

BREEAM PRE- ASSESSMENT REPORT

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EXECUTIVE SUMMARY

A BREEAM Pre-Assessment has been undertaken for NOMA, 3 Angel Square. The building will be assessed under BREEAM New Construction 2018 and will ensure the asset and its wider influence achieve optimal levels of sustainability.

Three credit scenarios have been established for NOMA, 3 Angel Square: 'Default', 'Excellent' and 'Outstanding'. A 'Default' scenario assumes a score attainable by the Project Team without setting significant sustainability benchmarks. The client has confirmed a BREEAM 'Outstanding' rating as the target for the development.

The target score and credit structures detailed in this pre-assessment are based on Mainer Associates' experience of working with the developer and completion of previous pre-assessments for assets on the same site. Following attendance at early-stage Project Team meetings and provision of detailed design documentation, this pre-assessment will be updated accordingly to offer a truer reflection of the sites potential level of sustainability.

The graphic below confirms the final BREEAM rating each scenario would achieve:

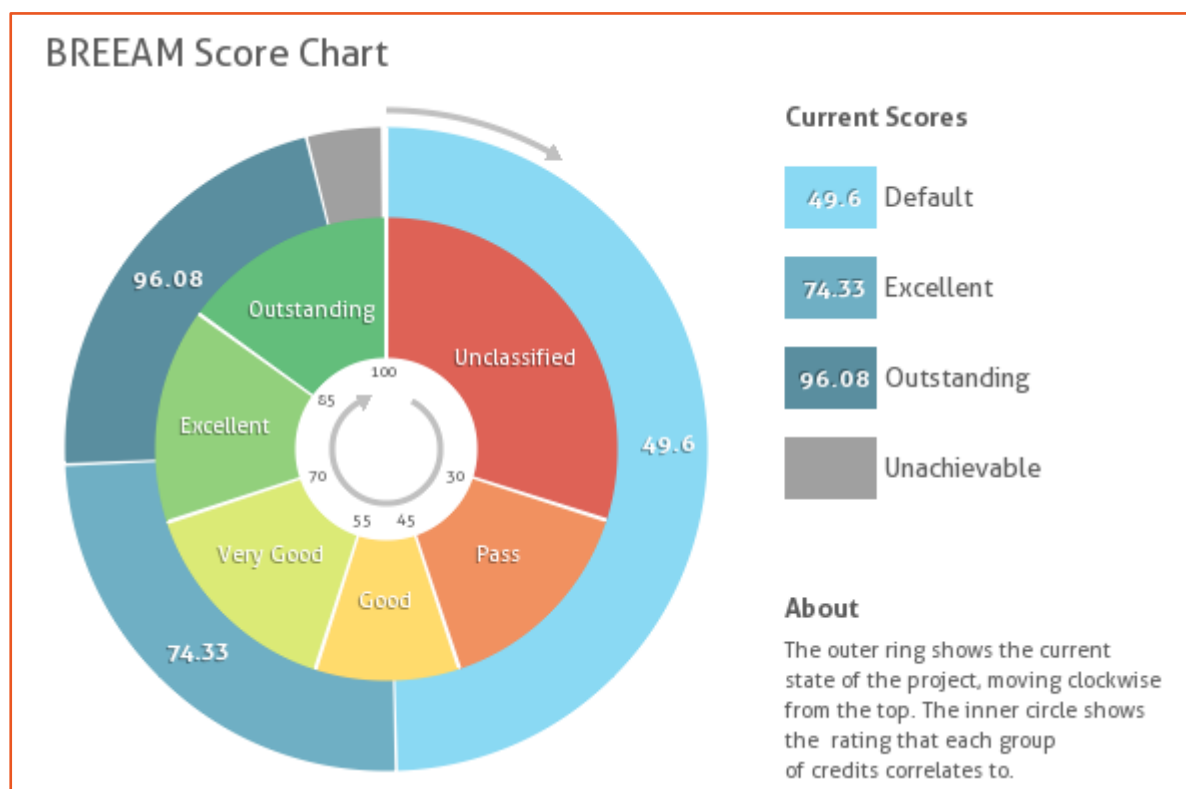


Image 1.0: BREEAM Rating Scenarios



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1.0 PROJECT BRIEF

The Proposed Development comprises the construction of two office-led buildings (Use Class Egi) with an ancillary gym, commercial retail uses at lower levels, a flexible restaurant and / or office space at Level 12 of 2 Angel Square, and a flexible commercial unit at Upper Ground Floor Level of 3 Angel Square allowing for ancillary seminar space and / or Sui Generis Use Class (t) Cinema space, with associated car and cycle parking, public realm and access arrangements (the “Proposed Development”) at NOMA.

The site sits between Manchester’s inner-city ring road (A665), Rochdale Road and Angel Street. Development of NOMA, 3 Angel Square will contribute the next phase of NOMA’s regeneration of the Angel Square area. NOMA is a 20-acre Masterplan creating new offices, shops, restaurants, and homes in what is currently a predominantly under-utilised area of Manchester. This development will be a significant addition to the areas local vernacular and help create a new vibrant inner-city district.

The building totals 11 stories above the lower and upper ground floors. The lower ground floor features the reception area with passenger lifts and a car park with a small allocation of 15 parking spaces, 10% of which will be dedicated to electric vehicles. The development will promote sustainable transport further through provision of 148 cycle storage spaces, accompanied by adequate cyclist facilities. This floor also accommodates two commercial retail units and ancillary plant and waste and recycling facilities..

The upper ground floor houses the upper floors of the two commercial retail units, an ancillary gym and a flexible seminar and / or cinema space. Floors 1-11 comprise open plan office space with a central core with sanitaryware areas and passenger lifts. 3 Angel Square offers 29,841.m² of office floor space. Level 11 features a roof terrace offering occupants a shared outside space.

