BREEAM-NL 2014

LABEL FOR SUSTAINABLE REAL ESTATE

Assessor manual New Construction and Refurbishment

Version 1.01, september 2014

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The Dutch Green Building Council

The Dutch Green Building Council (DGBC) is an independent foundation organisation that has developed a sustainability label for the Dutch build environment. It provides certificates to projects of which the measure of sustainability has been assessed according to pre-set criteria that have been documented in an Assessment manual (BRL). The BREEAM family of labels is based entirely on, and follows to a very large extent the international BREEAM, developed by the BRE in England (see under BREEAM).

This manual contains all information about the Dutch version of BREEAM for new building, called BREEAM-NL. You can specify any additions and suggestions and send them to helpdesk@dgbc.nl.

The DGBC is supported by a large number of organizations who all have ambition and the sustainability objectives of the DGBC subscribe. These are active participants in the development and continuous improvement involved. On www.dgbc.nl more information about becoming participant.

BREEAM

BREEAM is an instrument for assessing the sustainability of buildings. BREEAM was developed by the Center for Sustainable Construction, BRE part of the British. BREEAM stands for Building Research Establishment Environmental Assessment Method. BREEAM-NL is developed and managed by DGBC licensed by BRE Global Ltd (UK), where the use and development direction will be overseen by an independent board and a Central Advisory Group (similar to the Dutch National Board of Experts), where a broad cross-section of stakeholders from the construction industry are represented.

Scheme Operator

BREEAM-NL is developed and managed by DGBC, under license of BRE Global Ltd. The Netherlands has been formally recognized by the BRE as National Scheme Operator (Scheme Manager) and is therefore the only party in the Netherlands is entitled to operate this label.

DGBC, as Scheme Operator, is responsible for the content and functioning of the BREEAM-NL Schemes. The internal organization is therefore divided in a project team, a governance and an independent Committee of Experts (College van Deskundigen = CvD).The CvD's primary task is the monitoring of the quality and operation of the BREEAM schemes. CvD operates independently with respect to both project team and board. Both board and CvD positions are unpaid jobs, and are compiled on the basis of the 'all parties concerned' principle and therefore represent all the relevant stakeholders.

In order to guarantee the independence of assessments with the BREEAM-NL label a three-party certification system used. 1) The project (building, area, infrastructure work) builds the assessment and provides the evidence to prove compliance for the intended score, 2) an independent assessor assesses the completeness of the assessment and determines the qualification/rating of the project; 3) DGBC sample checks the work of the Assessor.

Imprint

The DGBC is indebted to BRE Global for their continued commitment to releasing relevant international labels, to our participants which make it possible to develop and improve BREEAM-NL labels, and to all individuals who have contributed in the form of feedback or recommendations. Much of it is reflected in the credit text. You can continue to provide input through helpdesk@dgbc.nl

At the time of completion of this version of the assessmenttext a large number of skilled and experienced people were involved. Not least, the Committee of Experts and the Advisory Group who continuously ensure the quality of the label throughout the year and give direction in the development process:

Committee of experts

- prof. dr. ir. J.W.F. Wamelink, TU Delft (voorzitter)
- H. Copier, CBRE
- Ing. P.G.C.P. Dielissen DimensieVier
- ir. J.M. Elias, Unica Ecopower
- ir. J.A.J. Korbee, AgentschapNL
- R.M.G. Verbeek, Facilicom
- dr. ir. D.T. Welling, Redevco
- K.G. Westhoff, Gemeente Rotterdam Ontwikkelingsbedrijf
- ing. M. Baars, Search

Advisery group new buildings and large-scale renovation

- ir. J.M. Elias, Unica Ecopower (voorzitter)
- ir. P.W. van Calis, ARCADIS Nederland BV
- Ing. P.G.C.P. Dielissen DimensieVier
- E. van Eeckhoven, C2N B.V.
- dr. ir. G.T. Luiten, TNO Bouw & Ondergrond
- ir. M.G. van Rhenen, OVG projectontwikkeling
- ir. I.C. Strom, Royal HaskoningDHV B.V.
- ir. E.M.M. Willems, Caubergh-Huygen Raadgevende Ingenieurs
- ir. F.T.S. Zegers, E4S Consult
- ir. I.M. Kuijpers-Van Gaalen, DGMR Bouw B.V.
- ing. M. de Graaf, BAM Advies & Engineering

All credits and other parts of the label are reviewed and approved by the Advisory Group new buildings and large-scale renovation, the Committee of experts and BRE Global.

