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MAINERASSOCIATES

BREEAM Pre-Assessment:

Barnsley Fire Station

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TABLE OF CONTENTS

TABLE OF CONTENTS 2
EXECUTIVE SUMMARY 3
1.0 INTRODUCTION 5
2.0 CREDIT SUMMARY 7
3.0 CREDIT TABLE 10
4.0 CONCLUSIONS 26
5.0 APPENDIX A – BREEAM EVIDENCE REQUIREMENTS 27
6.0 APPENDIX B – DETAILED INFORMATION REQUIREMENTS 32

EXECUTIVE SUMMARY

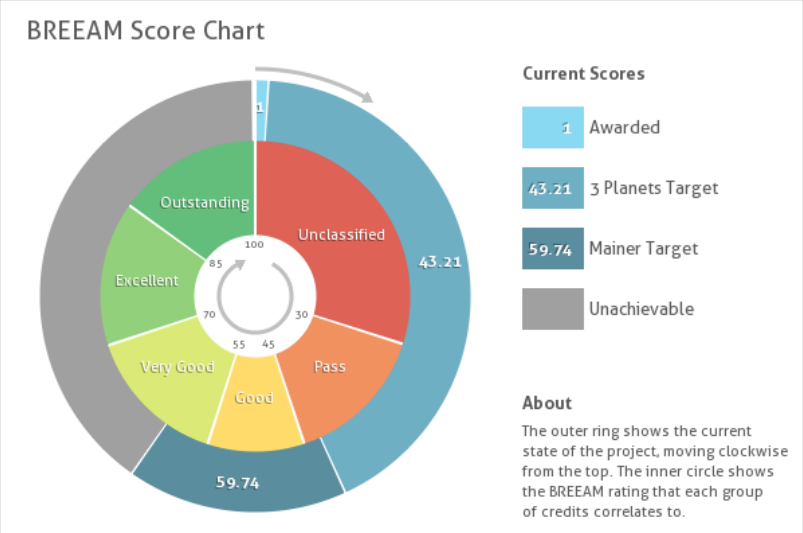
A BREEAM Pre-Assessment has been undertaken for the proposed fire station in Barnsley, in Keresforth. The new station is for South Yorkshire Fire and Rescue and will see the current fire station structures demolished and a new contemporary station with a drill yard and surrounding landscaping constructed. The development will be assessed using the BREEAM 2018.

We understand the desired rating is BREEAM Very Good. Following handover of the assessment from a previous assessor Mainer Associates have completed a revised pre-assessment for the site, reviewing the current design information provided to us and the previous credit structures.

The original pre-assessment had the target score at 43%. Mainer Associates have therefore developed a new credit structure with new credits to target in order to ensure the required 55% for a Very Good rating is achieved. This scenario is titled 'Mainer Target' and currently sits at 59.47% to offer the team a cushion above the 55% if credits are missed. The new credits added into the target score by Mainer are covered in detail in Section 3.0 and 3.1.

We envisage the credit structures may again change once Mainer Associates have held workshops with the Project Team. However, it is our intention that where the team feel a credit cannot be achieved, an alternative one is targeted, to ensure the new target score is maintained.

The following scenarios are outlined with their associated scores:



- Awarded: 1%
- Previous Assessor: 43.21%
- Mainer Target: 59.74%

The graphic confirms the final BREEAM rating each scenario could achieve.

The RIBA Stages Table overleaf indicates required actions and reports at specific RIBA Stages for the achievement of certain credits. Further information on these early stage actions and their associated content requirements can be found in the Mainer Associates Survey Requirements and BREEAM AP reports.

RIBA Stage Information - BREEAM 2018							
RIBA Stage	1 Preparation & Brief	2 Concept Design	3 Developed Design	4 Technical Design	5 Construction	6 Handover	7 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-
Ecology	LE - Ecologist Appointment/Selection of Assessment Route	LE - Ecology Report					
Consultation		Man 01 - Consultation (Project Delivery Planning & Interested Parties)		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 Study		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 and report on opportunities and methods to optimise the use of materials	Mat 06 - Set targets and report on opportunities and methods to optimise the use of materials	Mat 06 - Set targets and report on opportunities and methods to optimise the use of materials	Mat 06 - Set targets and report on opportunities and methods to optimise the use of materials	Mat 06 - Set targets and report on opportunities and 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					

1.0 INTRODUCTION

Mainer Associates have been appointed to undertake a BREEAM Pre-assessment for the new Barnsley Fire Station which lies South-West of Barnsley town centre adjacent to the A6133. The site is surrounded by a mix of land use types including residential, industrial warehousing, arable farming and residential greenspace (allotments).

Construction of the new Barnsley Fire Station will see the current building and structures demolished to make way for new and modern depot for South Yorkshire Fire and Rescue. The development will retain the existing drill tower within the drill yard but see a contemporary fire station constructed featuring rest rooms, sanitaryware areas, kitchen and dining, medical and training rooms, gym space and administrative areas.



Image 1.0 Proposed Site Plan



Image 2.0 Aerial Image with Site Boundary

We understand the building will be completed to a fully fitted finish. BREEAM's 'Fully Fitted' assessment option has therefore been selected for this development, offering a greater scope of available credits and allowing the asset to achieve a more onerous BREEAM rating.

