



**Trident Park Energy from Waste and Recycling Facility
Cardiff**

BREEAM: Industrial Pre-assessment Credit Estimate



breeam:industrial

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1.0 INTRODUCTION

Viridor Limited (Viridor) is proposing to construct an Energy from Waste (EfW) and Recycling facility at Trident Park, Glass Avenue, Cardiff. To ensure compliance with best practice and Viridor's own corporate responsibility procedures, the company intends that the design, construction and commissioning of the recycling facility be as environmentally sustainable as is practically possible. To this end Viridor have elected to implement the *Building Research Establishment's Assessment Method for Industrial Buildings* (BREEAM: Industrial) to guide the design, ensure appropriate construction techniques are employed and to provide a quantitative assessment of the finished building's performance with regard to environmental sustainability.

BREEAM: Industrial assesses the environmental sustainability of a development in eight key technical areas: management of the development; health and well-being of the occupants; energy efficiency; transport considerations; efficiency of water consumption; selection of appropriate construction materials and their responsible sourcing; land-use and ecological concerns; and the minimisation of pollution.

Viridor has retained SLR Consulting Limited (SLR) to conduct the BREEAM: Industrial assessment and to provide advice on maximising the sustainability of the facility, which incorporates two energy-from-waste production lines and associated office space. The following report is based upon the Building Research Establishment's (BRE) pre-assessment estimate template¹ and is designed to give an estimate of a development's potential BREEAM: Industrial rating. It has been conducted during the preliminary stages of the design process and will demonstrate areas in which the current design scores highly and highlight those where it may be possible to make further improvements. This will allow elements of the design to be guided or modified in order to improve environmental sustainability and thereby maximise the rating achieved by the development.

In addition to providing an assessment of the development design's predicted environmental sustainability, the report provides information on achieving further credit where this is considered possible. The report also indicates the evidence that will be required in order to prove compliance with the BREEAM: Industrial credit criteria. Unless specifically stated it should be assumed that all articles of evidence described in the tables below will be required.

Please note that this report constitutes an assessment of the probable outcome of the BREEAM: Industrial assessment and is based upon such knowledge of the current design proposals as is available. The report does not constitute a formal assessment and, whilst likely to be an accurate estimate, the final score is liable to change.

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2.0 BREEAM: INDUSTRIAL ASSESSMENT ESTIMATES

MANAGEMENT					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
M01	Where evidence provided demonstrates that an appropriate project team member has been appointed to monitor commissioning on behalf of the client to ensure commissioning will be carried out in line with current Building Regulations and (where applicable), best practice.	1.67	3.33	Viridor indicated that: <ol style="list-style-type: none"> 1.) an appropriate, named, team member will be appointed to monitor commissioning; 2.) commissioning will be conducted according to Building Regulations and BSRIA and CIBSE guidelines, where appropriate; 3.) a specialist agent will be appointed to commission complex systems such as: air conditioning; mechanical, displacement or complex passive ventilation; building management systems and renewable energy sources, where present. 4.) seasonal commissioning will be conducted during the first 12 months of occupation, post construction. 	Copies of the letter of appointment specifically mentioning the responsibility for commissioning and listing the relevant systems for which commissioning is required. The letters should specify that all commissioning is to be in line with current best practice building guidelines, building regulations and BSRIA and CIBSE guidelines. The development specification document should include confirmation that all relevant building services, including heating, are covered. The services included should be listed. The development design specification should also state that all commissioning is to be in line with current best practice building guidelines, building regulations and BSRIA and CIBSE guidelines. Copies of the letters of appointment for the seasonal commissioning should also be provided (this can be additional wording included in the appointment letters above)
	Where in addition to the above evidence provided demonstrates that seasonal commissioning will be carried out during the first year of occupation, post construction (or post fit out). NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.	3.33			

MANAGEMENT					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
M04	Where evidence provided demonstrates that there is a commitment to comply with best practice site management principles. OR Where evidence provided demonstrates that there is a commitment to go significantly beyond best practice site management principles.	1.67	1.67	Viridor intend that the construction company selected to build the development will be accredited under either the Considerate Constructors Scheme or an analogous alternative and will achieve maximum credits under this section. However, as the construction company has not yet been appointed, as a matter of prudence it has been decided to consider that 1.67 points will be attained.	Should the credits be sought for this section, a copy of a contractual commitment from or on the construction company to achieve a minimum of 32 points under the CCS, with at least 3 points being scored in every section must be supplied; or Sufficient information to enable the completion of BREEAM Checklist A1 (Appendix 1), for example an awarded CCS certificate.
	NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.	3.33			
M05	Where evidence provided demonstrates that	1.67	5	Viridor have indicated that they will achieve items b,c, d, e, f and g.	Documentary evidence must be provided that the requirements of BREEAM Checklist A3 (Appendix 1) are met. This must include details such as the name of the individual who will have responsibility for monitoring compliance of each item. If compliance with the items is to be made a contractual obligation on the construction company, and not directly implemented by Viridor themselves, then the relevant clauses of the construction company's contract must be provided (or the tender documentation if the construction company is not appointed at the time of assessment).
	<ul style="list-style-type: none"> • 2 or more of items a-g, listed below are achieved. OR <ul style="list-style-type: none"> • 4 or more of items a-g, listed below are achieved. OR <ul style="list-style-type: none"> • 6 or more of items a-g, listed below are achieved. 	3.33			
	<ul style="list-style-type: none"> a) Monitor and report CO₂ or energy arising from site activities. 	5			