Also, there are several consultants who to have supported the translation and the development of the BREEAM-NL content. The following persons were involved in writing the credit texts:

Balvers, ir. J.R. van	BBA Binnenmilieu
Boerstra, ir. A.C.	BBA Binnenmilieu
Eeckhoven, E. van	C2N B.V.
Maingay-Frijters, ir. E.E.S.	C2N B.V.
Elkhuizen, P.A.	COFELY GDF SUEZ

Kuijpers-Van Gaalen, ir. I.M.	DGMR Bouw B.V.
Loos, ir. R.R.M. van der	DGMR Bouw B.V.
Strom, ir. I.C.	HaskoningDHV B.V.
Woersem, I. van	HaskoningDHV B.V.
Dansen, ir. M.A.P.	Dutch Green Building Council
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Zegers, ir. F.T.S.	E4S Consult
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Haas, prof. dr. ir. E.M.	NIBE
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Wolfs, M	PRC B.V.
Boer, ing. H.C.M. van den	Search B.V.
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Kooken, J.E.	Search B.V.
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Hoogers, A	Builddesk
Vos, ir. M.	Bureau Nieman
Buurman, P.	Deerns
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Eijdems, ir. H.H.E.W.	P2P-consult
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Springer, ir. M.	Adamasgroep

And also members of:

- Nederlandse Brancheorganisatie voor Gebouw Automatisering;
- Nederlandse Vereniging van Leveranciers van Grootkeukenapparatuur (NVLG).

Dutch Green Building Council
Annemarie van Doorn, Directeur
Maarten Dansen, Operationeel Manager
Edwin van Noort, Projectmanager
Rianne de Jong, ondersteuning en testprotocol

In addition, the DGBC indebted to BRE Global to the translation made possible and to all persons and participants through the focus groups, pilots and otherwise feedback and recommendations made. Much of it is in the questions of this version processed.

Table of contents

1. Introduction

1.1. Wat is BREEAM and BREEAM-NL?

BREEAM (Building Research Establishment's Environmental Assessment Method) is the world's leading and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable design and has become the de facto measure used to describe a building's environmental performance. BREEAM-NL is the Dutch adaption of the international version of BREEAM.

Aims of BREEAM:

- To mitigate the impacts of buildings on the environment
- To enable buildings to be recognised according to their environmental benefits
- To provide a credible, environmental label for buildings
- To stimulate demand for sustainable buildings

Objectives of BREEAM:

- To provide market recognition to low environmental impact buildings
- To ensure best environmental practice is incorporated in buildings
- To set criteria and standards surpassing those required by regulations and challenge the market to provide innovative solutions that minimise the environmental impact of buildings
- To raise the awareness of owners, occupants, designers and operators of the benefits of buildings with a reduced impact on the environment
- To allow organisations to demonstrate progress towards corporate environmental objectives

1.1. BREEAM Credibility

Technical Credibility

BREEAM is tried and tested, both in terms of its robust technical standards and its commercial delivery, and expert advice (based on scientific evidence) continues to inform almost every issue in BREEAM. In the UK there are over 115,000 buildings certified and over 700,000 homes and buildings currently registered for assessment. BREEAM can be used to assess any building type anywhere in the world.

BREEAM has always used objective criteria to recognise good environmental performance:

- Issues for assessment are agreed to be significant, and offer worthwhile reductions in environmental impact Issues must be assessable at the relevant stage in the building's life
- Performance levels are based on scientific evidence wherever possible
- Performance levels must exceed demands of law and regulations and encourage innovation
- Improvements encouraged by BREEAM are achievable and cost effective

Where specific targets cannot be set using hard science or research, sensible practical measures are recommended to minimise environmental impact or enhance the environment of the building and its users.

Commercial Credibility

Assessments are undertaken by organisations and individuals trained by DGBC under license of BRE Global. This ensures:

- Competition in the market for assessment services
- Engagement with the whole of the industry
- Assessors work to the same quality standards (monitored by DGBC)
- Certification is carried out by DGBC under license of BRE Global

1.2. Summary of topics in the BREEAM-NL manual

The assessment of a building (plus lot) is based on a creditlist. The Dutch Credit List focuses on Dutch legislation, practice guidelines and building practice. The points to be allocated may vary by type of building (retail, school, office). The applicant must indicate in his registration for each part of the building which building type is applicable.

Version 1.0 and subsequent major changes in the credit list are approved by the Advisory Group of DGBC and BRE Global and is available on www.breeam.nl.