The development under assessment is 3000m^2 of GIA, consisting of 2 floors to accommodate fire service staff, a depot area for vehicles, and a drill yard. The development will make practical use of previously developed land.

The site currently consists predominantly of hardstanding and existing structures. Ecological survey and assessment and survey completed by TEP indicates vegetation and landscaping within the site boundary is of minimal, low, ecological value, although removal of trees should be avoided.

This Pre-Assessment has been undertaken using the BREEAM 2018 New Construction scheme and acts as a review of the original pre-assessment completed by a previous assessor, and provides the Project Team with a new credit structure and target score that can achieve a Very Good Rating. Particular attention should be paid to Section 3.0 and 3.1 which outlines in detail the new credits added by Mainer Associates into the new target score.

This report has therefore identified the set of credits confirmed by the previous assessor, and a new set of credits required to achieve Very Good in greater detail. This new credit structure is titled 'Mainer Target' and is to be considered the new target for the project team to achieve.

2.0 CREDIT SUMMARY - ASSUMPTIONS

Mainer Associates have identified areas where credits are likely to be achieved, or lost, based on information already available to us.

Tra 01: Travel Plan

Two credits are available where an appropriate consultant completes a site-specific travel assessment for the development, assessing existing travel patterns and infrastructure. A Travel Plan must then be developed based on this assessment which includes proposals to improve sustainable modes of transport and movement of staff during the buildings operation. 2 credits are available for completion of this exercise. These credits have been added into the target credit scenario by Mainer Associates.

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 in relation to the site's existing accessibility index. Points are allocated to different sustainable transport measures, that are implemented in addition to existing infrastructure. The project will accumulate points and corresponding credits in relation to the type and number of measures developed.

Mainer Associates have conducted an initial study into the site's accessibility and have established an accessibility index score of 1.51 for Barnsley Fire Station. Table 1.0 details the sustainable transport measures outlined by BREEAM. The Project Team should review this table and identify viable options to implement for the achievement of credits.

Mainer have allocated 4 credits to Tra 02 and intend to discuss options with the Project Team to confirm which measures to pursue.

1 point = 1 credit.

Sustainable Transport Measures		
Assessment option	Public transport measures	Points
1	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	2. Provide a public transport information system in a publicly accessible area.	1
Assessment option	Private transport measures	Points

Sustainable Transport Measures		
4	3. Provide electric recharging stations of a minimum of 3kW for at least 10% of the total car parking capacity for the development.	1
5	4. Set up a car sharing group or facility to facilitate and encourage building users to car share. 5. Raise awareness of the sharing scheme with marketing and communication materials 6. Provide priority spaces for car sharers for at least 5% of the total car parking capacity for the development. 7. Locate priority parking spaces nearest the development entrance used by the sharing scheme participants.	1
Assessment option	Active travel measures	Points
6	8. 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. 9. 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	10. Install compliant cycle storage spaces to meet the minimum levels set out on the basis of anticipated building occupancy.	1
8	11. Option 7 must be achieved. 12. Provide at least two compliant cyclists' facilities for the building users, (including pupils where appropriate to the building type): Showers Changing facilities Lockers Drying spaces	1
9	Existing Amenities: 13. 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: 14. Ensure a minimum of one new accessible amenity is provided.	2

Table 1.0 Sustainable Transport Measures

LE01-LE05: Site Selection - Land Use and Ecology

This credit requires at least 75% of a proposed development's footprint to be on an area of land which has been previously occupied/developed. The development is on a pre-existing site and will therefore achieve this credit.

TEP have completed a BREEAM Ecological Assessment Report for the site which signifies completion of a RIBA Stage 2 item. This sets a strong basis for achieving multiple credits under the Ecology section of the BREEAM guidance and we therefore envisage at least 4 Ecology credits can be gained, with potential to gain more with TEP's input. The original pre-assessment did not have any credits targeted for Ecology. TEP and the design team should review our comments in our BREEAM AP Report (issue 1) to determine whether further credits could be achieved.

Pol 03: Surface Water Run-Off

The development is located in a low risk Flood Zone and will therefore achieve a minimum of 2 credits for Pol 03 where a site-specific flood risk assessment is completed by a flood risk consultant.

