REAL ASSETS

Sustainable Design Brief

For today's investor

AVIVA INVESTORS

Contents

Introduction 3

Sustainability KPIs: Reported at Fund Level 3

Design Standards 4

Priority goals for achieving zero carbon 4

Headline requirements 4

Building energy systems 5

Social value and wellbeing 5

Design principles 6

Passive buildings 6

Power management 7

Low impact materials 7

Contact Details 7

Introduction

The purpose of this Sustainable Design Brief is to promote and improve Sustainable Development, to standardise the approach to Sustainability across the development portfolio and to ensure that real estate funds deliver on the Sustainability KPIs.

We are looking for a concise way to improve standards. One that:

- Doesn't over burden the design team with process
- Focusses on results and achieving and measuring outcomes
- Embeds in existing processes

Sustainability KPIs: Reported at Fund Level

The following KPIs are reported at fund level. This Design Brief has been developed to ensure that developments deliver against these.

1. Reduce carbon emissions from our real estate equity investments by 30% by 2025

- Quarterly carbon emissions (tCO_{2e}) per sector/fund
- Quarterly carbon emissions (tCO_{2e}) measured against ERV
- Percentage total floor area using REGO backed green tariffs
- Energy intensity of new acquisitions (kWh/m^2)
- Total scope three emissions from development activity

2. Reduce energy intensity in our real estate equity investments by 10% by 2025

- Energy intensity (kWh/m^2) by sector/fund
- EPC Ratings per sector/fund
- Energy intensity of new acquisitions (kWh/m^2)

3. Create healthy, safe, fair and accessible employment for our customers, suppliers and communities

- Number of work-related fatalities, reportable injuries and first aid injuries at our occupied buildings or infrastructure assets
- Number of apprenticeships & work experience placements
- Number of initiatives to support long term unemployed
- Number of engagements with schools and colleges on STEM subjects
- % Payment of the Living Wage as a percentage of total supply chain workforce in UK Direct Real Estate
- Total value (£) of Infrastructure Community Grant funds
- Diversity and Inclusion characteristics of our direct suppliers

Design Standards

These design standards cover all building types, some building types naturally perform better than others on particular categories. If all the target and good practice goals are achieved the building will be zero carbon.

Priority goals for achieving zero carbon

1. **Fossil fuel free development**
2. **Achieve target Energy Use Intensity**
3. **Achieve target Embodied carbon**
4. **Net Zero Carbon development through on-site renewables and a quality green tariff**

Headline requirements

- Has the operational energy consumption been predicted for different options or scenarios (e.g. different occupancy patterns and use of servers and catering)?
- Has the most energy efficient (low impact) option been chosen? If not, why not?
- Can operational energy be measured and tracked by Aviva throughout design and operation?
- Has a Net Zero Carbon Plan been written to align with UKGBC Net Zero Definition, considering operational and embodied carbon?

Table 1. **Energy use intensity (based on GIA)**

Type	Minimum standard	Target
Offices	144 kWh/m^2	100 kWh/m^2
Retail – Shopping Centre	255 kWh/m^2	
Retail – High street	111 kWh/m^2	
Industrials	125 kWh/m^2	
Residential	70 kWh/m^2	50 kWh/m^2

Table 2. **Wider environmental impact**

	Minimum standard	Good practice
BREEAM	Excellent	Outstanding
Home Quality Mark (Residential)	Reference HQM	HQM 4 Stars
EPC	B	A
Advanced energy modelling	CIBSE TM54 Use benchmarks to estimate total energy consumption	NABERS Design for Performance or Passive House Planning Package (PHPP)
Total Commercial embodied carbon[1]	1,000kgCO_2/m^2	600kg CO_2/m^2
Total Residential embodied carbon	800 kgCO_2/m^2	500 kg CO_2/m^2

1. (RICS A1-A5, using a BREEAM compliant process and including all building elements including MEP and FFE)