The development is a fully fitted new build. This Pre-Assessment has been undertaken using the BREEAM 2018 New Construction scheme. We understand the client has set BREEAM ‘Outstanding’ as the target and will consider credits for a higher BREEAM score under an additional credit scenario. Mainer Associates have provided an additional scenario in this report to reflect credits the Project Team has the potential to achieve.

This Pre-Assessment report has therefore identified a set of credits that will be required for an ‘Outstanding’ rating, and a separate set of credits required for a more onerous, yet attainable, additional credit score. The more onerous credits are detailed in section 3.



SITE-RELATED CREDITS



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2.0 SITE-RELATED CREDITS

This section outlines credits that Mainer Associates have anticipated are likely to be achieved based on current design proposals and site.

Tra 01: Travel Plan

We expect a site-specific travel plan to be developed. This plan should include existing infrastructure and travel patterns, current cyclist facilities and walkability, site accessibility by public transport, disabled access, and access to local amenities. Critically, the plan should also identify avenues to improve sustainable modes of transport available to building occupants during the building's operating hours.

The NOMA, 3 Angel Square development is within proximity to major transport links in Manchester city centre, including Manchester Victoria Station, Shudehill Bus Station and the city's Metrolink infrastructure. We have therefore assumed the Project Team will ensure a Travel Assessment of the site is completed to guide the implementation of a Travel Plan for the building's occupants and management team. This would gain 2 credits for Tra 01.

Tra 02: Sustainable Transport Measures

BREEAM 2018 UK New Construction has re-structured the transport category. Tra 02 'Sustainable Transport Measures' now awards credits based on improvements made to sustainable transport options and the sites accessibility index. Points are allocated to different sustainable transport measures implemented. The project will accumulate points and corresponding credits in relation to the type and number of measures developed.

Mainer Associates will conduct an initial study into the sites accessibility to determine its Accessibility Index, due to the developments location we expect this to be high. Mainer's experience with the client on previous developments leads us to believe numerous enhancements to sustainable transport measures will be opted for. The following table has been established to offer a tailored set of potential sustainable transport measures that we feel can achieve 8 credits:

Table 1.0 details potential sustainable transport measures.

**Table 1.0: Sustainable Transport Measures**

Assessment Option	Public Transport Measures	Points
1	Demonstrate an increase over the existing Accessibility Index. This could be through provision of a diverted bus route, a new or enhanced bus stop, or other similar solutions.	3
2	Provide a public transport information system in a publicly accessible area.	1
Assessment Option	Private Transport Measures	Points
4	Provide electric recharging stations of a minimum of 3kW for at least 10% of the total car parking capacity for the development.	1
5	Set up a car sharing group or facility to facilitate and encourage building users to car share. Raise awareness of the sharing scheme with marketing and communication materials Provide priority spaces for car sharers for at least 5% of the total car parking capacity for the development. Locate priority parking spaces nearest the development entrance used by the sharing scheme participants.	1
Assessment Option	Active Travel Measures	Points
6	During preparation of the brief, the design team consults with the local authority (LA) on the state of the local cycling network and public accessible pedestrian routes, to focus on whichever the LA deems most relevant to the project, and how to improve it. Agree and implement one proposition chosen with the local authority. The proposition supported by the development is additional to existing local plans and has a significant impact on the local cycling network or on pedestrian routes open to the public.	2
7	Install compliant cycle storage spaces to meet the minimum levels set out on the basis of anticipated building occupancy.	1
8	Option 7 must be achieved. Provide at least two compliant cyclists' facilities for the building users: • Showers - 1/10 storage spaces • Changing facilities • Lockers 1/storage space • Drying spaces	1
9	Existing Amenities: At least three existing accessible amenities are present. These may be appropriate food outlets, access to cash, access to an outdoor open space access to recreation or sports facility, pharmacy, GP, or postal service.	1
10	Enhanced Amenities: Ensure a minimum of one new accessible amenity is provided.	2

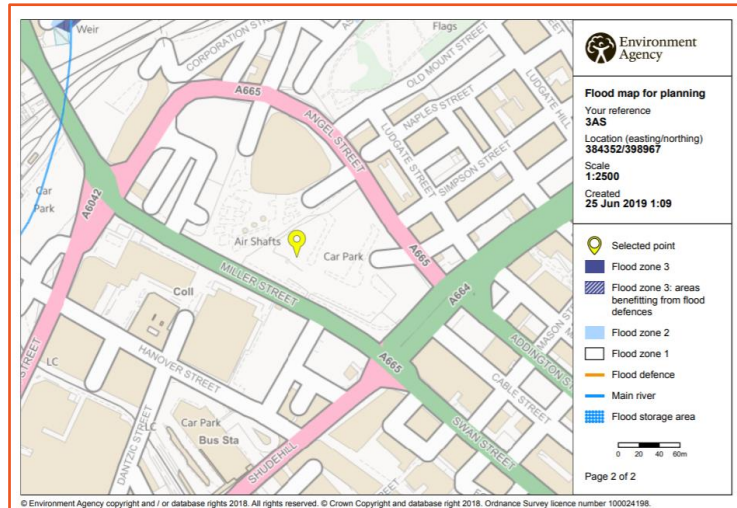


Image 3.0: Environment Agency Flood Map for Planning – 3 Angel Square



CREDIT TABLE



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3.0 CREDIT TABLE

The following scenarios are outlined in the Table 2.0:

Available: Summary of all available credits.

Default: Credits the development would be expected to achieve without BREEAM expertise and significant benchmarks.