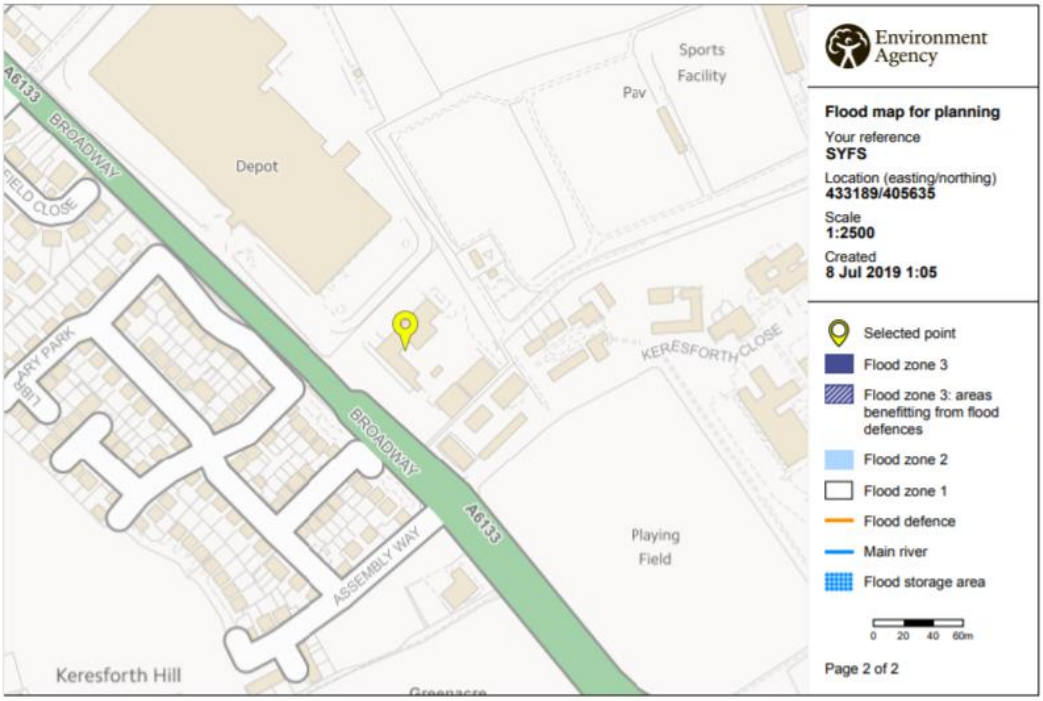


Image 3.0 Environment Agency Flood Map for Planning.

3.0 CREDIT TABLE

The following credit scenarios are outlined in the Table 2.0:

- **Available**: Summary of all available credits.
- **Awarded:** Credits currently awarded.
- **Previous Target**: Credits the previous assessor targeted
- **Mainer Target**: A new target developed by Mainer Associates following review of the original pre-assessment, site and floor plans, and the ecological assessment. This target will achieve the Very Good Rating required by the client. This score and credit structure forms the new target for the Project Team to work towards.

Table 2.0 below outlines which credits are targeted/included under each scenario. Highlighted issues indicate where Mainer Associates have added credits into the new target scenario to ensure the score amounts to a percentage that would achieve a Very Good rating. These credits are detailed further in Section 3.1.

Table 2.0 Credit Table

		Available	3 Planets Target	Mainer Target	Awarded
Management					
Man 01	Project brief and design	4	2	3	0
Man 02	Life cycle cost and service planning	4	1	1	0
Man 03	Responsible construction practices	7	6	6	0
Man 04	Commissioning and handover	4	3	4	0
Man 05	Aftercare	3	2	2	0
		22	**14**	**16**	**0**
Health & Wellbeing					
Hea 01	Visual comfort	6	1	2	0
Hea 02	Indoor air quality	5	0	2	0
Hea 04	Thermal comfort	3	2	3	0
Hea 05	Acoustic performance	3	0	3	0
Hea 06	Security	2	0	1	0
Hea 07	Safe and healthy surroundings	2	1	1	0
		21	**4**	**12**	**0**
Energy					
Ene 01	Reduction of energy use and carbon emissions	18	4	4	0
Ene 02	Energy monitoring	2	1	2	0
Ene 03	External Lighting	1	1	1	0
Ene 04	Low carbon design	3	2	2	0

Ene 08	Energy efficient equipment	2	2	2	0
		26	**10**	**11**	**0**
Transport					
Tra 01	Transport assessment and travel plan	2	0	2	0
Tra 02	Sustainable transport measures	10	0	4	0
		12	**0**	**6**	**0**
Water					
Wat 01	Water consumption	6	4	4	0
Wat 02	Water monitoring	1	1	1	0
Wat 03	Water leak detection	2	2	2	0
		9	**7**	**7**	**0**
Materials					
Mat 01	Environmental impacts from construction products - Building life cycle assessment (LCA)	10	6	3	0
Mat 02	Mat 02 Environmental impacts from construction products - Environmental Product Declarations (EPD)	1	0	0	0
Mat 03	Responsible sourcing of construction products	5	2	2	0
Mat 05	Designing for durability and resilience	1	1	1	0
Mat 06	Material efficiency	1	0	1	0
		18	**9**	**7**	**0**
Waste					
Wst 01	Construction waste management	6	3	4	0
Wst 02	Use of recycled and sustainably sourced aggregates	2	0	0	0
Wst 03	Operational waste	1	1	1	0
Wst 05	Adaptation to climate change	2	1	1	0
Wst 06	Design for disassembly and adaptability	2	2	2	0
		13	**7**	**8**	**0**
Land Use & Ecology					
LE 01	Site selection	2	1	1	1
LE 02	Identifying and understanding the risks and opportunities for the site	3	0	1	0
LE 03	Managing negative impacts on ecology	3	0	1	0
LE 04	Change and enhancement of ecological value	5	0	1	0
LE 05	Long term management and maintenance	2	0	1	0
		15	**1**	**5**	**1**
Pollution					
Pol 01	Impact of refrigerants	3	2	2	0
Pol 02	Local air quality	2	0	0	0
Pol 03	Flood and surface water management	5	3	3	0
Pol 04	Reduction of night time light pollution	1	1	1	0
Pol 05	Reduction of noise pollution	1	0	1	0
		12	**6**	**7**	**0**
Innovation					
AI	Approved Innovation	1	0	0	0
		1	**0**	**0**	**0**

3.1 New Target Score Credits

The following credits detailed in this section are those which have been added by Mainer Associates into the target score in order to achieve the desired Very Good rating.

