

Designing for Durability and Resilience

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Executive summary

Introduction

There are a number of credit issues within the BREEAM V6 requirements that address the environmental impacts and climate change impacts on the development and require the design team to consider how developments can be future-proofed and adaptable to such potential impacts. Credit Mat 05 aims to reduce the need to repair and replace materials resulting from damage to exposed elements of the building and landscape.

This report has been produced following a consultation with the design team in March 2025 BREEAM Accredited Professional Becky Armstrong, and subsequent discussions.

Project Summary

The project consists of the erection of two buildings for Flexible Use Classes including Eg (ii) (iii), B2, B8, including servicing, parking access, landscaping.

The BREEAM assessment will be undertaken using the Similar Buildings approach, with a single certificate issued upon completion that lists all assessed units.

The project aims for a BREEAM 'Excellent' rating under the BREEAM New Construction V6 methodology

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Protecting Vulnerable Parts of the Building from Damage

Vulnerable areas and protection

The following vulnerable areas have been identified within the development:

Risk	Area identified	Protection measure specified
High user number areas	- Entrance areas including the main building entrance - Circulation areas, including corridors in the office space - Common areas (e.g. WCs) will be frequently used by all building users	- Kick plates and on internal doors to reduce risk of damage. - Hard wearing floors in the office areas such as durable carpet tile and vinyl. - Ceramic tiles to high traffic entrance areas - Vinyl to wet rooms/WC areas
Vehicle or trolley movements within 1m of the internal building fabric in storage, delivery, corridor and kitchen areas	- Entrance areas including the main building entrance - Circulation areas, including corridors in the office space - Warehouse area	- Kick plates and on internal doors to reduce risk of damage. - Hard wearing floors in the office areas such as durable carpet tile and vinyl. - Ceramic tiles to high traffic entrance areas - Bollards, barriers in dock areas, around service components and along office walls
Parking or manoeuvring areas are within 1 metre of the building façade and where delivery areas or routes are within 2 metres of the façade	- Areas near the delivery/loading doors - Car parking areas near external facade	- Robust external walls as detailed in this report - Raised kerbs, barriers and bollards to protect against vehicular movement around the building to protect the fabric from impact from any vehicle with a measurable overhang of the body from the wheel track. - Robust materials will be specified for the docking areas
Potential malicious damage	- External landscaped areas - External facade	- The site secured by high, robust boundary fencing, - CCTV can be specified as a deterrent.

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Environmental Factors

A number of environmental factors have been identified as having the potential to cause degradation to the building over time. The table below summarises those factors which the assessed development may be affected by, and the potential impact this may have.

	Factors	Material Degradation effects	Impact on development
Environmental agents:	Solar radiation	Fading / discolouration, melting, dimensional change	✓
	Temperature variation	Dimensional change, e.g. swelling or shrinkage.	✓
	Water / moisture	Rotting and corrosion	✓
	Wind	Corrosion and abrasion.	✓
	Precipitation, e.g. rain and snow	Corrosion, salt crystallization and abrasion	✓
	Extreme weather, e.g. high winds, flooding, heavy snow	Corrosion, melting, salt crystallization, abrasion, fading/discolouration and dimensional change, e.g. swelling or shrinkage, blistering.	✓
Biological agents:	Vegetation	Discolouration, rotting, warping and decaying.	X
	Pests, insects	Corrosion, discolouration	X
Pollutants:	Air contaminants	Corrosion, fading	✓
	Ground contaminants	Subsidence, rotting	X

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Solar radiation

The material degradation effects identified are fading/discolouration and dimensional change, e.g. swelling or shrinkage, blistering.

Design measure specified:

The façade will be composite walling and cladding. Durable cladding is specified to resist discolouration. The windows will be aluminium framed glass panels. They will be large scale and polyester powder coated, which makes them heat resistant and prevents warping. External doors will have a robust paint treatment to mitigate against discolouration and fading.

Temperature variation

The material degradation effect identified is dimensional change, e.g. swelling or shrinkage.

Design measure specified:

The design team has decided to use built in movement joints to cope with shrinkage. The units will have typical movement joints built in to allow for swelling.

Water / moisture

The material degradation effects identified are rotting and corrosion.

Design measure specified:

The façade will be composite walling and cladding. The finish will be water repellent and resistant to corrosion. The windows will be polyester powder coated aluminium, which will be resistant to corrosion. External doors will have a robust paint treatment to mitigate against moisture.

Galvanised steel cycle racks could be specified with the aim of avoiding corrosion. In addition, the racks should be covered to avoid them coming into contact with precipitation.

Precipitation

The material degradation effects identified are corrosion and abrasion.

Design measures specified:

The façade will be durable cladding, which is very robust against corrosion and abrasion. The windows will be polyester powder coated aluminium, which will be resistant to corrosion.

Extreme weather conditions: high wind speeds, flooding, driving rain, snow

The material degradation effects identified are corrosion, melting, salt crystallization, abrasion, fading/discolouration and dimensional change, e.g. swelling or shrinkage, blistering.

Design measure specified:

The façade will be composite walling and cladding, reducing the likelihood of wind driving rain into crevices resulting in water ingress. All design is based on current British Standards and Euro codes. The units are designed for an element of snow loading.

Vegetation, pests, insects

Environmental factor deemed to not be applicable to the development.

Air contaminants

The material degradation effects identified are corrosion, rotting and fading.

Design measure specified:

The façade will be composite walling and cladding. External doors will have a robust paint treatment to mitigate against discolouration and fading.

Ground contaminants

No known contaminants from site investigation and as such mitigation measures have not been necessary to protect against this factor.

Should any contaminants be discovered as a result of ground contamination assessments prior to works commencing on site, remediation measures will be implemented as necessary.