Excellent: Credits required in order to achieve a BREEAM 'Excellent' rating. The credits targeted in this scenario are detailed in Appendix B. Appendix B provides critical detail on the credits that must be achieved to gain the Excellent rating.

Outstanding: Credits required in order to achieve a BREEAM 'Outstanding' rating. The credits targeted are detailed in Appendix B. Appendix B provides critical detail on the credits that must be achieved to gain the Excellent & outstanding ratings.

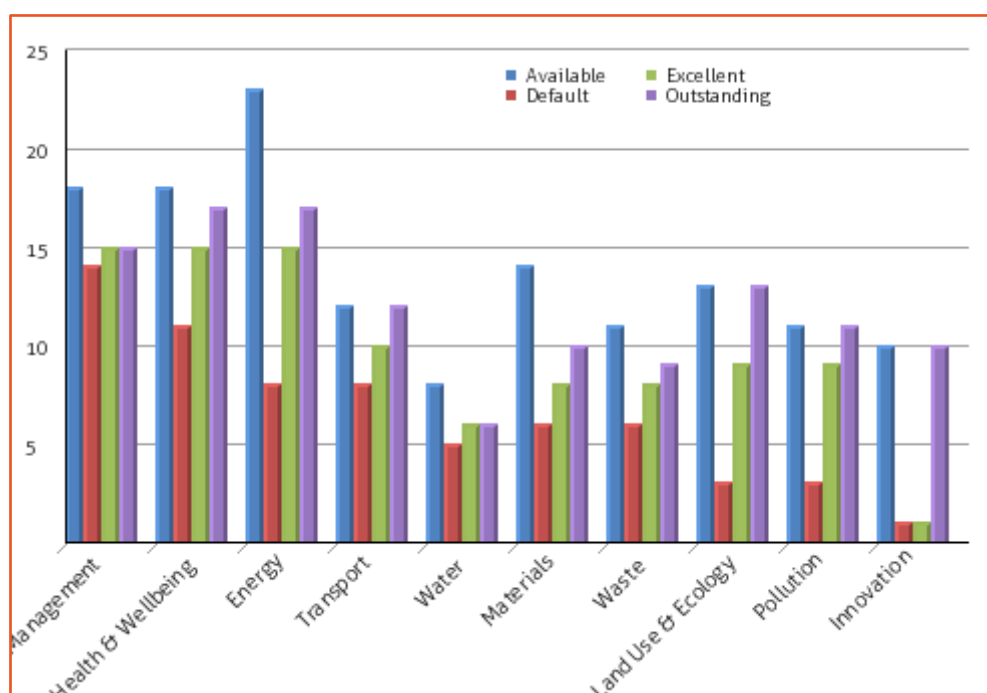


Image 4.0: Available, Excellent and Outstanding Result Graph



The following table outlines the number of credits targeted/included under each scenario. Highlighted issues in **green** indicate where additional credits are available.

Table 2.0: NOMA, 3 Angel Square Credit Summary Table

	Available	Default	Excellent	Outstanding
Man 01 - Project brief and design	4	4	4	4
Man 02 - Life cycle cost and service planning	4	1	1	1
Man 03 - Responsible construction practices	6	5	6	6
Man 03 - Exemplary(1) - Responsible construction practices	1	1	1	1
Man 04 - Commissioning and handover	4	4	4	4
Standard Management Credit Total:	18	14	15	15
Exemplary Management Credit Total:	1	1	1	1
% Management Total (Standard + Exemplary):	11.98	9.54	10.15	10.15
Hea 01 - Visual comfort	5	1	3	4
Hea 01 - Exemplary(1) - Visual comfort	1	0	0	0
Hea 01 - Exemplary(2) - Visual comfort	1	0	0	0
Hea 02 - Indoor air quality	4	3	4	4
Hea 02 - Exemplary(1) - Indoor air quality	1	0	0	1
Hea 04 - Thermal comfort	3	3	3	3
Hea 05 - Acoustic performance	3	3	3	3
Hea 06 - Security	1	1	1	1
Hea 06 - Exemplary(1) - Security	1	0	0	1
Hea 07 - Safe and healthy surroundings	2	0	1	2
Standard Health & Wellbeing Credit Total:	18	11	15	17
Exemplary Health & Wellbeing Credit Total:	4	0	0	2
% Health & Wellbeing Total (Standard + Exemplary):	17.86	8.47	11.55	15.09
Ene 01 - Reduction of energy use and carbon emissions	13	1	8	10
Ene 01 - Exemplary(1) - Reduction of energy use and carbon emissions	3	0	0	0
Ene 01 - Exemplary(2) - Reduction of energy use and carbon emissions	2	0	0	1
Ene 02 - Energy monitoring	2	2	2	2
Ene 03 - External Lighting	1	1	1	1
Ene 04 - Low carbon design	3	2	2	2
Ene 06 - Energy efficient transportation systems	2	2	2	2
Ene 08 - Energy efficient equipment	2	0	0	0
Standard Energy Credit Total:	23	8	15	17