Man 01: Project Delivery

This credit requires project team consultation to cover BREEAMs minimum consultation content. Evidence regularly provided by design teams for this credit are meeting minutes and a responsibilities matrix. The following requirements must be met:

1. Prior to completion of the Concept Design, the design team meet to identify and define for each key phase of project delivery:
    a. Roles
    b. Responsibilities
    c. Contributions.
2. Consider each one of the following items when defining roles, responsibilities and contributions for each key phase of the project:
    d. End user requirements
    e. Aims of the design and design strategy
    f. Particular installation and construction requirements or limitations
    g. Occupiers' budget and technical expertise in maintaining any proposed systems
    h. Maintainability and adaptability of the proposals
    i. Operational energy
    j. Requirements for the production of project and end user documentation
    k. Requirements for commissioning, training and aftercare support.

Where the building occupants are not known, the list of considerations above still applies. The appropriate project delivery stakeholder considers each item, based on likely scenarios of building occupancy.

1. The project team demonstrates how the project delivery stakeholders' contributions and the consultation process outcomes influence the following:
    l. Initial Project Brief
    m. Project Execution Plan
    n. Communication Strategy
    o. Concept Design.

Man 01: BREEAM AP Concept and Developed Design

Mainer Associates are appointed to complete the role of BREEAM AP throughout concept and developed design. Evidence such as this pre-assessment, BREEAM AP and Tracker reports produced and issued throughout the project will be uploaded as evidence to achieve these credits.

Man 04: Testing and Inspecting the Building Fabric (Thermographic Survey)

Prior to handover of the building, post-construction quality assurance and thermographic survey of the building must be completed by a suitably qualified professional. This can be achieved at Design Stage where the BREEAM requirements for this credit are contained within the Employer's Requirements.

1. Complete post-construction testing and inspection to quality-assure the integrity of the building fabric, including continuity of insulation, avoidance of thermal bridging and air leakage paths (this is through airtightness testing and a thermographic survey). A suitably qualified professional undertakes the survey and testing in accordance with the appropriate standard.

2. Rectify any defects identified during post-construction testing and inspection prior to building handover and close out. Any remedial work must meet the required performance characteristics for the building or element as defined at the design stage.

Suitably qualified Professional

Thermography surveys and airtightness testing are to be undertaken by suitably qualified professionals in accordance with the appropriate standards, as follows:

1. Airtightness testing: by professionals with membership of Air Tightness Testing and Measurement Association (ATTMA) or Independent Air Tightness Testing Scheme (IATS) attained at organisational level maintaining UKAS (United Kingdom Accreditation Service) accreditation (as air tightness testing laboratories to ISO 17025).

2. Thermographic survey: by professionals holding a valid Category 2, e.g. PCN (Personnel Certification in Non-Destructive Testing) or QCF (Ofqual's Qualification and Credit Framework) or RQF (Regulated Qualifications Framework) Level 4, e.g. ABBE (Awarding Body for the Built Environment), certificate in thermography (as defined by the UKTA (UK Thermography Authority) website). Where a Category 2 or Level 4 thermographer is not available, the survey may be undertaken by a Category 1 thermographer and then the images interpreted by a Category 2 or Level 4 thermographer.

Hea 01: Visual Comfort – Glare Control

To achieve this credit a glare control assessment must be completed identifying areas at risk of glare and confirms the chosen glare control strategy. Evidence regularly submitted for this credit are elevations drawings with annotations highlighting areas at risk, and not at risk, of glare. The annotations should also outline where design elements have been designed in or where blinds will be installed to control glare. Where blinds are the selected strategy, a product data sheet must be provided to demonstrate the fabric light transmittance value is <0.1(10%).

1. Identify areas at risk of glare using a glare control assessment. The glare control assessment also justifies any areas deemed not at risk of glare.

2. A glare control strategy designs out potential glare in all relevant building areas where risk has been identified. This should be achieved through building form and layout or building design measures.

3. The glare control strategy does not increase energy consumption used for lighting. This is achieved by:
    a. Maximising daylight levels in all weather, cloudy or sunny AND,
    b. Ensuring the use or location of shading does not conflict with the operation of lighting control systems.

Hea 01: Visual Comfort – Internal and External Lighting

To achieve this credit Silcock Leedham will need to confirm the internal and external lighting has been designed in accordance with the following BREEAM requirements:

1. Internal lighting in all relevant areas of the building is designed to provide illuminance (lux) levels and colouring rendering index in accordance with the SLL Code for Lighting 2012(33) and any other relevant industry standard. Internal lighting should be appropriate to the tasks undertaken, accounting for building user concentration and comfort levels.