A BREEAM standard covers issues in categories of sustainability as follows:

- Management
- Health & Well Being
- Energy
- Transportation
- Water
- Materials
- Waste
- Land Use and Ecology
- Pollution

Each category is detailed in this technical manual and consists of a number of issues (summarized below). Each issue seeks to Mitigating the impact of a new or refurbished building on the environment by defining a target performance and Credit criteria that must be met to confirm the target has been achieved.
Where a performance target has been achieved the number of available BREEAM credits can be awarded.

The sustainability objectives rise above the statutory minimum as laid down in the Building Decree or other laws and regulations. BREEAM-NL certification therefore goes beyond legal requirements and is a voluntary choice of the building owner / client. The objectives are based on current practice guidelines (best practices).
Most credits have a certain freedom of choice, which means that development and construction teams can choose themselves which credits they wish to obtain points and thus build up a total score. For a number of items a minimum standard is applicable, that must be achieved in order to obtain a total score.

If all subjects within a category are assessed, then a score category can be determined, to which an environmental weighting is applied (see below).

The weighted category scores are totaled and lead to an overall score, which may have additional scores if innovation credits have been awarded. This total score eventually leads to a BREEAM-NL rating.

The assessments of buildings result in a final report and a BREEAM-NL certificate, in which the environmental performance of the building are listed against the issues from the standards framework.

For a complete certification process of a project the BREEAM User Guide is mandatory. It states among other things that an independent assessment should be performed by a BREEAM assessor, and that the DGBC performs quality checks (QA - Quality Assurance) on the report submitted by the assessor. The user guide is available on www.breeam.nl.

2. Scope

This chapter looks at the scope, the scope of the Technical Manual, and the building typologies.

2.1. Subject of assessment

This Technical Manual (BRL) was designed to assess properties under BREEAM-NL. After positive results from the assessment, a BREEAM-NL certificate is issued showing the appropriate ratings of the project.
Upon registering the project to be assessed it is determined against which version the object is to be assessed. The version against which the assessment has been made will be shown on the BREEAM-NL certificate. BREEAM-NL issued certificates for completed assessments are a snapshot and have in principle an unlimited validity. This does not apply to temporary certificates for the BREEAM-NL Design Phase upon completion of the actual building.

All BREEAM assessments in the Netherlands should be conducted against the BREEAM-NL Technical Manual; not with e.g. BREEAM International or BREEAM Europe. This agreement was made between DGBC and BRE Gobal.
If a building does not fall under the scope of this Technical Manual, then a custom process may be started, known as 'BREEAM bespoke'. DGBC must be contacted for this, and DGBC will consult with BRE Global.

2.2. Building Definition

The building is integrally assessed on the following elements:

1. Architectural elements (between floors, walls, roof, windows, supporting structure);
2. Installations (lighting, heating, cooling, ventilation);
3. Finish (inside walls, floor finishes, etc.);
4. The plot of which the building forms a part.

2.3. Scope of BREEAM-NL on creditlevel

In general, the scope of a credit is described within the credit. If there is doubt wether a particular aspect should be assessed when reviewing a credit the following table with NL-SfB codes should be used. The NL-SfB code is the most widely used method in the Netherlands for classification of building elements. A check mark in the following table means the building element is part of the general scope of BREEAM-NL.

Code	Definition	Scope
10	**Ground, substructure**	☑
11	Groundwork	☑
13	Floor beds	☑
16	Retaining walls, foundations	☑
17	Pile foundations	☑
20	**Structure primary elements, carcass**	☑
21	External walls	☑
22	Internal walls	☑
23	Floors	☑

24	Stairs and slopes	☑
27	Roofs	☑
28	Building frames	☑
30	**Secondary elements, openings**	☑
31	External wall openings	☑
32	Internal wall openings	☑
33	Floor openings	☑
34	Ballustrades, handrails	☑
35	Ceilings	☑
37	Roof openings	☑
38	Built-in system other than 31 to 37	☑
40	**Finishes**	☑
41	External wall finishes	☑
42	Internal wall finishes	☑
43	Floor finishes	☑
44	Stair and slope finishes	☑
45	Ceiling finishes	☑
47	Roof finishes	☑
48	Finish packages	☑
50	**Services, mainly mechanical**	☑
51	Heat generation	☑
52	Drainage	☑
53	Water	☑
54	Gas	☑
55	Cold generation and distribution	☑
56	Heat distribution	☑
57	Air treatment	☑
58	Monitoring climate and sanitary	☑
60	**Services, mainly electrical**	☑
61	Electrical supply	☑
62	Power	☑
63	Lighting	☑
64	Communication	☑
65	Security	☑
66	Transport	☑
67	Building monitoring facilities	☑
70	**Facilities**	**-**
71	Traffic facilities	-
72	User facilities	-
73	Food processing facilities	-
74	Sanitary facilities	☑
75	Maintenance facilities	-
76	Storage facilities	-
79	Permanent facilities	**-**
80	**Fittings**	**-**