Exemplary Energy Credit Total:	5	0	0	1
% Energy Total (Standard + Exemplary):	20.87	5.52	10.35	12.73
Tra 01 - Transport assessment and travel plan	2	2	2	2
Tra 02 - Sustainable transport measures	10	6	8	10
Standard Transport Credit Total:	12	8	10	12
Exemplary Transport Credit Total:	0	0	0	0
% Transport Total (Standard + Exemplary):	9.96	6.64	8.30	9.96
Wat 01 - Water consumption	5	2	3	3
Wat 01 - Exemplary(1) - Water consumption	1	0	0	0
Wat 02 - Water monitoring	1	1	1	1
Wat 03 - Water leak detection	2	2	2	2
Standard Water Credit Total:	8	5	6	6
Exemplary Water Credit Total:	1	0	0	0
% Water Total (Standard + Exemplary):	7.96	4.35	5.22	5.22
Mat 01 - Environmental impacts from construction products - Building life cycle assessment (LCA)	7	2	2	4
Mat 01 - Exemplary(1) - Environmental impacts from construction products - Building life cycle assessment (LCA)	1	0	0	1
Mat 01 - Exemplary(2) - Environmental impacts from construction products - Building life cycle assessment (LCA)	1	0	0	1
Mat 01 - Exemplary(3) - Environmental impacts from construction products - Building life cycle assessment (LCA)	1	0	0	1
Mat 02 - Mat 02 Environmental impacts from construction products - Environmental Product Declarations (EPD)	1	0	1	1
Mat 03 - Responsible sourcing of construction products	4	2	3	3
Mat 03 - Exemplary(1) - Responsible sourcing of construction products	1	0	0	0
Mat 05 - Designing for durability and resilience	1	1	1	1
Mat 06 - Material efficiency	1	1	1	1
Standard Materials Credit Total:	14	6	8	10
Exemplary Materials Credit Total:	4	0	0	3
% Materials Total (Standard + Exemplary):	18.98	6.42	8.56	13.70
Wst 01 - Construction waste management	5	3	4	4
Wst 01 - Exemplary(1) - Construction waste management	1	0	0	0
Wst 02 - Use of recycled and sustainably sourced aggregates	1	0	0	0
Wst 02 - Exemplary(1) - Use of recycled and sustainably sourced aggregates	1	0	0	0
Wst 03 - Operational waste	1	1	1	1
Wst 04 - Speculative finishes (Offices only)	1	0	0	1



Wst 05 - Adaptation to climate change	1	0	1	1
Wst 05 - Exemplary(1) - Adaptation to climate change	1	0	0	1
Wst 06 - Design for disassembly and adaptability	2	2	2	2
Standard Waste Credit Total:	11	6	8	9
Exemplary Waste Credit Total:	3	0	0	1
% Waste Total (Standard + Exemplary):	8.94	3.24	4.32	5.86
LE 01 - Site selection	2	1	1	2
LE 02 - Identifying and understanding the risks and opportunities for the site	2	0	1	2
LE 02 - Exemplary(1) - Identifying and understanding the risks and opportunities for the site	1	0	0	1
LE 03 - Managing negative impacts on ecology	3	0	2	3
LE 04 - Change and enhancement of ecological value	4	1	3	4
LE 04 - Exemplary(1) - Change and enhancement of ecological value	1	0	0	1
LE 05 - Long term management and maintenance	2	1	2	2
Standard Land Use & Ecology Credit Total:	13	3	9	13
Exemplary Land Use & Ecology Credit Total:	2	0	0	2
% Land Use & Ecology Total (Standard + Exemplary):	15	3	9	15
Pol 01 - Impact of refrigerants	3	0	2	3
Pol 02 - Local air quality	2	0	1	2
Pol 03 - Flood and surface water management	5	2	5	5
Pol 04 - Reduction of night time light pollution	1	1	1	1
Standard Pollution Credit Total:	11	3	9	11
Exemplary Pollution Credit Total:	0	0	0	0
% Pollution Total (Standard + Exemplary):	7.92	2.16	6.48	7.92
AI - Approved Innovation	1	0	0	0
AI - Innovation Credit Total:	0	0	0	0
% Innovation Total (Standard + Exemplary):	1	0	0	0
OVERALL TOTALS:		65	96	120
% OVERALL SCORE TOTALS:		49.34	73.93	95.63

4.1 Additional Credits

This section identifies and explains additional credits in further detail. These should be taken into consideration, with appropriate ones added to the targeted scenario. The recommended credits are highlighted green in Table 2.0 above.



Man 05: Aftercare

This credit requires the client or building occupier to carry out a Post Occupancy Evaluation (POE) exercise one year after the building is substantially occupied. This gains comprehensive in-use performance feedback and identifies gaps between design intent and in-use performance. The aim is to highlight any improvements or interventions that need to be made and to inform operational processes.

An independent party carries out the POE covering:

1. A review of the design intent and construction process.

Feedback from a wide range of building users including facilities management on the design and environmental conditions of the building covering:

2. Internal environmental conditions (light, noise, temperature, air quality).
3. Control, operation, and maintenance.
4. Facilities and amenities.
5. Access and layout.
6. Energy and water consumption.
7. Other relevant issues, where appropriate.
8. The independent party provides a report with lessons learned to the client and building occupiers.

The client or building occupier commits funds to pay for the POE in advance. Evidence of the appointment of the independent party and schedule of responsibilities which fulfils the BREEAM criteria are acceptable to demonstrate compliance.

Post-Occupancy Evaluation (POE) Definition:

POE is also known as Building Performance Evaluation (BPE).

The POE is used to improve the building operation, occupants' comfort and other areas based on its outcomes.

Therefore, the POE provides suggestions on potential improvements, including, but not limited to the following:

1. Re-commissioning activities
2. Measures that maintain or improve end users' comfort and productivity
3. Health and safety



A POE can also be used as part of the stakeholder consultation at the briefing stage for a new building or the refurbishment of an existing one, in cases where the building occupants are the same. This can be achieved through the use of a questionnaire or workshops to highlight lessons from the old or existing building that could be considered in the design of the new project.

Hea 01: Visual Comfort – View Out

To achieve the view-out credit the building must be designed to meet the following criteria:

1. 95% of the floor area in 95% of spaces for each relevant building area is within 8 m of an external wall. The external wall has a window or permanent opening that provides an adequate view out.
2. The window or opening must be $\geq 20\%$ of the surrounding wall area. Where the room depth is greater than 8 m, compliance is only possible where the percentage of window or opening is the same as, or greater than, the values in Table 1.0 of BS 8206: part 2⁽³²⁾

View out – Relevant Building Areas:

1. Areas with workstations or benches or desks for building users.
2. Close work will be undertaken, or visual aids will be used.