2. For areas where computer screens are regularly used, the lighting design complies with CIBSE Lighting Guide 7sections 2.4, 2.13 to 2.15, 2.20, and 6.10 to 6.20. This gives recommendations highlighting:
    a. Limits to the luminance of the luminaires to avoid screen reflections. (Manufacturers' data for the luminaires should be sought to confirm this.)
    b. Any area where a surface is used to reflect light in to a space, such as uplighting, the recommendations refer to the luminance of the lit ceiling rather than the luminaire; a design team calculation is usually required to demonstrate this.
    c. Recommendations for direct lighting, ceiling illuminance, and average wall illuminance.

Hea 02: Indoor Air Quality

The previous pre-assessment did not target any credit sunder Hea 02. Mainer Associates envisage the ventilation and VOC emissions from products credits can be achieved. This may change following discussion with the design team.

Hea 02: Indoor Air Quality – Indoor Air Quality Plan

In order to achieve any credits under the Hea 02 the new 2018 guidance stipulates an indoor air quality plan must be produced by the M&E engineer as a prerequisite. Mainer Associates will issue GN06 to assist in developing the IAQP for the fire station and suggest items a-e are used to structure the document. The BREEAM guidance stipulates:

A site-specific indoor air quality plan must be produced and implemented in accordance with the guidance in Guidance Note GN06. The plan must be produced no later than the end of Concept Design. The objective of the plan is to facilitate a process that leads to design, specification and installation decisions and actions that minimise indoor air pollution during occupation of the building. The indoor air quality plan must consider the following:

a. Removal of contaminant sources.
b. Dilution and control of contaminant sources and where present, consideration is given to the air quality requirements of specialist areas such as laboratories.
c. Procedures for pre-occupancy flush out.
d. Third party testing and analysis.
e. Maintaining good indoor air quality in-use.

Hea 02 – Indoor air quality – Ventilation

To achieve this credit annotated ventilation layout drawings are regularly provided as evidence to demonstrate the design of building ventilation layouts align to the BREEAM requirements. The annotations must indicate appropriate distances between supply and extracts, and the relevant ventilation design standards have been used. Silcock Leedham will need to demonstrate the ventilation layout meets the following design requirements:

1. The building has been designed to minimise the indoor concentration and recirculation of pollutants in the building as follows:

a. Provide fresh air into the building in accordance with the criteria of the relevant standard for ventilation.
b. Ventilation pathways are designed to minimise the ingress and build-up of air pollutants inside the building.

c. Where present, HVAC systems must incorporate suitable filtration to minimise external air pollution, as defined in BS EN 13779:2007 Annex A3. The specified filters should achieve a minimum Indoor Air Quality of IDA2.

d. Areas of the building subject to large and unpredictable or variable occupancy patterns have carbon dioxide (CO_2) or air quality sensors specified and:

   In mechanically ventilated buildings or spaces: sensors are linked to the mechanical ventilation system and provide demand-controlled ventilation to the space.

   In naturally ventilated buildings or spaces: sensors either have the ability to alert the building owner or manager when CO_2 levels exceed the recommended set point, or are linked to controls with the ability to adjust the quantity of fresh air, i.e. automatic opening windows or roof vents.

e. For naturally ventilated or mixed mode buildings, the design demonstrates that the ventilation strategy provides adequate cross flow of air to maintain the required thermal comfort conditions and ventilation rates in accordance with CIBSE AM10.

Hea 02 – Indoor air quality – Emissions from Construction Products

To achieve one credit Bond Bryan must specify internal finishes and products that meet the following emission limits and testing standards, for 3/5 of the product types listed in Table 3.0 and 4.0. Where wood-based products are not one of three selected product types, all wood-based products used for internal fixtures and fittings must be tested and classified as formaldehyde E1 class as a minimum.

Emission Criteria by Product Type	
Interior paints and coatings	
Emission limit* Formaldehyde	≤ 0.06 mg/m³
Total volatile organic compound (TVOC)	≤ 1.0 mg/m³
Category 1A and 1B carcinogens	≤ 0.001 mg/m³
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	≤ 0.06 mg/m³ m³ (Non-MDF) ≤ 0.08 mg/ m³(MDF)
Total volatile organic compound (TVOC)	≤ 1.0 mg/m³
Category 1A and 1B carcinogens	≤ 0.001 mg/m³

Emission Criteria by Product Type	
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	≤ 0.06 mg/m³
Total volatile organic compound (TVOC)	≤ 1.0 mg/m³
Category 1A and 1B carcinogens	≤ 0.001 mg/m³
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	≤ 0.06 mg/m³
Total volatile organic compound (TVOC)	≤ 1.0 mg/m³
Category 1A and 1B carcinogens	≤ 0.001 mg/m³
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	≤ 0.06 mg/m³
Total volatile organic compound (TVOC)	≤ 1.0 mg/m³
Category 1A and 1B carcinogens	≤ 0.001 mg/m³
Testing requirement	EN 13999 (Parts 1-4) *or* ISO 16000-9 *or* EN 16516 *or* CDPH Standard Method v1.1

