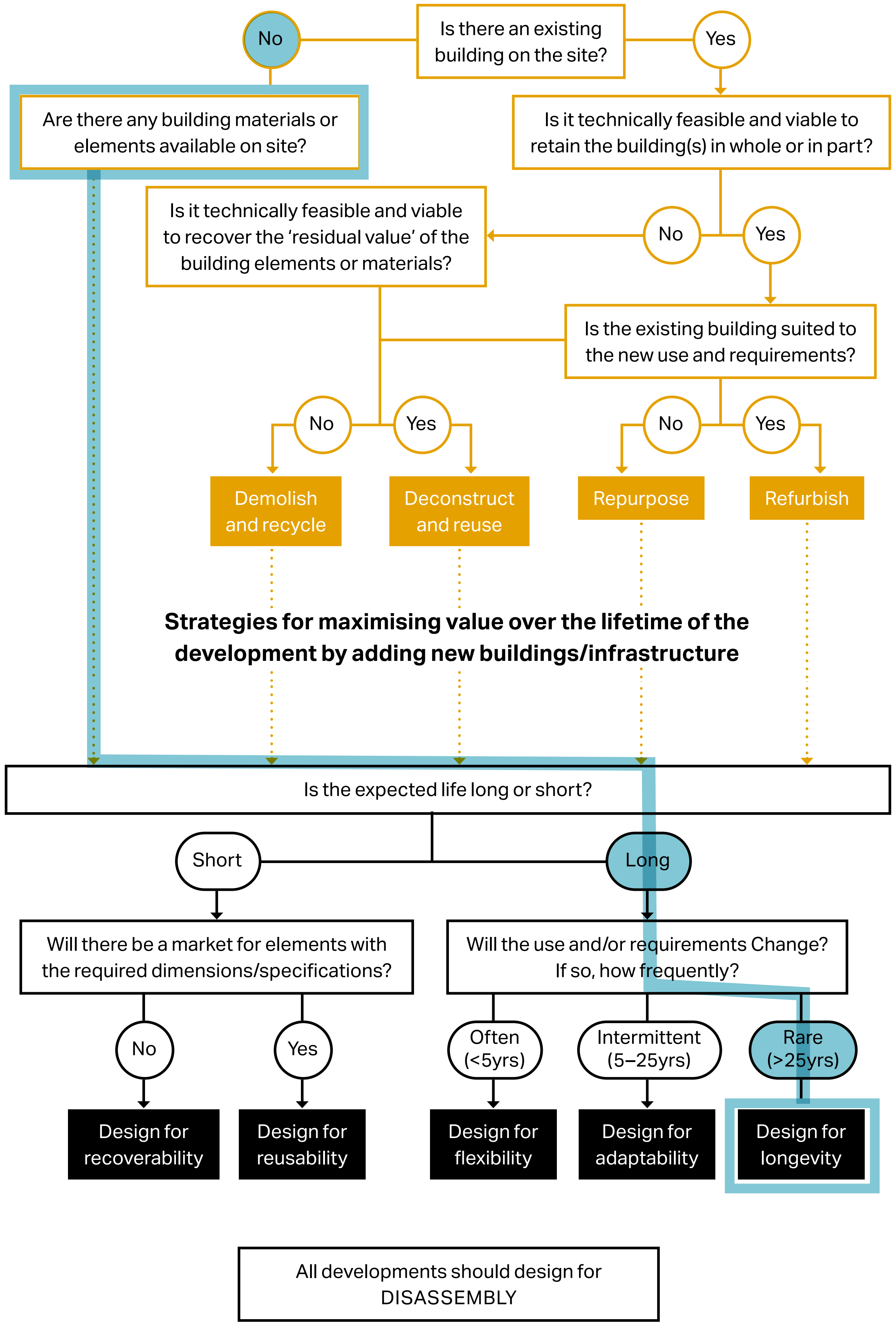

GLA Decision tree

07 Energy Strategy

Operational energy

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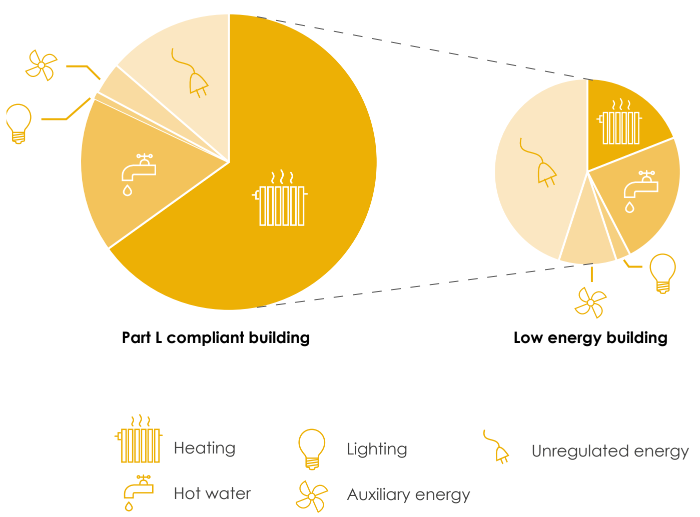
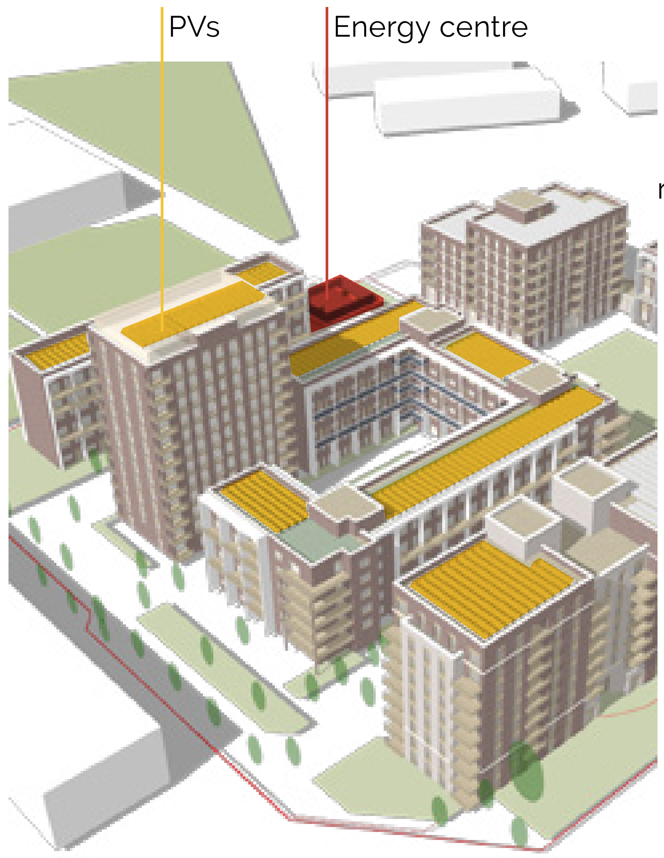
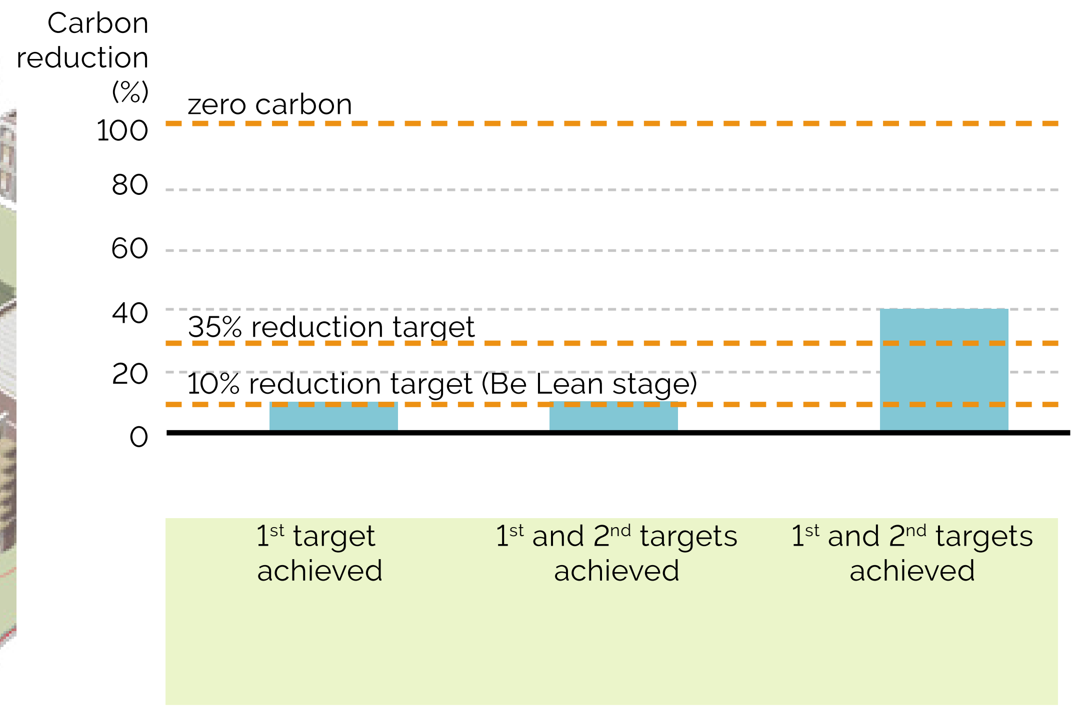


Image from LETI climate emergency design guide





		BE LEAN	BE CLEAN	BE GREEN
CONSTRUCTION	External walls (W/m²K)	0.15		
	Sheltered walls (W/m²K)	0.18		
	Corridor treatment	not heated		
	GF/Exposed floor (W/m²K)	0.1		
	Roof (W/m²K)	0.1		
	Air tightness (m³/h/m² @50 Pa)	3		
	Thermal bridging	ACD+improved lintels and balconies		
GLAZING	Type	Double		
	U-value (W/m²K)	1.3		
	g-value	0.4		
VENTILATION	MEV/MVHR	MVHR (SFP: 0.39)		
HVAC		Communal boiler	Communal boiler	ASHP+Boiler
RENEWABLE ENERGY		None	None	maximised
	Variance (%)	**10%**	**0%**	**30%or more**

Summary of preliminary calculations conducted on representative dwellings