81	Traffic fittings	-
82	User fittings	-
83	Food processing fittings	-
84	Sanitary fittings	-
85	Maintenance fittings	-
86	Storage fittings	-
89	Movable inventory	-
90	**Ground facilities**	☑
91	Ground facilities	☑
92	Structures on site	☑
93	Fences	☑
94	Site finishes	☑
95	Site installations, mechanical	☑
96	Site installations, elektrotechnical	☑
97	Site design standard	☑
98	Site design special	☑

Tabel 1 – NL-Sfb codes vs scope of BREEAM-NL

2.4. Project stages - Design & Post-construction stage

For the following stages in the development and construction process of buildings, a BREEAM-NL assessment of building (plus plot) can be made:

- Design stage: leads to a preliminary BREEAM-NL certificate
- Post-construction stage: leads to a final BREEAM-NL certificate

Design stage: Interim Certificate
The requirements in the design stage represent the sustainability *ambitions* of the building, not the actual performance. The assessment at this stage does not represent the final BREEAM assessment of the building in post construction stage.

For a formal BREEAM assessment in the DO-phase (Final Draft) to do so, the design has to advanced enough that a proper assessment with sufficient underpinning evidence is present. Ealier in the development process is possible, but will often lead to insufficient verifiable evidence. There are still too many uncertainties and the risk of differences between Design and Post Construction will increase. Moreover, implementing parties than too early in the process 'forced' to make better choices can be made later, as the flexibility of the Design Process harm. DGBC emphasizes that BREEAM is early in the process should be taken later in the process feasible to make a proper assessment, so preferably already in the initial phase, or the preliminary design phase

Note that the client is very important that the quality of the evidence for the ontwerpcertficaat good and clear for the parties involved, so the risk of failure during construction is minimized. The more uncertainty in the DO phase, the more likely differences in outcomes between temporary and permanent certificate.

The temporary certificate expires as soon as the actual building has been assessed and has received final certification. The temporary certificate could be used by the owner / developer for communications to investors, tenants, license – issuers, end-users and financial institutions. There is validity to the temporary certificate, however the certificate can not be used to assume final performance in the post construction stage. However, the design / construction team should aware that requirements over time will be stricter and that as more time evolves between design and delivery fase, it will be less certain that the same score will be achieved after completion.

Post construction stage: final certificate

The final assessment relates to the sustainability performance of the building after completion as it will be used, so after the construction work has essentially been completed. An assessment of issues that can only be assessed during construction, must be documented by the expert after which a final inspection will be performed by the assessor. This concerns mainly credits under the "Management" category. The assessment of the remaining credits will be executed after completion of construction and before commissioning of the building. The assessor can check these credits on site during the construction phase.

The assessment in the post construction stage can be performed in 2 ways:
1. An assessment based on completion of a design phase assessment
2. An full assessment of the post construction stage

Ad. 1. In a post construction stage assessment of a building, for which in the design phase a temporary BREEAM-NL certificate was issued, it will be confirmed whether the building has actually been realized according to the design. Any deviations need to be evidenced. The final assessment is -logically- for the completed building.
Ad.2. If no design phase assessment has been undertaken, a full delivery-phase assessment needs to be carried out. In both cases, both the evidence necessary for a design assessment and a delivery assessment needs to be verified.

A post construction stage assessment takes place based on the BREEAM-NL credit list current at the time of project registration. The post constrauction stage assessment provides the final BREEAM-NL certificate, through which the developer / owner has the full right to use the BREEAM-NL logo and brand name for the corresponding object. Where in the case of a design stage certificate it aways has to be clarified that it is only a *design stage* certificate.

2.5. Project types that can be assessed using BREEAM-NL

Building assessments with BREEAM NL can only be executed for the following types of building projects:
• New build
• Large-scale renovation of existing buildings
• New extensions to an existing building
Thus existing buildings do not fall under this scheme.

Large-scale renovation of existing buildings
Large-scale renovation including change to the building envelope (walls, floor, roof, windows, doors) and the installations (lighting, heating, cooling, ventilation) with the aim of building life extension.

Small-scale renovation
BREEAM-NL is not designed for small-scale renovations of existing buildings to be assessed, i.e. renovations that do not lead to a change in the thermal shell and installations or use of the function of the building.