Table 3.0 Emission Criteria by Product Type

Product Category	Free TVOC content of ready-to-use product (g/l)	Testing Requirements
Interior matt walls and ceilings (Gloss <25@60°)	10	ISO 11890-2[71] or ISO 17895[72]
Interior glossy walls and ceilings (Gloss>25@60°)	40	

Interior trim and cladding paints for wood and metal	90	or Calculation based on the ingredients and raw materials.
Interior trim varnishes and wood stains, including opaque wood stains	65	
Interior minimal build wood stains	50	
Primers	15	
Binding primers	15	
One-packed performance coatings	100	
Two-pack reactive performance coatings for specific end use such as floors	80	
Multi-coloured coatings	80	
Decorative effect coatings	80	

Table 4.0 Maximum TVOC content for paints and coatings

Hea 04: Thermal Comfort – Design for future thermal comfort

The first thermal comfort modelling and analysis credit had been included in the previous pre-assessment. Mainer Associates have now also included the second thermal modelling credit in the new target scenario. This credit will require Silcock Leedham to model a future climate change scenario and demonstrate the building can achieve the required thermal comfort levels for this scenario.

1. Summer and winter operative temperature ranges in occupied spaces are in accordance with the criteria set out in CIBSE Guide A Environmental design or other appropriate standard, for a projected climate change scenario.
2. For air-conditioned buildings, the PMV and PPD indices based on the climate change scenario modelling are reported via the BREEAM assessment scoring and reporting tool.

Hea 05: Acoustics

Turner and Townsend will need to appoint an acoustician to complete a BREEAM compliant acoustic assessment. Three credits are achievable where the acoustician demonstrates the development will meet the requirements on sound insulation, indoor ambient noise levels and room acoustics, set out in the guidance.

1. The building meets the appropriate acoustic performance standards and testing requirements defined in the table below. These tables define criteria for the acoustic principles of:
   a. Sound insulation.

b. Indoor ambient noise level.
c. Room acoustics.

OR,

A suitably qualified acoustician (SQA) is appointed to define a bespoke set of performance requirements for all function areas in the building. The bespoke performance requirements use the three acoustic principles defined in criterion Hea 05 Acoustic performance - Criterion 1 above, setting out the performance requirements for each and the testing regime required.

Table 5.18 BREEAM acoustic criteria for Industrial, Retail, Prisons and Other building types

Industrial, Retail, Prisons and Other building types (three credits)	
First credit-Sound insulation	
All room functions	
Criteria	The sound insulation between rooms and other occupied areas complies with the performance criteria given in Section 7 of BS 8233:2014. Alternatively, propose performance standard based on demonstrably best practice.
Testing requirement	A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Methodology on page 106 section of this BREEAM issue.
Rooms with specific functions	Educational space (teaching and lecture spaces) refer to Table 5.14 on page 102 Medical treatment rooms refer to Table 5.15 on page 103
Second credit – Internal indoor ambient noise levels	
Criteria	Achieve indoor ambient noise levels that comply with the design ranges given in Section 7 of BS 8233:2014.
Testing requirement	A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Methodology on the facing page section of this BREEAM Issue.
Rooms with specific functions	Education space (teaching and learning spaces) refer to Table 5.14 on page 102 Medical treatment rooms refer to Table 5.15 on page 103
Third credit - Room acoustics	
Criteria	Achieve the requirements relating to sound absorption and reverberation times, where applicable, set out in Section 7 of BS 8233:2014
Testing requirement	A programme of pre-completion acoustic testing is carried out by a compliant test body in accordance with the acoustic testing and measurement procedures outlined in the Methodology on the facing page section of this BREEAM issue. For spaces where the acoustic environment is controlled through the use of defined amounts of sound absorption, installation of a specification compliant with the BS 8233:2014 criteria demonstrates compliance. A site inspection by the developer or SQA is required to confirm that a compliant specification has been installed.
Rooms with specific functions	Educational space (teaching and learning spaces) refer to Table 5.14 on page 102 Medical treatment rooms refer to Table 5.15 on page 103

Hea 06: Site Security

Mainer Associates have received the correspondence with the ALO and we have therefore put this credit into the target scenario. The ALO will need to provide their security needs assessment once complete.

Tra 01: Transport Assessment/Travel Plan, and, Tra 02: Sustainable Transport Measures

Turner and Townsend are to appoint a transport consultant to complete a transport assessment of the current site and establish an operational travel plan based on this assessment. This assessment should also confirm the sustainable transport measures that will be implemented for credits under Tra 02

Mainer Associates have allocated 4 credits to Tra 02, sustainable transport measures. This will require Turner and Townsend, Bond Bryan, SYFS and the appointed Transport Consultant to liaise and confirm which measures they can/want to implement. Review Table 1.0 in Section 2.0 for all sustainable transport options.

Mainer Associates will discuss with the team the practically and viability of different measures.