MANAGEMENT					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
	b) Monitor and report on water consumption from site activities. c) Monitor and report transport to and from site to enable CO ₂ emissions arising from transport to be calculated. d) Monitor construction waste on site. e) Sort and recycle construction waste on site. f) Adopt best practice policies in respect to air (dust) pollution. g) Adopt best practice policies in respect to water (ground and surface) pollution.				
	Where temporary timber is used on site during construction, this is from a sustainably responsible source OR is re-used or recycled.	1.67	0	Whilst Viridor have indicated their intention to use only temporary site timber from a certified source or re-used/recycled material, it has not been possible to confirm that this will be possible at the current stage of the design process.	If it is intended to claim this credit for the design stage assessment, specific wording must be provided in the development brief documentation stating that all temporary timber will be from a certified source, recycled or re-used.

MANAGEMENT					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
M12	Where evidence provided demonstrates the provision of a simple guide that covers information relevant to the tenant/occupants and non-technical building manager on the operation and environmental performance of the building.	1.67	1.67	Viridor have indicated that they will produce a building user guide to meet the BREEAM requirements and suitable for the non-technical user.	<p>Either a copy of the user guide or written confirmation that one will be produced to meet the required BREEAM standard including statement of the contents list.</p> <p>The guide must be a separate section of the O&M manual, the presence of an O&M manual does not satisfy the requirements. The guide must include information on the following content headings:</p> <ol style="list-style-type: none"> 1. building services information; 2. emergency information; 3. energy and environmental strategy; 4. water use; 5. transport facilities; 6. materials and waste policy; 7. re-fit/re-arrangement considerations; 8. reporting provision; 9. training; 10. links and references; and 11. general information.
Total Points achieved to carry forward			11.67		

HEALTH & WELLBEING		Points Available	Points Achieved	Comments	Evidence Required
Credit Reference					
HW01	Where at least 80% of floor area is adequately daylight.	2.14	2.14	A significant part of the construction fabric will be light permeable and it is considered that at least 80% of the floor area will be adequately daylight.	Comprehensive calculations must be provided to demonstrate that the daylighting criteria are met in at least 80% of the operational and ancillary areas (excluding sanitary facilities).
HW04	Where evidence provided demonstrates that high frequency ballasts are installed on all fluorescent and compact fluorescent lamps.	2.14	2.14	Viridor have indicated that high frequency ballasts will be fitted to all fluorescent and compact fluorescent lamps.	Specific wording should be included with the development design specification confirming that high frequency ballasts will be employed.

HEALTH & WELLBEING		Points Available	Points Achieved	Comments	Evidence Required
Credit Reference					
HW05	<p>Where evidence provided demonstrates that all internal and external lighting, where relevant, is specified in accordance with the appropriate maintained illuminance levels (in lux) recommended by CIBSE.</p> <p>External Lighting - Lux levels must be specified in accordance with CIBSE Lighting Guide 6, '<i>The outdoor environment</i>'. External areas that must comply include (where applicable):</p> <ul style="list-style-type: none"> • covered and open pavement areas • external circulation areas and entrances • surface car parks (i.e. uncovered car parks) • access roads (following the recommendations in BS5489 Part 1) [4] • direction signs & notice boards • outdoor work and storage areas • bicycle racks • delivery, refuse and rubbish areas • garage forecourts • subways, stairways and foot bridges • cash machines • Roadways, general movement (following the recommendations in BS5489 Part 1) • Walkways, perimeter zones, security: • Recreational and club sports: • Sports facilities <p>Internal Lighting - Lux levels must be specified in accordance with part two of the 2002 <i>Code for Lighting</i> ^[1] and its 2004 Addendum.</p>	2.14	2.14	<p>Viridor have indicated that they will specify that internal and external lighting must meet the required specification.</p>	<p>Specific wording in the development design specification must state that the appropriate guidelines for lighting in both the external and internal areas will meet the requirements of the pertinent guidelines.</p> <p>Confirmation of the maintained lux levels in both the production and ancillary areas must be provided.</p>