New build extension to an existing building
Assessment of a new extension to an existing building, possibly in combination with renovation of the existing building. If the new extension is being assessed separately, in cases where the new extension uses installations or facilities in the existing building, it is necessary to include these in the assessment. In the additional information on the credit criteria guidelines are given.

2.6. Toekenning score middels greenlease

Non-fitted, speculative new buildings (often referred to as shell and core buildings) can be assessed using the BREEAM-NL new build and large-scale renovation scheme.

The application of the BREEAM-NL new buildings and large scale renovation and Credit criteria for a shell and core building, for the majority of BREEAM-NL assessment issues, will be straightforward. However, several of the BREEAM-NL issues and their criteria are tailored to assess a building that is being fitted out. These BREEAM-NL issues will not be scoped out of the assessment of a shell and core new building. Ultimately the building will be used in a fitted-out state, the BREEAM-NL assessment and rating must therefore reflect the environmental performance of the building based on its intended use.

It is recognised however, that it may not be possible for a shell and core design/specification to demonstrate compliance with some of the BREEAM-NL criteria, as fit-out decisions relating to certain aspects of a new building will be made by the future tenant, who at the time of the interim or final assessment stage may not be known. Subsequently DGBC recognise that there is a need for a degree of flexibility in applying BREEAM-NL to new shell and core building design and specification, to recognise the scope of limitations and opportunities open to the developer to influence the final fitted-out performance of the building.

It is possible to demonstrate compliance with BREEAM-NL criteria for the post construction certificate by use of a green lease agreement.

A – Final post-construction certificate for non-fitted speculativ building using green lease

For some BREEAM-NL criteria it is not possible to demonstrate compliance at post-construction stage when the bulding is non-fitted. Some fit-out decisions have to be made by the future tenant. At post construction stage 100% of the net lettable area will have to demonstrate compliance to the BREEAM-NL criteria in one of a combination of the following three ways to receive full creditpoints.

1. Finished / decorated: the finishes and furnishings must comply, as it would apply to a regular project.
2. Tenant is known but not building is not fitted-oud at post construction certification: a formal legally binding Green Lease Agreement between owner/developer and their tenant(s) which commits the tenant's fit-out to meet the criteria of a BREEAM issue.
3. Tenant unknown: a formal legally binding statement from the onwer which states:
    a. the owner will take the necessary measures as soon as the tenant is known. This statement requires the owner to comply to the BREEAM-NL criteria as soon as the tennant starts moving in.

    OR

    b. the greenlease agreement is a standard part of the owners tenancy agreement which have to be signed bij the future tenant. This green lease agreement requires the tenant to comply to the BREEAM-NL criteria.

The formal binding Green Lease Agreement between owner and tennant, the formal legally binding statement from the owner, or the standard tenancy agreement with green lease parts can be used as evidence to demonstrate compliance with the BREEAM-NL criteria in design stage or post

construction stage. The BREEAM-NL criteria need to be clearly defined in the legally binding documents and provide incentives or a penalty clause. In addition, there is a consultative group created in which the owner and tenant(s) are participating to ensure compliance of the greenlease agreement. If these requirements are not met, no BREEAM-NL points are awarded.

Credit	Possible to comply with option 2 or 3
Man 4 – User Guide	☑ yes
Hea 4 – High Frequency lighting	☑ yes
Hea 5 – Interna land external lighting levels	☑ yes
Hea 6 – Lighting zones & controls	☑ yes
Hea 8 – Internal Air Quality	☑ yes
Hea 9 – Volatile Organic Compounds	☑ yes
Hea 11 – Thermal zoning	☑ yes
Ene 2 – Sub-metering of Energy Uses	☑ yes
Ene 4 – Energy-efficient external lighting	☑ yes
Ene 7 – Energy-efficient refrigerated and frozen storage	☑ yes
POL 3 – Refrigerant GWP – Cold storage	☑ yes
POL 7 – Reduction of night time light pollution	☑ yes

Tabel x: Credits that can comply by using option 2 or 3

For assistance in creating a Green Lease Agreement it is possible to make use of the greenleasemenukaart created bij Platform Duurzame Huisvesting (http://www.platformduurzamehuisvesting.nl/).

In addition to above options to demonstrate compliance, it is possible to re-certify the building when the tennant(s) are known. The re-certifcation has to take place within 1 year of technical completion of the building. A second post-construction assessment has to be completed after the tenant(s) fit-out decisions are made and applied to the building.