Ene 02: Sub-metering of High Energy Loads

This is the second credit under Ene02 and will require submetering of relevant functions areas within the building consuming the majority of the building's energy load. The evidence requirement for this credit are metering schematics confirming installation of sub-meters. The BREEAM criteria are:

1. Monitor a significant majority of the energy supply with an accessible energy monitoring and management system for relevant function areas or departments in single occupancy buildings.
   OR,
2. Separate accessible energy sub-meters with pulsed or other open protocol communication outputs for future connection to an energy monitoring and management system for relevant function areas or departments in single occupancy buildings.

Mat 01: Environmental Impacts 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 OR a more advance LCA tool, during concept design (RIBA stage 2). The results from the LCA are then submitted via the Mat01/01 submission tool.

Due to the stage of the project, Mainer Associates have reduced the original credit allocation to this item from 6 to 3. In order to achieve as many as 6 credits for Mat 01 under BREEAM 2018, a full LCA exercises and appraisal report must be completed prior to full planning application submission. Mainer have therefore opted to use the simplified BREEAM LCA tool which still allows a reduced number of credits to be achieved.

Mainer Associates will arrange a specific workshop with Bond Bryan to complete the tool.

Mat 06: Material Efficiency

Although the development is moving into Stage 3, the material efficiency credit can still be targeted. This credit requires Bond Bryan to develop a material efficiency report outlining opportunities and strategies used to optimise the use of materials throughout all RIBA Stages. This will draw on aspects of the design and material selection that allow for material efficiencies to be gained. Mainer Associates will also request input from the contractor once appointed on their material efficiency measures during construction.

Bond Bryan need to refer to Mainer's Mat 06 briefing note for guidance on the structure and content of the material efficiency report.

Land Use and Ecology

The previous pre-assessment did not have credits allocated and targeted under Ecology issues LE02-05. Mainer Associates have therefore reviewed the Ecological Assessment by TEP and targeted 4 credits across these assessment issues. This is still conservative, and there is potential to gain further credits with input from TEP and liaison with Turner and Townsend. Both parties should review ecology comments in the BREEAM AP Report (issue 1).

The following outline the new ecology credits that have been added in to the target score.

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

The 'survey and evaluation' credit has been targeted by Mainer Associates. As TEP have completed an Ecological Assessment of the site, this credit can be awarded where the contractor confirms all EU and UK legislation relating to ecology and construction will be adhered to. This can be achieved at Design Stage where this clause is contained within the Employer's Requirements.

The (second) 'ecological outcomes' credit under LE02 would also be easily achievable. TEP would need to confirm their recommendations outlined in the report are the optimal ecological outcome for the site and confirm the ecological hierarchy has been followed when putting forward recommendation on protection and enhancement.

Additional information and Definitions from BREEAM 2018:

Liaison Discussions

This should consider the following as appropriate to the nature and scale of the project:

1. Ecological value and benefit offered (pre-, during and post-asset maintenance or project completion).
2. Biodiversity and ecosystem services benefits offered pre-, during and post-asset maintenance or project completion.
3. Local microclimatic conditions.
4. Habitat extent, quality, connectivity and fragmentation
5. Opportunities to enhance the value of existing habitats and biodiversity, or to restore or create new, more valuable ones.
6. Opportunities to align and integrate with existing ecological features and initiativesin the zone of influence.
7. The viability of assessment requirements points 9 (hierarchy of actionslist and capacity and feasibility for enhancement).

Measures and Solutions

When determining the associated solutions for the site the following should be considered:

1. Ecological, biodiversity and ecosystem services benefits, accounting for:

- Local priorities.
- Long term viability of the outcome or option.
- Alignment with the sites function, amenity and value.

2. Practicality, including consideration of:

- Timing and duration of implementing and realising the outcome and associated options.
- Outline up-front and ongoing management and maintenance costs.
- Long term management and maintenance implications.
- Opportunities and barriers arising from management or procurement structures. e. Availability of appropriate skills, budgets and other resources at all stages.

LE 03: Managing Negative Impacts on Ecology

The 'planning and liaison' credit is now targeted on this assessment which will require collaboration between TEP, Turner and Townsend and the appointed contractor to define roles and responsibilities in ensuring successful delivery of TEPs ecological recommendations and ensure the site has been appropriately prepared for construction. The criteria for this credit are as follows:

1. Roles and responsibilities for managing negative impacts on the ecology are clearly defined and allocated to support successful delivery of project outcomes at an early enough stage to influence the Concept Design.
2. The potential impact of site preparation and construction works on ecology are identified at an early project stage to optimise benefits and outputs.

3. The project team, liaising and collaborating with representative stakeholders and, taking into consideration data collated and shared, have proposed solutions and selected measures to be implemented during site preparation and construction works.

Project Team Members

- The client, owner, occupier.
- Design, project, facilities teams.
- Specialist consultants. Ecologist Drainage engineer, Landscape architect.

Representative Stakeholders

- Can include but not limited to:
- Local government and other statutory relevant organisations
- Local community groups or organisations
- Charities. E.g. – The Wildlife Trusts

Coordination of the liaison and collaboration is likely to happen by a central project team member with an overview of the project, its members, specialist contractors etc. and has the ability to instruct the work associated with delivering the ecological outcome for the site selected.