Hea 01: Visual Comfort – Internal and External Lighting Levels, Zoning and Control (Exemplary)

To achieve this credit, lighting in each zone can be manually dimmed by occupants down to 20% of the maximum light output using dimmer switches positioned in accessible locations. Dimming and control gear should avoid flicker and noise.

Hea 02: Indoor Air Quality – Emissions from Building Products (Exemplary)

An exemplary level credit can be achieved where all of the product types listed in Table 3.0 meet the emission limits, testing requirements and any additional requirements also listed.

Table 3.0: Emission Criteria by Product Type

Interior paints and coatings	
Emission limit* Formaldehyde	$\leq 0.06 \text{ mg/m}^3$
Total volatile organic compound (TVOC)	$\leq 1.0 \text{ mg/m}^3$

**Table 3.0: Emission Criteria by Product Type**

Category 1A and 1B carcinogens	$\leq 0.001 \text{ mg/m}^3$
Testing requirement	EN 16402 or ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1
Additional requirements	Meet TVOC content limits (See Table 5.13) Paints used in wet areas (e.g. bathrooms, kitchens, utility rooms) should protect against mould growth (See Methodology)
Wood-based products (including wood flooring)	
Emission limit* Formaldehyde	$\leq 0.06 \text{ mg/m}^3 \text{ m}^3$ (Non-MDF) $\leq 0.08 \text{ mg/m}^3$ (MDF)
Total volatile organic compound (TVOC)	$\leq 1.0 \text{ mg/m}^3$
Category 1A and 1B carcinogens	$\leq 0.001 \text{ mg/m}^3$
Testing requirement	ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1 or EN 717-1 (formaldehyde emissions only)
Additional requirements	N/A
Flooring materials (including floor levelling compounds and resin flooring)	
Emission limit* Formaldehyde	$\leq 0.06 \text{ mg/m}^3$
Total volatile organic compound (TVOC)	$\leq 1.0 \text{ mg/m}^3$
Category 1A and 1B carcinogens	$\leq 0.001 \text{ mg/m}^3$
Testing requirement	ISO 10580 or ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1
Additional requirements	N/A
Ceiling, wall, and acoustic and thermal insulation materials	
Emission limit* Formaldehyde	$\leq 0.06 \text{ mg/m}^3$

**Table 3.0: Emission Criteria by Product Type**

Total volatile organic compound (TVOC)	$\leq 1.0 \text{ mg/m}^3$
Category 1A and 1B carcinogens	$\leq 0.001 \text{ mg/m}^3$
Testing requirement	ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1
Additional requirements	N/A
Interior adhesives and sealants (including flooring adhesives)	
Emission limit* Formaldehyde	$\leq 0.06 \text{ mg/m}^3$
Total volatile organic compound (TVOC)	$\leq 1.0 \text{ mg/m}^3$
Category 1A and 1B carcinogens	$\leq 0.001 \text{ mg/m}^3$
Testing requirement	EN 13999 (Parts 1-4) or ISO 16000-9 or EN 16516 or CDPH Standard Method v1.1

Ene 01: Reduction of Energy Use and Carbon Emissions

This credit aims to encourage the reduction of operational energy demand. Ene 01 is now split into two assessment parts, the first concerns a calculation of the as-designed and as-built operational energy performance ratio. The second section requires completion of further detailed modelling of operational energy after holding an energy performance workshop.

A minimum of 6 credits is a mandatory requirement for an Outstanding rating when assessing the energy performance ratio. The current target on this project is 8.

Tra 02: Sustainable Transport Measures

In order to achieve a further 2 credits under the additional credit scenario a total of 10 sustainable transport measure points are required. Table 4.0 details additional sustainable transport measures:

**Table 4.0: Additional Sustainable Transport Measures**

Assessment Option	Public Transport Measures	Applicable Building Types	Points
1	The existing AI calculated in Tra 01 achieves the following: ≥ 8	All	1
2	Demonstrate an increase over the existing Accessibility Index through negotiations with local bus, train or tram companies to increase the frequency of the local service provision for the development OR	All	2
	Provide a dedicated service, such as a bus route or service		3
Assessment Option	Private Transport Measures	Applicable Building Types	Points
5	Set up a car sharing group or facility to facilitate and encourage building users to car share Raise awareness of the sharing scheme with marketing and communication materials Provide priority spaces for car sharers for at least 5% of the total car parking capacity for the development Locate priority parking spaces nearest the development entrance used by the sharing scheme participants	All	1
Assessment Option	Alternative Transport Measures	Applicable Building Types	Points
11	Implement one site-specific improvement measure, not covered by the options already listed in this issue, in line with the recommendations of the travel plan. Submit these for review by BRE.	All	1-3

Mat 01: Environmental Impact from Construction Products – Building Life Cycle Assessment (LCA)

This credit aims to encourage the use of construction materials with a low environmental impact. This is achieved by conducting a life cycle assessment of the building's superstructure using the BREEAM simplified building LCA tool during concept design (RIBA stage 2). The results from the LCA are then submitted to the Mat01/01 submission tool. There are opportunities to achieve 10 credits under Mat 01 where Mainer Associates are appointed to complete a full LCA exercise of the superstructure at both Concept and Technical Design stages using our 'One Click' LCA software.

The following details full credit criteria for an additional credit where LCA exercises are completed for building structures other than the superstructure. Mainer Associates can also develop evidence to satisfy these criteria using our LCA software.