B – Final post-construction certificate for non-fitted speculativ building with multiple tennants
In the case of large scale developments, where multiple tennants apply a different fit-out, the situation may arise that one of the tenants or a group of tenants can not meet the BREEAM-NL criteria. Because most credits demand a 100% of the GFA to comply to the criteria, developments with multipe tenants where a few tennants can not comply to the creditcriteria the BREEAM-NL points can not be awarded. For the credits described in table X it is possible to comply to the creditcriteria when > 75% of the net lettable floor area within the tenanted building/development is covered by a compliant option (or a combinations of options) as described in A, this will be acceptable for the purposes of awarding BREEAM credits.

2.7. Building Types that can be assessed with BREEAM-NL

This Technical Manual can currently be used to assess the following building types:

1. Offices
2. Retail / retail premises
3. Schools
4. Industrial Buildings, where the assessment relates to the building-related environmental performance (not on the industrial processes taking place)
5. Houses and residential buildings
6. Lodging
7. Meeting

Within the various topics in BREEAM NL function-specific requirements are made in relation to the building type. According to the Building Decree the building function is the function that was linked to the building or space.

Building type	Description	Examples
Houses / residential	Residential	**Scope of this manual** Free/social sector houses, flats/appartement buildings, detached houses, two or more in a row, attached houses, serial houses, bungalows, assissted living centers, student housing. **Bespoke** Nursing home, retirement home, militairy accommodation. **Not to certify** Caravan.
Meeting	Buildingtype for the coming together of people for culture, communication, providing food or drinks for use at the same space, child care.	**Scope of this manual** Distrcit building, the dining room of a restaurant, canteen, training room, conference room of an office or restaurant, day care for children, exhibition hall (but not a museum), conference center, library reading room, training room. **Bespoke** Stands/bleachers/terraces in sportsbuildings, cinema, theather, casino, church, disco/club, bar/pub.
Cell	Building type for coercion stay	**Scope of this manual** Non-applicable **Bespoke** Prison or police custody, temporary custody.
Healthcare	Buildingt ype for medical research, nursing, care or treatment.	**Scope of this manual** Non-applicable **Bespoke** Space for the treatment or care of patients in a hospital, nursing home, mental hospital, medical center, outpatient clinic, surgery of a doctor, physiotherapist or dentist. Operating room, practice room of a veterinarian / veterinary clinic, ward of an assisted living complex.
Industrial	Building type for commercial processing or storage of materials and goods	**Scope of this manual** Workshop, warehouse, factory (light industrial), restaurant kitchen, studio, cold store. Separate manual (www.breeam.nl) Datacentre. **Bespoke** Laboratory, factory (heavy industry). **Not to certify** Stable for storage of goods, stable for animals, storage shed, greenhouse.
Office	Building type for administration.	**Scope of this manual** Administrative office, bank, town hall, office in shop, office to a home (professional). **Bespoke** –
Lodging	Building for providing recreational residence or	**Scope of this manual** Hotel, motel, inn, shelter voor temporary stay of people

	temporary shelter to people.	**Bespoke** Summer house / cottage, hiker's cabin, mobile home.
Schools	Building for teaching.	**Scope of this manual** School for all types of education (primary, secondary, colleges, universities, special), Classrooms and lecture rooms, Sports rooms and gyms for pupils / students, Library / study room **Bespoke** –
Sportfunctie	Building for sports	**Scope of this manual** Non-applicable **Bespoke** Swimming pool, tennis court, squash court, indoor cycling, fitness center, bowling, billiard room, shooting room, stadium.
Retail	Building for the sale of materials, goods or services.	**Scope of this manual** Shopping Mall, general display and sale of goods, supermarket, travel agency, hair saloon, beauty saloon, pharmacy **Bespoke** Sales at a gas station, railway sales office
Other building types	Building for activities where the presence of people is not the primary activity	**Scope of this manual** Parking, storage space or garage at home (as part of an other building type, not independently certifiable. The spaces may not exceed one third of the total surface area) **Bespoke** Stand-alone parking or garage. Parking or garage of which the spaces exceed one third of the total surface area. **Not to certify** Transformerhouse, telephonecell, greenhouse at home, sanitary building on a campsite, waiting room for passengers on a trainstation, bus shelter, train platform.
Structure which is not a building	Structure or part of a structure, which is not a building or part of a building	**Scope of this manual** Balcony and carport (as part of a building type, not stand-alone certifiable). **Bespoke** Stands/bleachers/terraces of an outdoor sports facility. (as part of a bespoke building type, not stand-alone certifiable) **Not to certify** Bridge, road tunnel, floating docks, playground equipment, antenna installations, large animal cages, embankment, viaduct.