HEALTH & WELLBEING		Points Available	Points Achieved	Comments	Evidence Required
Credit Reference					
HW11	<p>Where evidence provided demonstrates that each space within the development achieves recommended minimum fresh air rates.</p> <p>Mechanical Ventilation For office areas fresh air should be provided at a rate of 12 litres per second per person. For operational areas fresh air should be provided at a rate of at least 8 litres per second per person. In the case of fully fitted out schemes (where the number of occupants is known) this should be based on actual occupancy. In the case of speculative schemes occupancy of 1 person per 10m² should be assumed.</p> <p>OR</p> <p>Natural Ventilation Where office or operational areas have been designed to be naturally ventilated, all of the following criteria should be achieved: Background ventilation to be in accordance with the Building Regulations Part F. The plan depth of building is less than 15m.</p>	2.14	2.14	Viridor has indicated that they will ensure that the building achieves the minimum recommended fresh air rates.	<p>Design calculations must be provided indicating that the required rate of fresh air renewal is met. Should the assessment be completed prior to such modelling being completed, then a written statement of intent to achieve the required rates of air renewal should be provided within the development design brief.</p> <p>If natural ventilation only is to be used then it will be necessary to provide: details of the window/ventilation opening specifications, the area of opening, the internal area of each room, and the depth of the room.</p>
HW16	Where evidence provided demonstrates that the risk of waterborne and airborne legionella contamination has been minimised.	2.14	2.14	Viridor has indicated that the development design brief will meet the required design specification.	<p>Written confirmation from the design team that the water systems will meet the requirements of ACoP L8 or CIBSE TM13.</p> <p>Written confirmation of all types of water system present within the development.</p>

HEALTH & WELLBEING		Points Available	Points Achieved	Comments	Evidence Required
Credit Reference					
HW18	Where information provided demonstrates that office space within the development achieves best practice in terms of occupant comfort and control.				
	Three of the following measures must be achieved for at least 80% of the development's office space.	2.14	4.3	Viridor have confirmed that they will achieve compliance with view out, daylight glare control, lighting zones, thermal zoning and thermal performance.	Evidence need only be provided for those criteria it is attempted to achieve. View out: plans showing the layout of workstations within the office (this may be a notional layout but should be characteristic of the use of the office space). Daylight glare control: confirmation of the scope and details of the glare control method and demonstration of how these are controlled by the occupants (e.g. user controlled blinds). Lighting zones: confirmation of the control systems specified, including details of the installation and its zoning (a plan is often useful here). Potential for natural ventilation: evidence of the following in either drawings, specifications or calculations; details of window opening specifications, the openable area of window, the internal area of the room(s), and the depth of the room. Internal air pollution: plans showing the location of air intakes, extracts, openable
	OR Five of the following measures must be achieved for at least 80% of the development's office space.	4.3			
<p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p> <ul style="list-style-type: none"> • View Out - All work stations are situated a maximum of 7m away from a window or permanent opening providing a view. • Daylight glare control - Where an occupant controlled system of glare control, (e.g. internal or external blinds) is fitted on all windows. • Lighting zones - Separate zoned lighting controls provided. • Potential for natural ventilation - The openable window area in each room/floor plate should be equivalent to 5% of the gross 					

HEALTH & WELLBEING		Points Available	Points Achieved	Comments	Evidence Required
Credit Reference	<p>internal floor area of that room/floor plate, and for accommodation over 7m deep openable windows are on opposite sides.</p> <ul style="list-style-type: none"> • Internal air pollution - Air-conditioned and mixed-mode buildings: - Where locations of air intakes/outlets are over 10m apart to minimise recirculation AND intakes are over 20m from sources of external pollution or for naturally-ventilated buildings: Where location of openable windows/ventilators are over 10m from sources of external pollution. • Thermal zoning - where the heating / cooling system is designed to allow separate occupant control to be made of each perimeter area (i.e. within 7m of each external wall) and the central zone (i.e. over 7m from the external walls). • Thermal comfort - Thermal comfort levels must meet the requirements set out in CIBSE Guide A and feasibility studies aimed at optimising thermal comfort completed. • Acoustic performance - Indoor ambient noise level in unoccupied offices must be achieved. 				<p>windows, ventilators and sources of external pollution.</p> <p>Thermal zoning: details of thermal zoning and the method of control to be employed.</p> <p>Thermal comfort: feasibility study aimed at optimising thermal comfort and confirmation that a thermal comfort assessment has been undertaken (e.g. signed minutes of a meeting confirming such or copy of report).</p> <p>Acoustic performance: calculations demonstrating the indoor ambient noise level for each type of space.</p>
Total points achieved to carry forward			15		

ENERGY					
Credit Reference		Points Available	Points achieved	Comments	Evidence Required
E01	Where the building demonstrates a percentage improvement above the requirement for CO ₂ emissions as set out in the Building Regulations. <ul style="list-style-type: none"> • +1% • +2% • +4% • +6% • +8% • +10% • +12% • +14% • +18% • +22% • +30% • +40% • +50% • +60% • ≥70% Where fitted out units with unheated operational space are being assessed then the notional model must assume that the operational space has no heating source.				
		0.96			
		1.92			
		2.88			
		3.85			
		4.81			
		5.77			
		6.73			
		7.69			
		8.65		14.43	
		9.62			
		10.58			
		11.54			
		12.50			
13.46					
14.43					
	NOTE: These point scores are not cumulative,			Whilst SBEM calculations have not yet been conducted, as all of the facility's electricity and heat will be provided from the energy-from-waste plant, it is considered that the maximum number of credits will be awarded. This issue is being reviewed by BRE.	Should an attempt be made to achieve credits under this section, a copy of the report produced by the approved calculation tool must be provided. This report must include: <ol style="list-style-type: none"> 1. The predicted building carbon dioxide emission rate, the target emission rate from the notional building in kgCO₂/m². 2. The percentage improvement over Buildings Regulations 2002, obtained from the method used to show Building regulations 2006 compliance. 3. Percentage improvement over Buildings Regulations 2002 for 2006 Regulations compliance. 4. The name of the approved software used to carry out the modelling. 5. Confirmation of the expertise and experience of the individual carrying out the modelling.