Building energy systems

Table 3. **Energy supply**

	Minimum standard	Target
Energy supply	Fossil fuel free and low temperature (e.g. flow temperatures of 60°C)	20% of energy from on-site renewables
Refrigerant usage	Direct effect life cycle CO_2 equivalent emissions (DELC) of ≤1,000 CO_2-eq/kW	DELC of ≤100 CO_2-eq/kW
EV Charging	Review opportunity with RAW Charging. Install infrastructure to allow future EV charging	

Table 4. **Achieving operational performance for all buildings and where appropriate domestic**

	Minimum standard	Good practice
Metering & data management	Data is logged and stored for 18 months. All metering to be linked to an open protocol BMS and accessible remotely by Aviva. Separate meters required for: Tenant & landlord energy Heating & cooling Ventilation Domestic hot water Lighting Small power Pumps Lifts & escalators Catering Special uses e.g. server rooms	Energy model aligned with metering to allow fine tuning and optimization
Environmental quality	Data is logged and stored for 18 months. BMS logs and stores temperature and CO2 data	BMS logs and stores air quality (RESET Grade B) and light level data
Controls	Systems can be turned down when not needed without compromising efficiency (e.g. lighting and ventilation). Buildings are zoned to ensure energy is not used where it is not needed.	There are extended periods of times when the building operates passively
Enhanced commissioning	Schedule is in place for commissioning and recommissioning to appropriate standards. Meters are clearly labelled with serial numbers and end uses. Meter readings are verified (e.g. manual compared to half hourly, and cross-referencing meters).	Enhanced testing of building fabric e.g. thermographic survey
Handover & verification	First two years of quarterly energy data broken down by end use is supplied to Aviva. A simplified user guide is produced that outlines design intent and systems operation.	Soft landings and POE

Social value and wellbeing

Table 5. **Social value & wellbeing**

	Minimum standard	Good practice
Social value	Social value requirements written into construction and operational contracts	Social value considered during design and during appointment of design team. Project aligned with UKGBC Framework for Defining Social Value
Wellbeing assessment	Reference the WELL Standard in design	Certify using WELL Standard or Fitwel

Design principles

These principles if followed will promote much lower carbon emissions. However, they are not applicable to all situations.

Passive buildings

Building should be designed so that they can run passively some of the time. The longer a building can run with little or no energy input the better.

Table 6. **Commercial Passive design**

	Good practice
Building fabric	Maximise insulation, air tightness and glazing specification
Glazing	Glazing ratio (based on floor area) is between 20% and 30%
Floor depths	7m (depth to enable daylight and natural ventilation)
Ventilation	Mixed mode and demand controlled
Lighting	Daylight sensing and PIR linked
Hot water	Minimise dead legs, specify low flow fittings, pipework insulation
Temperature set points	Design to achieve 22C cooling but enable operation at 26C Design to achieve 21C heating but enable operation at 19C
Lighting set points	Design for CIBSE/BCO with daylighting controls but enable operation at 20% output

Table 7. **Commercial Passive design**

	Good practice
Building fabric	Maximise insulation, air tightness ($3m^3/h.m^2$ at 50 Pa) and glazing specification (1.0 $W/m^2.K$)
Glazing	Glazing ratio (based on floor area) is between 20% and 30%
Form	Prioritise projecting balconies over inset balconies to reduce form factor and thermal bridges
Ventilation	Cross ventilation and secure night time purge is possible. MVHR provides consistent background ventilation.
Construction Details	Accredited thermal bridging
Hot water	Minimise dead legs, specify low flow fittings, pipework insulation, and waste water heat recovery

Power management

- Identify opportunities for battery storage and load shedding

Low impact materials

- Reduce material use by refurbishment, retaining structure and good design
- Use recycled and re-used materials
- Use materials that have been processed less
- Use timber and other biogenic material
- Source bulky materials locally
- Specify cement replacement concrete and recycled steel
- Consider the end of life; design for disassembly, adaption and re-use

Contact details

United Kingdom

Trevor Keeling
St Helen's, 1 Undershaft, London EC3P 3DQ
trevor.keeling@avivainvestors.com

Contact us

Aviva Investors
St Helen's, 1 Undershaft
London EC3P 3DQ
+44 (0)20 7809 6000

www.avivainvestors.com

Important Information

200083-03062022