One credit – Core building services options appraisal during Concept Design:



1. Carry out an LCA options appraisal.
2. During Concept Design identify opportunities for reducing environmental impacts as follows:
 - a. Carry out building LCA options appraisal of at least 3 significantly different core building services design options.
 - b. Use a building LCA tool that is recognised by BREEAM (as suitable for assessing core building services during Concept Design) according to the methodology in the BREEAM guidance.
 - c. For each design option, fulfil the same functional requirements specified by the client and all statutory requirements (to ensure functional equivalency).
 - d. Integrate the LCA options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document.
 - e. Record the following in the Mat 01/02 Results Submission Tool: The differences between the design options; the design option selected by the client to be progressed beyond Concept Design; the reasons for selecting it and the reasons for not selecting the other design options.
 - f. Submit the Mat 01/02 Results Submission Tool to BRE at the end of Concept Design, and before planning permission is applied for (that includes external material or product specification).

One credit – LCA and LCC alignment:

1. Option appraisals for Concept and Technical design.
2. Achieve Elemental LCC plan and Component Level LCC options appraisal credits (Man 02 Life cycle cost and service life planning).
3. Include design options appraised during Concept Design in Assessment scope - The elemental LCC plan.
4. Include the design options appraised during Concept Design in the 'Component level LCC option appraisal' (in Man 02 Life cycle cost and service life planning).
5. Integrate the aligned LCA and LCC options appraisal activity within the wider design decision-making process. Record this in an options appraisal summary document including the relevant cost information from the 'elemental LCC plan' and 'Component level LCC option appraisal'.

One credit – Third party verification:

1. Prerequisite – achieve all applicable criteria under standard credits.
2. A suitably qualified third party carries out the building LCAs or produces a report verifying the building LCAs accurately represent the designs under consideration during Concept Design and Technical Design.



3. For each LCA option, itemise the findings of the verification checks made by the suitably qualified third party in the report including, as a minimum, the quality requirements outlined in Table 9.4 of the BREEAM guidance.
4. Include details of the suitably qualified third party's relevant skills and experience and a declaration of their third-party independence from the project client and design team in the report.

Wst 05: Adaptation to Climate Change

For the exemplary level credit under Wst 05, BREEAM want the Project Team to demonstrate a holistic approach to ensure the building has been designed through appropriate strategies for adaptation to climate change.

As well as completing the adaptation to climate change study the Project Team must also achieve the following criteria and credits under other assessment issues:

Issue	Requirements	Link to Wst 05 issue
Hea 04 Thermal comfort	Criterion 6	Prevent increasing risks of overheating.
Ene 01 Reduction of energy use and carbon emissions	A minimum of six credits	Maximise energy efficiency to tackle likely energy demand and minimise resultant carbon emissions.
Ene 04 Low carbon design	The passive design analysis credit	Maximise opportunities to avoid unnecessary carbon emissions.
Wat 01 Water consumption	A minimum of three credits	Minimise water demand in periods of drought.
Mat 05 Designing for durability and resilience	Criteria 2–4	Avoid increased risks of deterioration and higher maintenance demands.
Pol 03 Flood and surface water management	Flood resilience: a minimum of one credit Surface water run-off: two credits	Minimise the risks of increased flood risk and surface water run-off affecting the site or others.

LE 01: Site Selection – Contaminated Land

An additional credit is available where assets are developed on contaminated land that will be remediated prior to construction. Achieving this additional credit will depend on the current site.



LE 02: Identifying and Understanding the Risks and Opportunities for the Project

In order to achieve 3 credits, a Suitably Qualified Ecologist undertakes all relevant works, including survey and evaluation, as well as determining the ecological outcomes for the site. When determining the ecological outcomes, the wider site sustainability-related activities and the potential for ecosystem service-related benefits are considered. Credits for Hea07, Pol 03 (Surface water run-off and Minimising Watercourse pollution) and Pol 05 must also be achieved.

LE 03: Managing Negative Impacts on Ecology

In order to achieve the three credits, the team must ensure that negative impacts from site preparation and construction works have been managed according to the hierarchy stated in the BREEAM guidance. The Suitably Qualified Ecologist must also demonstrate how there has been no overall loss of ecological value.

LE 04: Change and Enhancement of Ecological Value

In order to achieve the fourth credit under this issue, the SQE confirms the ecological value of the site has been enhanced to a level that merits 3 credits. Credits are awarded on a scale of 1-3. For the SQE to confirm the No. credits achieved, the SQE must follow methodology outlined in Guidance Note 36 of BREEAM.

Pol 01: Impact of Refrigerants

Further credits can be achieved where the building is fitted with a refrigerant leak detection system, AND the direct effect life cycle CO₂ equivalent emissions (DELC) are ≤ 100 CO₂-eq/kW, or all refrigerants present in plant have a global warming potential (GWP) ≤ 10 .

Alternatively, the project team can agree to select plant that does not use refrigerant. This would achieve 3 credits.

Pol 02: Local Air Quality

Two credits can be achieved where all heating and hot water is supplied by non-combustion systems. For example, only powered by electricity; OR emissions from all installed combustion plant that provide space heating and domestic hot water do not exceed levels set out in Table 6.0 and 7.0.