ENERGY					
Credit Reference		Points Available	Points achieved	Comments	Evidence Required
	simply award the appropriate points score corresponding to the predicted level of achievement.				
E03	Where evidence provided demonstrates sub-metering of energy use by areas is installed within each unit. This should cover the following areas as a minimum: <ul style="list-style-type: none"> • Office areas • Operational area • Ancillary areas (such as canteen etc) 	0.96	0.96	Viridor has indicated that energy sub-metering will be specified as part of the development design brief. As a minimum this will include separate meters for the operational, office and ancillary areas.	Specific wording in the development design brief stating that the energy use of the operational and ancillary areas will be monitored separately. A drawing indicating the location and function of the sub-meters.
E04	Where 80% of external luminaires have an efficacy of at least 70 luminaire-lumens/circuit-Watts and all external light fittings are controlled through a time switch or daylight sensor to allow for daylight control.	0.96	0.96	Viridor has indicated that at least 80% of the external luminaires will have an efficiency of at least 70 luminaire-lumens per circuit watt and will be controlled by either a time switch or daylight sensor.	Confirmation of the daylight or timer controls that have been fitted to the lights and either confirmation of the efficiency of the lights or specific wording in the development design documentation confirming that all lights will meet the required efficiency standards.
E05	Where evidence is provided to demonstrate that the building has been designed and detailed to ensure optimum building fabric performance and to minimise unnecessary air infiltration.	0.96	0	Due to the open nature of the building and the requirement for vehicles to be entering and exiting on a regular basis, it is unlikely that the requirements for this credit can be met.	-
Total points achieved to carry forward			16.35		

TRANSPORT					
Credit Reference		Points Available	Points achieved	Comments	Evidence Required
		T01	<p>The number of credits awarded is based on the proximity of the development to a public transport node with a good service frequency.</p> <ul style="list-style-type: none"> Where the transport node is within 800m with a frequent service of 30min intervals <p>OR</p> <ul style="list-style-type: none"> Where the transport node is within 500m with a frequent service of 30min intervals <p>OR</p> <ul style="list-style-type: none"> Where the transport node is within 800m with a frequent service of 15min intervals <p>OR</p> <ul style="list-style-type: none"> Where the transport node is within 500m with a frequent service of 15min intervals <p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p>		
	1.92				
	2.88				
	3.85				

TRANSPORT					
Credit Reference		Points Available	Points achieved	Comments	Evidence Required
T05	<p>Where evidence is provided to demonstrate that there is adequate provision of covered, secure and well lit cycle racks and showers. Compliant cycle storage facilities must be provided for a percentage of building occupants in accordance with the following figures:</p> <ul style="list-style-type: none"> • 10% of building occupants up to 500 PLUS • 7% for building occupants in the range of 501 – 1000 PLUS • 5% for building occupants over 1000 	0.96	1.92	<p>Viridor has confirmed that an adequate number of appropriate cycle storage racks will be provided to serve the number of employees. They will also provide adequate additional facilities sufficient for the award of the second credit. In order to achieve the second credit one shower must be provided per 10 cycle racks (these may be used by other staff members) and changing facilities (min 1m² per cycle rack) with either lockers (one per cycle space) or a specially designed and designated drying space for clothing (a plant room does not comply).</p>	<p>Design plans and/or documentation confirming:</p> <ol style="list-style-type: none"> 1. The number and type of cycle racks provided (10% of building employee numbers). 2. The proximity of the racks to the main building entrance (50m maximum unless overridden by health and safety considerations). 3. Confirmation that the racks are covered and lit in accordance with BS5489 Part 1. 4. Size and location of showers and changing facilities plus the size and design of the drying space and/or number of lockers.
	<p>Where in addition to the above, information is provided to demonstrate that there is adequate provision of changing facilities and lockers for clothes or a dedicated drying space for wet clothes.</p> <p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p>	1.92			

TRANSPORT					
Credit Reference		Points Available	Points achieved	Comments	Evidence Required
T08	Where evidence is provided to demonstrate that a travel plan has been developed and tailored to the specific needs of the users of the assessed development. The plan must include policies that address constraints, opportunities, targets and actions for the following: <ul style="list-style-type: none"> • walking; • cycling; • public transport; • use of the private car for travel to work; • mopeds/motorcycles; • reducing the need to travel; • visitors/customers; • deliveries. 	0.96	0.96	Viridor has confirmed that Travel Plans, for both the construction and operational periods has been produced and will form a site specific transport assessment addressing the issues required under the credit criteria. The following types of travel must be included: commuter journeys, business travel, visitors/customers, and deliveries.	Either a copy of the produced plan or, if not yet written, a firm written commitment to produce such a plan. The evidence should state the contents of the travel plan.
T12	Where evidence is provided to demonstrate that vehicle access areas have been designed to ensure adequate space for manoeuvring delivery vehicles, and provide space for storage of refuse skips and pallets.	0.96	0.96	Viridor has confirmed that the site has been designed to ensure adequate vehicle access and manoeuvring space. Parking and turning areas are designed to require only simple movements; a separate waiting area has been provided for waiting delivery vehicles, away from the manoeuvring area and staff car park; and separate areas for the storage of pallets and refuse skips.	A site plan clearly showing the manoeuvring area, delivery vehicle waiting area and designated area for skips and pallets, and Information demonstrating the adequacy of the manoeuvring area, including information regarding the number, size and types of vehicles using the facility.
Total points achieved to carry forward		3.84			