Table X – definitions of building types which can (or can not) be certified with BREEAM-NL new construction.

If building types are missing from the table, and one is not sure wheter is can be used for certification using this manual, please contact the DGBC at helpdesk@dgbc.nl. When contacting the DGBC, provide sufficient project information such as drawings and a description of activities in the building.

Other Buildings/BREEAM-NL bespoke

It is not possible to certify building other than specified in the table under "Scope of this manual"..If a building is classified as "Bespoke", then a custom process may be started, known as 'BREEAM bespoke'. In this Bespoke procedure the DGBC will, with participation of the project, review the credits and requirements that are relevant for that specific type of building and analyse prossible missing

credits and requirements. Thus a specific BREEAM-NL manual is developed for the project. When sufficient experience with a type of building is available the requirements and credits will be added to the standard manual. A bespoke procedure requires additional cost which is dependent on variables such as complexity of the building, the building type and special details relating to sustainability. For more information, search for bespoke or “maatwerk” on http://www.breeam.nl/ or contact the DGBC helpdesk (helpdesk@dgbc.nl)

Mixed-use/gecombineerd gebruik

Buildings which combine several building types, may also be assessed. In the assessment tool one can specify how many m2 of each building type is used. For specific credits different requirements are then set or additional information is requested. The weighting of scores for different building types will then be assessed in proportion to the usable area of each type. The following sections deal with mixed use per building type. Building types which are not available under the basic schemes of Breeam-NL New Build, should be assessed under the main basic function of the building.

Credits to be divided to function

Most of the credits apply to the entire building and plot. In table X is a list of credits, of which building types may be specific, r ather than applicable to whole building/site.

For example: If a mixed building has a loading and unloading system, the credit Ene6 – Avoidance of air infiltration can not specifically be attributed to one building function and filtered for the other building functions. The credit applies to the whole building.

3. Score and rating

This section of the BREEAM-NL manual explains how an assessed building's certified BREEAM-NL rating is
calculated.

There are a number of elements that determine the BREEAM-NL rating; these are as follows:

- BREEAM-NL rating benchmarks
- BREEAM-NL environmental weightings
- Minimum BREEAM-NL standards
- BREEAM-NL credits for Innovation

CAUTION: to score for a credit should always be able to obtain full credit to be fulfilled so well with the aims, requirements, criteria and evidence. Only to meet the required evidence is not necessarily enough to get credit approved by DGBC. This is explicitly stated because it can occure that only compliance with the requested evidence Credit aim is not necessarily achieved. DGBC will always consider the whole of the credit text and determine whether or not the credit can be approved.

3.1. Thresholds for qualifying

The final rating is obtained by conversing the score in the following table into a BREEAM-NL rating:

BREEAM-NL Rating	Stars	Score
PASS	☆	≥ 30%
GOOD	☆☆	≥ 45%
VERY GOOD	☆☆☆	≥ 55%
EXCELLENT	☆☆☆☆	≥ 70%
OUTSTANDING *	☆☆☆☆☆	≥ 85%

** For the rating Outstanding additional mandatory requirements exist, which are explained below.*

The final score obtained is listed on the certificate.

3.2. Weighting

The final total score is determined by adding the scores for each category. These scores are multiplied by a weighting percentage that applies to each category.

The weights follow from research-based consensus among different groups including government, suppliers, manufacturers and research institutions. This research was conducted by BRE to determine the relative importance (weight) of each category. The Netherlands has not yet performed own research / stakeholder analysis and that is why the same weighting as BREEAM International is currently maintained. So these are consensus rather than scientific weightings. The weighting percentages may change over time given societal developments.

BREEAM-NL Category	Weighting
Management	12%
Health and Comfort	15%
Energy	19%
Transport	8%
Water	6%
Materials	12.5%
Waste	7.5%
Land Use and Ecology	10%
Pollution	10%

3.3. Exceptional credits

Mandatory credits

To achieve a BREEAM-NL rating, the minimum percentage score must be achieved and the minimum standards (i.e. number of credits achieved) applicable to that rating level (as outlined in table XX) complied with.

Default credits

If one or more of the following credits specified are not applicable, then the points related to those credits may be awarded default.

Default credits	
Tra 4 Pedestrian and cycle safety;	In the case of no external area
Le 1 Re use of land;	In the case of refurbishment
Pol 1 Refrigerant GWP - Building Services;	In the case of no refrigerants(but incl. GTO)
Pol 2 Preventing refrigerant leaks;	In the case of no refrigerants
Ene 4 External lighting;	In the case of no external lighting
Pol 7 Reduction of night time light pollution;	In the case of no external lighting
Pol 8 Noise attenuation;	In the case there are no buildings in a radius of 800 meters

The assessor can approve these credits through a proper justification that the credit is not applicable.