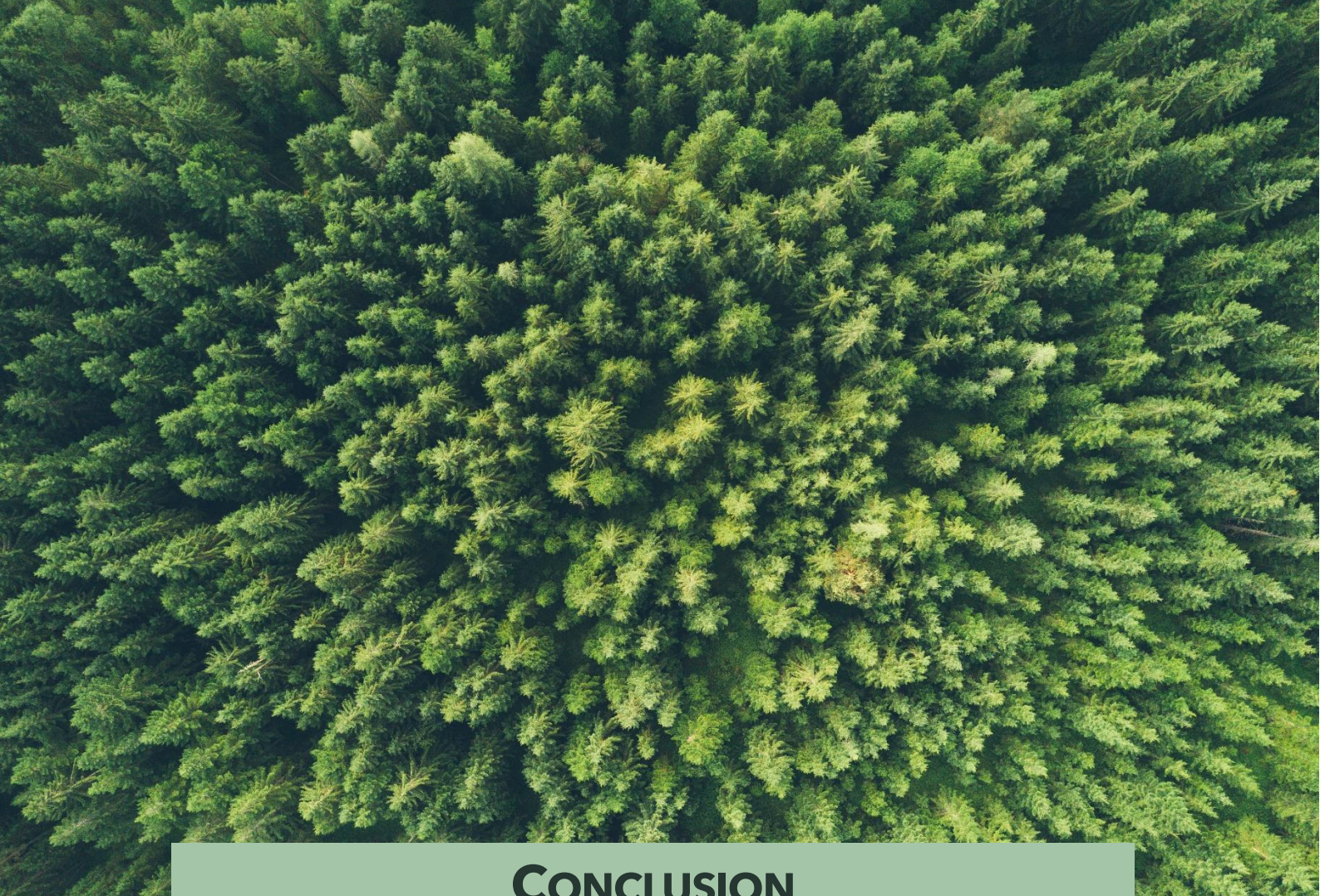
**Table 6.0: NOx Emission Benchmarks**

Appliance Type and Unit	Fuel	2 Credits (low pollution location)	2 Credits (high pollution location)
Boiler (mg/kWh)	Gas	24	24
Boiler (mg/kWh)	Oil	55	50
Boiler (mg/m ³)	Biomass and solid fossil fuel	70	
Cogeneration or heat pumps using external combustion (mg/kWh)	Gas	30	30
Cogeneration or heat pumps using external combustion (mg/kWh)	Oil	70	50
Cogeneration - using internal combustion engine (mg/kWh)	Gas		
Cogeneration - using internal combustion engine (mg/kWh)	Oil		
Local space heaters (mg/kWh)	Gas and Oil		
Closed fronted local space heaters (mg/m ³)	Biomass, solid fuel and wood pellets		

Table 7.0: PM10 and VOC Benchmarks

Appliance Type and Unit	Fuel	2 Credits (low pollution location)		2 Credits (high pollution location)	
		PM10	VOC	PM10	VOC
Boiler (mg/m ³)	Biomass	11	5	4	5
Boiler (mg/m ³)	Solid fossil fuel	17			
Closed face local space heater (mg/m ³)	Wood pellets	22	22	10	10
Closed face local space heater (mg/m ³)	Biomass and solid fuel	25	25		

PM10 = particulate matter <10 micrometers and VOC = volatile organic compounds.
For the purpose of BREEAM, PM and VOC emissions are only relevant to the assessment of biomass and solid fuel fired technologies.