WATER						
Credit Reference	Points available		Points achieved	Comments	Evidence Required	
W01	Credits are awarded based on the improvement over standard specification of water fittings. A standard specification would include 6 litre flush toilets, urinals with no controls, a shower that uses 12-15 litres per minute, standard taps with no flow restrictors. In a formal BREEAM assessment the predicted water consumption will be calculated using the BREEAM water calculator, as a guide the following can be used as a rough estimate of likely number of credits achieved: <ul style="list-style-type: none"> • where some of the fittings use less water than a standard fitting OR <ul style="list-style-type: none"> • where all of the fittings are low water OR, where only some of the fittings are low water, rainwater or grey water systems are specified. OR <ul style="list-style-type: none"> • where the water fittings are all low water AND rainwater or greywater fittings have been specified. <p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p>		1	Viridor has specified that all fittings will be low water use. Rainwater harvesting will be used to provide water for the recycling processes and it may be possible to divert some of this to the sanitary fittings.	Documentation specifying the type of water fittings (WCs, urinals, showers and taps) to be used, including details of the rate of water flow. If grey/rainwater is to be used, include details of the storage capacity and amount/proportion used for sanitation purposes.	
			2			2
			3			

WATER					
Credit Reference		Points available	Points achieved	Comments	Evidence Required
W02	Where evidence is provided to demonstrate that a water meter with a pulsed output will be installed on the mains supply to each unit.	1	1	Viridor has specified that this will be incorporated into their design specification.	Confirmation of the building's water meter arrangement from the project team and confirmation that the meter(s) have a pulsed output.
W03	Where evidence is provided to demonstrate that a leak detection system is specified or installed to each unit.	1	1	Viridor has specified that this will be included within the development specification.	Confirmation that leak detection systems are to be specified on all water supplies to the building. This should include leak detection for the water supplies within the building and between the building and the site boundary. Provision of appropriate technical details to demonstrate compliance with the above should be made.
Total points achieved to carry forward			4		

MATERIALS					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
MW01	Where evidence provided demonstrates that the major building elements specified have an 'A rating', as defined in the <i>Green Guide to Specification</i> . In a formal BREEAM assessment the number of credits will be calculated using the BREEAM materials calculator, but as a guide the following can be used as a rough estimate of the likely number of credits achieved. The following elements are considered; <ul style="list-style-type: none"> • External Walls • Roof Credits are awarded for the external walls and roof building elements based on the percentages below	1	2	The building materials for the walls and roof will be selected to ensure that they achieve an 'A'-rating under the Green Guide for Specification.	Evidence from the design team which confirms the materials' specifications and the appropriate Green Guide Rating. Evidence from the design team of the relevant proportions/areas of different specifications.
		2			
		<p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p>			

MATERIALS					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
MW02	Where at least 80% of the combined area of external hard landscaping and boundary protection specifications achieve an A rating, as defined by the Green Guide to Specification.	1	0	It is highly unlikely that this credit will be achievable as large areas of hard-standing will be required for roads and car-parking etc. and the majority of A-rated surface treatments (e.g. concrete paving slabs) are not sufficiently robust to withstand the impacts of heavy use.	Evidence confirming the materials' specifications and a plan confirming the relevant proportions/areas of each.
MW06	For new build: Where evidence provided demonstrates that a design reuses at least 80% of an existing primary structure and OR For part refurbishment and part new build: Where evidence provided demonstrates that the volume of the reused structure comprises at least 50% of the final structure's volume.	1	0	It is not feasible to achieve this credit as there are no suitable structures upon the site.	-
MW07	Where significant use of crushed aggregate, crushed masonry or alternative aggregates (manufactured from recycled materials) is specified for 'high grade' aggregate uses (such as the building structure, ground slabs, roads, etc.).	1	0	Insufficient crushed aggregate is present on the site to allow the conditions of the criterion to be satisfied. Investigations are being conducted to determine whether it is feasible to import sufficient recycled aggregate.	-
MW08	Where materials used in structural and non-structural elements are responsibly sourced.	2	0	At this preliminary stage suppliers have not yet been selected. Therefore it is not possible to determine whether it will be feasible to obtain the materials required in appropriate quantities from suppliers	If suppliers re unknown, a letter of intent to use suppliers who can provide an EMS certificate or equivalent for the process and extraction stages of the product. If suppliers are known then either an appropriate EMAS