LE 04: Change and Enhancement of Ecological Value

The project team, liaising and collaborating with representative stakeholders consider the ecology information collated and shared for completion of credits under LE02 and LE03, and have implemented the solutions and measures selected in a way that enhances ecological value in the following order:

- On site, and where this is not feasible,
- Off site within the zone of influence.

This can be achieved at Design Stage where the appointed contractor provides written commitments to implementing all recommendations outlined by TEP. Alternatively, this clause can be included within the Employer's Requirements.

LE05: Long Term Ecology Management and Maintenance

This credit requires the project team to ensure strategies are in place during the operation of the building to review and monitor the ecological measures implemented. This can be achieved at design stage where the Project Manager and Contractor provide written commitments to ensure appropriate measures and strategies will be developed and adopted to ensure the following is completed:

- Monitor and review the effectiveness with which the plans for LE 03 & LE 04 are implemented.

- Develop and review management and maintenance solutions, actions or measures.

In support of the above and to help ensure their continued relevance over the period of the project the following should be considered:

- Monitoring and reporting of the ecological outcomes for site implemented at the design and construction stage.
- Monitoring and reporting of outcomes and successes from the project.
- Arrangements for the ongoing management of landscape and habitat connected to the project (on and, where relevant, off site).
- Maintaining the ecological value of the site and its relationship or connection to its zone of influence.
- Maintaining the site in line with the any sustainability linked activities, e.g. ecosystems benefits (LE 02).
- Remedial or other management actions are carried out which relate to those identified in LE 02, LE 03 and LE 04

As part of the tenant or building owner information supplied, include a section on Ecology and Biodiversity to inform the owner or occupant of local ecological features, value and biodiversity on or near the site.

Pol 05: Reduction of Noise Pollution

Turner and Townsend must appoint a suitably qualified acoustician to complete a BREEAM Pol05 acoustic assessment on noise emissions from proposed external plant. There are residential areas within immediate proximity to the site, a Pol05 assessment will therefore be required.

1. Where there are noise-sensitive areas within the assessed building or noise-sensitive areas within 800 m radius of the assessed site, a noise impact assessment compliant with BS 4142:2014 is commissioned. Noise levels must be measured or determined for:

a. Existing background noise levels:
- At the nearest or most exposed noise-sensitive development to the proposed assessed site.
- Including existing plant on a building, where the assessed development is an extension to the building.

b. Noise rating level from the assessed building.

2. The noise impact assessment must be carried out by a suitably qualified acoustic consultant.
3. The noise level from the assessed building, as measured in the locality of the nearest or most exposed noise-sensitive development, must be at least 5dB lower than the background noise throughout the day and night.

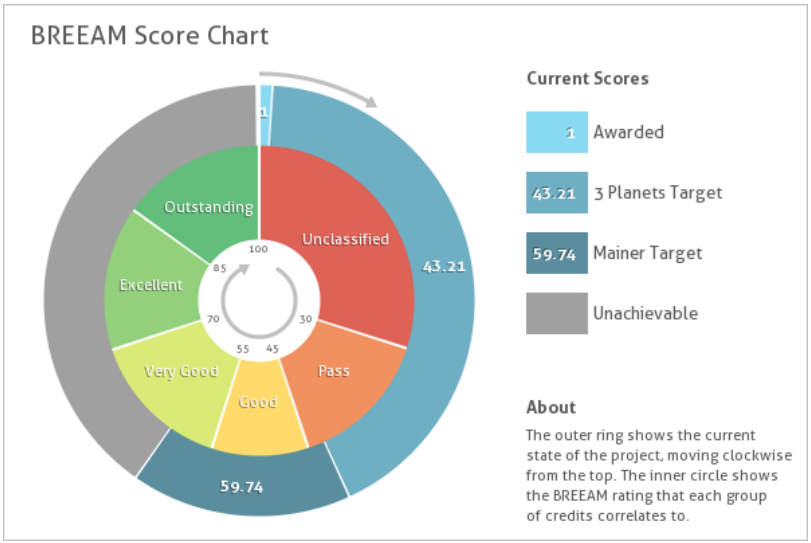
4. If the noise sources from the assessed building are greater than the levels described in criterion 3, measures have been installed to attenuate the noise at its source to a level where it will comply with the criterion.

4.0 CONCLUSIONS

A BREEAM Pre-Assessment has been undertaken for the new Barnsley Fire Station. Development of this pre-assessment has followed a full review of a previous pre-assessment and credit structure by a different assessor organisation.

The client has selected a BREEAM 'Very Good' rating as the target for this development. Mainer Associates have therefore developed a new credit structure and target score that would achieve this rating. This new scenario titled 'Mainer Target' forms the new set of credits the project team will have to achieve. The new credits that have been targeted in addition to those in the original pre-assessment are detailed in section 3.0 and 3.1 and will need to be discussed with the team to determine the practicalities and requirements in order to these credits.

The following results were concluded:



- Awarded: 50.64%
- Previous Target: 43.21%
- Mainer Target: 59.74%

The Appendices provide further information on the following:

- Appendix A: Details of evidence types accepted by the BRE
- Appendix B: Detailed information requirements