CONCLUSION



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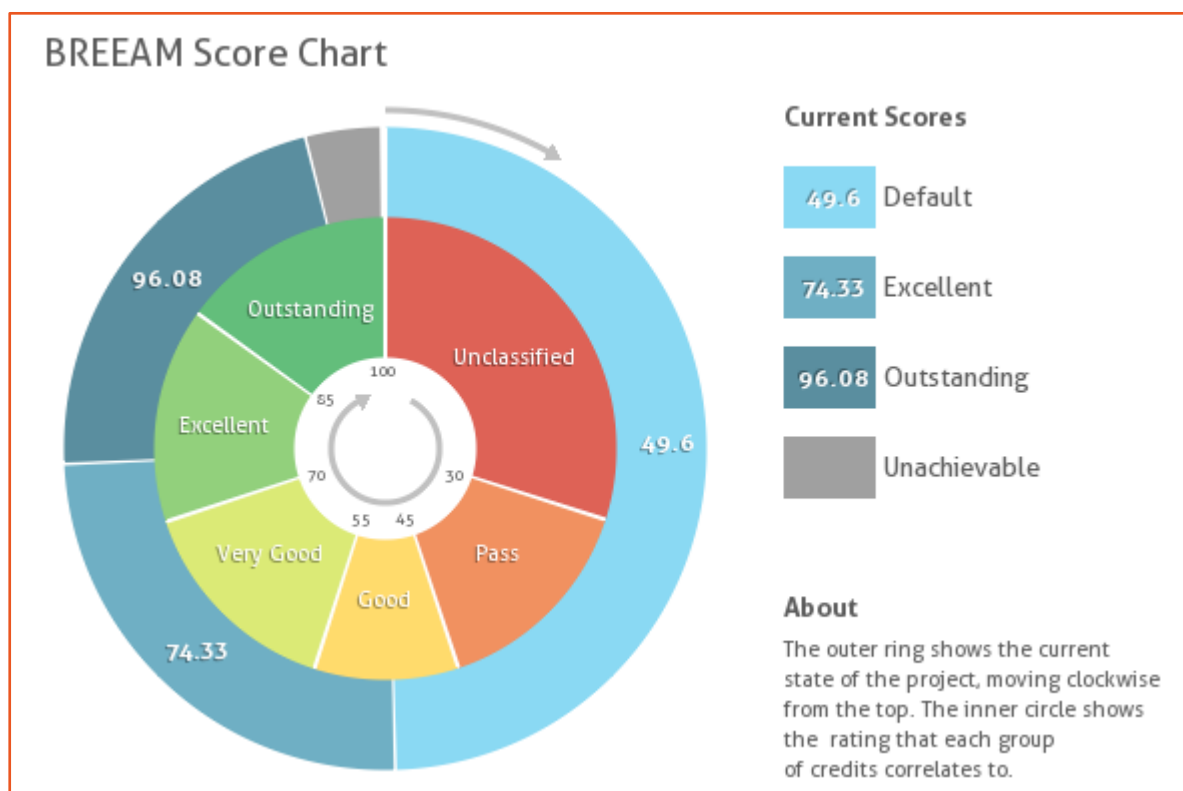
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4.0 CONCLUSION

A BREEAM Pre-Assessment has been undertaken for the NOMA, 3 Angel Square building at NOMA in Manchester City Centre. The client has selected a BREEAM 'Outstanding' rating as the target for this development. Both an 'Excellent' and 'Outstanding' scenario have been established by Mainer Associates.

The Outstanding scenario reflects a more onerous BREEAM rating and provides the Project Team with a selection of potential credits that could be targeted if credits are missed. Credits required in addition to those in the 'Excellent' scenario have been detailed in the previous section.



In addition to the information above, we have provided a BREEAM Survey RIBA Stage Table, BREEAM Survey Briefing Notes and the detailed criteria for the targeted credits. These can be sent directly on to the design team/consultants already working on the scheme to ensure that current work and future instructions incorporate the requirements of BREEAM. This will help avoid unnecessary additional costs later in the project programme.

The Design Team should review Appendix B for detailed requirements on each credit and Appendix C for guidance on Stage 2 surveys and reports. These credits should be the focus of the Design Team at this point in the project.





APPENDIX A: BREEAM RIBA STAGE 2

RIBA Stage Information - BREEAM 2018

RIBA Stage	1	2	3	4	5	6	7
	Preparation & Brief	Concept Design	Developed Design	Technical Design	Construction	Handover	In-Use
BREEAM Stage	Pre-Assessment	Pre-Assessment & Design Stage	Design Stage	Design Stage	Design Stage & Post Construction	Post Construction Stage	Post Construction Stage & BREEAM In-Use
Ecology	LE - Ecologist Appointment / Selection of Assessment Route	LE - Ecology Report					
Consultation		Man 01 - Consultation (Project Delivery Planning & Interested Parties) Man 1 - Advisory Professional		Man 01 - Consultation Feedback (Interested Parties)			
Advisory Professional		Man 01 - Advisory Professional	Man 01 - Advisory Professional	Man 01 - Advisory Professional	Man 01 - Advisory Professional	Man 01 - Advisory Professional	Man 01 - Advisory Professional
Post-Occupancy Evaluation							Man 05 - POE
Security		Hea 06 - Security Needs Assessment					
LZCs & Passive Design		Ene 04 - Passive Design Analysis & LZC Study					
Adaption to Climate Change		Wst 05 - Adaption to Climate Change		Wst 05 - Adaption to Climate Change Study Recommendations embedded in the design			
Functional Adaptability		Wst 06 - Functional Adaptability Study		Wst 06 - Functional Adaptation measures included within the design			



Travel Plan		Tra 01 - Transport Assessment & Travel Plan	Tra 01 - Transport Assessment & Travel Plan				
Material Efficiency	Mat 06 - Set targets & report on opportunities & methods to optimise the use of materials	Mat 06 - Set targets & report on opportunities & methods to optimise the use of materials	Mat 06 - Set targets & report on opportunities & methods to optimise the use of materials	Mat 06 - Set targets & report on opportunities & methods to optimise the use of materials			
Indoor Air Quality Plan		Hea 02 - Indoor Air Quality Plan					
Pre-Demolition Audit		Wst 01 - Pre-demolition audit					
Sustainable Procurement Plan		Mat 03 - Sustainable procurement plan					
Energy Efficiency		Ene 01 - Operational Energy Performance Workshop					
Environmental Performance of Building		Mat 01 - LCA Appraisal					



APPENDIX B: STAGE 2 SURVEY REQUIREMENTS