MATERIALS					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
				operating under certification schemes. Viridor will preferentially select suppliers with such certification where possible.	or ISO 140001 certificate or a signed and dated letter outlining the EMAS accreditation information, name of the certifying body, certificate approval date, expiry date and certificate approval number.
MW10	<p>Where protection is given to vulnerable parts of the building such as areas exposed to high pedestrian traffic, vehicular and trolley movements.</p> <p>Suitable durability measures are listed below:</p> <ul style="list-style-type: none"> • Bollards/high kerbs to vehicle drop-off areas • Corridor walls specified to Severe duty (SD) as per BS 5234-2 • Rails to walls of corridors where trolleys will be used (i.e. Science accommodation) • Kick plates/impact protection on doors • Hard wearing and easily washable floor finishes in heavily used circulation areas (i.e. main entrance, corridors etc). 	1	1	Viridor has confirmed that appropriate protection will be incorporated into the design specification.	<p>A specification listing all vulnerable areas of the building and the durability measures to be employed to protect them.</p> <p>A plan showing the location of all protection features.</p>
MW12	<p>Where a central, dedicated storage space is provided for materials that can be recycled. This can be either within the building itself, or on site using skips, (provided there is good access for collections and it is within easy reach of the building).</p> <p>For fully fitted out units: The space provided should allow an external hardstanding area that is adequate to enable the</p>	1	1	Viridor has confirmed that this will be included within the development design specification.	A plan showing the size and location of the storage area. Evidence that the area will be labelled for the storage of recyclable materials, will not be used for other purposes and is of sufficient size to accommodate the predicted waste stream.

MATERIALS					
Credit Reference		Points Available	Points Achieved	Comments	Evidence Required
	occupier to recycle materials from the operational area(s) effectively PLUS at least 2m ² per 1000m ² of net office floor area (up to a maximum of 10m ²).				
MW13	Where evidence provided demonstrates that either a compactor or baler is provided for compacting/baling waste generated on site and <ul style="list-style-type: none"> • A water outlet is provided for cleaning • The development achieves the BREEAM credit for recycling storage facilities (MW12) 	1	-	Due to the nature of the development, BRE will be contacted to determine whether this credit can be achieved by default.	Documentation specifying the type of compactor/baler to be installed. A plan showing where the baler will be located. Relevant specification documents indicating that a water outlet will be provided per facility. Confirmation that the requirements for Credit MW12 have been met.
Total points achieved to carry forward		4			

LAND USE & ECOLOGY					
Credit Reference		Points available	Points achieved	Comments	Evidence Required
LE01	Where the footprint of the proposed development largely falls within the boundary of land previously developed.	1.5	1.5	The site is considered to have been previously developed, containing buildings and large areas of hard-standing.	Maps, photographs and/or reports proving conclusively that 75% or more of the site has been developed within the previous 50 years.
LE02	Where land used for the new development has, prior to development, been defined as contaminated, and where adequate remedial steps have been taken to decontaminate the site prior to construction.	1.5	1.5	The land is considered to have been contaminated and remedial activities are being undertaken to restore it.	A copy of the report defining the site as contaminated; and Contract documents or letters of appointment detailing the requirement/commitment to implement the necessary remedial steps identified within the report. These should include steps taken to decontaminate or contain contamination prior to development.
LE03	Where evidence is provided to demonstrate that the construction zone is defined as land of low ecological value and all existing features of ecological value will be fully protected from damage during site preparation and construction works.	1.5	1.5	The site is of no inherent ecological value.	Report from a suitably qualified ecologist stating that the site is of low ecological value and all ecological features within the development site are adequately protected.

LAND USE & ECOLOGY					
Credit Reference		Points available	Points achieved	Comments	Evidence Required
LE04	<p>Credits are awarded based upon the degree of negative impact the new development has on the site's existing ecology. In a formal BREEAM assessment the ecological impact of the development is calculated based on the area of habitat and number of floral species displaced, using BREEAM's ecological value calculator. As a guide, the following can be used to estimate the likely number of credits:</p>				
	<p>No credits can be awarded where the new development will displace a significant majority of the existing site's ecological habitat types and areas.</p>	1.5	1.5	A detailed landscaping scheme has been prepared, but not designed specifically to encourage nature conservation.	Details of vegetation plot types and their areas prior to development (including plans).
	<p>Where a majority of the existing site's ecological habitat types and areas are not displaced as a result of the new development.</p>	3			Details of vegetation plot types and their areas post development (including plans).
<p>Where either the development displaces none of the existing site's ecological habitat types and areas. Or, where there is no, or very limited existing site ecology; for example the new development is a refurbishment, or it is on contaminated land or Brownfield land that has been derelict/unoccupied for less than one year.</p> <p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p>					

LAND USE & ECOLOGY					
Credit Reference		Points available	Points achieved	Comments	Evidence Required
LE05	Where evidence is provided to demonstrate that the design team (or client) has i) appointed a professional to advise and report on enhancing and protecting the ecological value of the site; AND ii) implemented the professional's recommendations for general enhancement and protection for site ecology.	1.5	3	An ecologist has been appointed to advise and report on enhancing and protecting the ecological value of the site. The recommendations produced will be implemented. It is considered likely that there will be an increase in the ecological value of the site, but highly unlikely that maximum credits will be awarded.	Demonstrable evidence that an appropriately qualified ecologist has been appointed to report on enhancing and protecting the ecology of the site. A copy of the ecologist's report, to include appropriate recommendations for the protection and enhancement of site ecology Written commitment from the design team that the recommendations of the ecology report have been/will be implemented.
	OR Where, in addition to the above , evidence is provided to demonstrate a positive increase in the ecological value of the site of up to (but not including) 6 species.	3			
	OR Where, in addition to the above , evidence is provided to demonstrate a positive increase in the ecological value of the site of 6 species or greater.	4.5			
	NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.				
LE06	Where evidence is provided to demonstrate that the client has committed to achieving the mandatory requirements listed below and: At least two of the additional requirements.	1.5	3	Viridor has committed to achieving the mandatory requirements and at least four of	Written confirmation/evidence that each of the mandatory requirements and the four

LAND USE & ECOLOGY					
Credit Reference		Points available	Points achieved	Comments	Evidence Required
	At least four of the additional requirements.			the additional requirements.	selected optional requirements have been implemented/achieved. This could include signed and dated meeting minutes, wording in the design specification, design drawings or correspondence.
	<p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p> <p>Mandatory Requirements A suitably qualified ecologist must confirm in writing that:</p> <ul style="list-style-type: none"> All relevant UK and EU legislation relating to protection and enhancement of ecology has been, or will be, complied with during the design and construction process. An appropriate management plan is produced covering at least the first 5 years after project completion. This should include details of the scope of the management plan. Key responsibilities, and with whom these responsibilities lie, e.g. owner, landlord, occupier, FM, other. <p>Additional Requirements</p> <ul style="list-style-type: none"> A 'Biodiversity Champion' has been nominated The relevant site work-force has been trained on how to protect site ecology during the project. Record and monitor actions taken to protect biodiversity throughout key stages of construction 	3			

LAND USE & ECOLOGY			
Credit Reference		Points available	Points achieved
		Comments	
		Evidence Required	
	<ul style="list-style-type: none"> The client requires that a new ecologically valuable habitat, appropriate to the local area, be created. The client requires the contractor to programme site works to minimise disturbance to wildlife. The client requires actions to be taken to protect/enhance biodiversity A Biodiversity Champion must have sufficient authority and time on site to influence activities and ensure that they have minimal detrimental impact on biodiversity Local biodiversity expertise should be sought at, or before, the design stage Where a site is deemed to have no ecological value <p>The refurbishment of a listed building may be exempt from the credit requirements if they conflict with the need to maintain the building's listed features</p>		
Total points achieved to carry forward		12	

POLLUTION		Points available	Points achieved	Comments	Evidence required
Credit Reference					
P01	<p>Where evidence provided demonstrates the use of refrigerants with a global warming potential (GWP) of less than 5 OR where there are no refrigerants specified for use in building services.</p> <p>For fitted out buildings with integral cold storage areas, the following must also be achieved: Where evidence provided demonstrates that all refrigerant types used in cold storage systems have a global warming potential (GWP) of below 5.</p>	1.15	0	Whilst Viridor aim to select air conditioning systems using refrigerants with a GWP of less than 5, this cannot be confirmed at this stage of the design process. It is, however, considered unlikely that this will be attained.	Specific wording in the design specification stating that no refrigerants are to be used for building services or that the total refrigerant charge is less than 5kg.
P02	Where evidence provided demonstrates that refrigerant leaks can be detected AND that the provision of automatic refrigerant pump down is made to a heat exchanger (or dedicated storage tanks) with isolation valves OR where there are no refrigerants specified for the development.	1.15	0	As the coolant systems have not yet been defined, it is not possible to assess this credit at this stage in the design process.	Specific wording in the design specification (see P01).
P04	Where evidence provided demonstrates that the specification of insulating materials avoids the use of substances with a global warming potential (GWP) of 5 or more in either manufacture or composition	1.15	1.15	Viridor has confirmed that all insulating materials within the building fabric will have a GWP of less than 5. This must include any insulation used for the following purposes: building fabric (walls, floor, roof, cavity walls, lintels <i>etc.</i>), building services (hot and cold pipe-works, water tanks <i>etc.</i>) and sound proofing.	Details of the insulations used, including type, manufacturer and technical specification.

POLLUTION					
Credit Reference		Points available	Points achieved	Comments	Evidence required
P06	<p>Office and associated areas: Where evidence provided demonstrates that the maximum dry NO_x emissions from delivered space heating energy are:</p> <ul style="list-style-type: none"> • ≤70 mg/kWh delivered heating energy or less (at 0% excess O₂), ≤70 mg/kWh delivered heating energy (at 0% excess O₂). 	1.15	-	<p>As all of the space heating will be provided by the energy-from-waste plant it will be necessary to confirm the NO_x/kWh output from the plant is less than 70mg.</p>	<p>Design specification clauses stating the heating system type specified.</p> <p>Manufacturer's details for energy-from-waste plant's dry NO_x emission rate at 0% excess oxygen.</p>
	<p>In addition for Fully Fitted Buildings - Operational areas: Where evidence provided demonstrates that the maximum dry NO_x emissions from delivered space heating energy are:</p> <ul style="list-style-type: none"> • ≤70 mg/kWh delivered heating energy or less (at 0% excess O₂). <p>NOTE: These point scores ARE cumulative.</p>	2.32			
P07	<p>Where evidence provided demonstrates that the assessed development is located in a zone defined as having a low annual probability of flooding.</p>	2.31	2.31	<p>The development site is located in a zone considered to have a low risk of annual flooding.</p>	<p>Written confirmation from the design team of the flood zone or annual probability of flooding in their site's location. The information must state the source of the information regarding the flood zone category; and</p> <p>Confirmation of the design flood level for the site/flood zone and site plans or specifications outlining the range of ground</p>
	<p>OR Where evidence provided demonstrates that the assessed development is located in a zone defined as having a medium annual probability of flooding and the ground level of the building, car parking and access is above the design flood level for the site's location.</p>	1.15		<p>There is currently no plan to implement a Sustainable Drainage Scheme.</p>	

POLLUTION		Points available	Points achieved	Comments	Evidence required
Credit Reference					
	<p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p> <p>Where evidence provided demonstrates that Sustainable Urban Drainage techniques are specified to minimise the risk of localised flooding, resulting from a loss of flood storage on site through development.</p>	1.15	0		levels of the building , car park and site access.
P08	<p>Where evidence provided demonstrates that on site treatment such as oil separators/interceptors or filtration have been specified for areas at risk from pollution, i.e. vehicle manoeuvring areas, car parks, waste disposal facilities, delivery facilities or plant areas.</p>	1.15	1.15	<p>Viridor has specified that appropriate site treatments will be included within the design specification.</p> <p>Please note that further requirements will be necessary should there be chemical storage areas on site.</p>	<p>Written confirmation that appropriate facilities for drainage and pollution control have been specified in accordance with current best practice guidelines.</p> <p>Written confirmation from the local authority and/or Environment Agency that they approve of the proposals.</p>
P11	<p>Where evidence provided demonstrates that a feasibility study considering renewable and low emission energy has been carried out and the results implemented.</p> <p>OR</p> <p>Where evidence provided demonstrates that the first credit has been achieved and 10% of total energy demand for the building/development is supplied from local renewable, or low emission energy, sources.</p>	1.15 2.31	3.46	<p>Due to the provision of all the electricity and heating from the energy-from-waste plant, it is considered that over 15% of the energy demand will come from local renewable sources.</p>	<p>A copy of the renewable energy feasibility study must be provided.</p>

POLLUTION		Points available	Points achieved	Comments	Evidence required
Credit Reference					
	<p>OR</p> <p>Where evidence provided demonstrates that the first credit has been achieved and 15% of total energy demand for the building/development is supplied from local renewable, or low emission energy, sources.</p> <p>NOTE: These point scores are not cumulative, simply award the appropriate points score corresponding to the predicted level of achievement.</p>	3.46			
P13	<p>Where evidence provided demonstrates that sources of noise from the development do not give rise to the likelihood of complaints from existing noise sensitive premises and amenity or wildlife areas that are within the locality of the site.</p>	1.15	1.15	<p>Viridor has confirmed that this will be included within their design brief. This must include an assessment in compliance with BS4142:1997 measuring the existing background noise levels at the most noise sensitive part of the site and the specific noise level resulting from the proposed noise source. If the specific noise level of the proposed source is 5dB or greater than background noise level, and noise sensitive premises are within 800m, the report must demonstrate that suitable noise attenuation measures are implemented.</p>	<p>A plan identifying all noise sensitive premises/areas within 800m. Where there are no sensitive premises within 800m and the credit is to be awarded by default, a plan must be provided showing the respective distances.</p> <p>Written confirmation that a noise assessment has been or will be conducted, and identification of which parts of the development have been/will be subjected to assessment.</p>
Total points achieved to carry forward		9.22			

3.0 SCORING AND SUMMARY

The BREEAM: Industrial assessment awards ratings to developments in four bands, Pass, Good, Very Good or Excellent, according to their points score, as follows:

RATING	SCORE
PASS	25
GOOD	40
VERY GOOD	55
EXCELLENT	70

The table below shows the results of the appraisal of the Trident Park Energy Reclamation Facility:

Technical area	Points achieved
Management	11.67
Health and Wellbeing	15
Energy	16.35
Transport	3.84
Water	4
Materials and Waste	4
Land Use and Ecology	12
Pollution	9.22
Total:	76.08

The score of 76.08 translates into a BREEAM: Industrial rating of Excellent. The 6.08 points above the 70 point threshold should provide a sufficient buffer to insulate against the changes to design that are inherent with construction projects. Additionally there are some credits that have not been attained where minor modifications could result in the credit being achieved.

The provision of all of the development's energy demands from a local renewable energy source is a significant factor in the high score attained by the development.