Credit filtering

The list of credits that a building is assessed against depends on the type of building and the application of certain building components such as elevators, escalators or a cooling site. When entering the building information in the Assessment Tool, the required credit list is automatically generated.

The following credits are not included in the calculation:

Ene 6 Minimizing air infiltration loading and unloading platform; if no platform and/or expedition
Ene 7 Energy efficient refrigeration and freezer storage, if no cold storage

Ene 8 Energy-efficient elevators,	if no lifts
Ene 9 Energy-efficient escalators / moving walkways, escalators,	if any / moving walkways
Wat 6 Irrigation Systems,	if no green area
Wat 7 Vehicles Laundry service,	if no vehicles washing
service	
WST 5 Compost,	if no food-preperation

Credits to be divided to function or applied to entire project

Most of the credits apply to the entire building and plot, as outlined in table XX. In so-called funtion credits it is possible to choose for the credit by function if the credit is achieved or not.

For example: If a mixed building has a loading and unloading system, the credit Ene6 – Avoidance of air infiltration can not specifically be attributed to one building function and filtered for the other building functions. The credit applies to the whole building.

For example: If a mixed building wants to comply to the credit HEA 2 view out, it's possible to choose for every individual building function to comply. The percentage is calculated by the amount of floor area.

BREEAM-NL-innovation credits

Innovation credits provide additional recognition for a building that innovates in the field of sustainable performance, above and beyond the level that is currently recognised and rewarded within standard BREEAM-NL issues. Innovation credits therefore enable clients and design teams to boost their building's
BREEAM-NL performance and in addition, help support the market for new innovative technologies and
practices.

An additional 1% score can be added to a building's final BREEAM-NL score for each Innovation credit
achieved. The maximum number of Innovation credits that can be awarded for any one building assessed is 10; therefore the maximum available score achieved for 'innovation' is 10%. Innovation credits can be awarded regardless of the final BREEAM-NL rating i.e. they are awardable at any BREEAM-NL
rating level.

A building can achieve an Innovation credit by meeting exemplary performance criteria for an existing BREEAM-NL issue (table XX outlines the BREEAM-NL issues with exemplary performance criteria).

Tabel XX Summary of credits and special conditions

			Building types / functions							Mandatory credits							
		Points	Lodging	Meeting	Office	Retail	Industrial	Schools	Residential	1 star	2 stars	3 stars	4 stars	5 stars	Defaulcredit	Filercredit	Entire building credit
Management																	
MAN 1	Commissioning	3	x	x	x	x	x	x	x	1	1	1	2	3			x
MAN 2	Construction Site and Surroundings	2	x	x	x	x	x	x	x				1	2			x
MAN 3	Construction site impacts	1	x	x	x	x	x	x	x								x
	Exemplary performance	1%	x	x	x	x	x	x	x								x
MAN 4	User guide	1	x	x	x	x	x	x	x					1			x
MAN 6	Consultation	1	x	x	x	x	x	x	x								x
MAN 8	Security	1	x	x	x	x	x	x	x								x
MAN 9	The development as a learning source	1	x	x	x	x	x	x	x					1			x
MAN 11	Easy of maintenance	1	x	x	x	x	x	x	x								x
MAN 12	Life cycle costing	2	x	x	x	x	x	x	x								x
Health																	
HEA 1	Daylighting	1	x	x	x	x		x	x								
	Exemplary performance	1%	x	x	x	x		x	x								
HEA 2	View Out	1		x	x	x	x	x									
HEA 3	Glare Control	1		x	x			x									
HEA 4	High frequency lighting	1		x	x	x	x	x		1	1	1	1	1			x
HEA 5	Internal and External Lighting Levels	1		x	x	x	x	x									x
HEA 6	Lighting zones & controls	1	x	x	x			x									
HEA 7	Natural Ventilation	1	x	x	x			x									x
HEA 8	Internal Air Quality	2	x	x	x	x	x	x	x								x
HEA 9	Volatile Organic Compounds	1	x	x	x	x	x	x	x								x
HEA 10	Thermal Comfort	2	x	x	x	x	x	x	x								
HEA 11	Thermal zoning	1	x	x	x			x									
HEA 13	Acoustic Performance	1	x	x	x			x	x								
HEA 14	Private outdoor space	1							x								x
HEA 15	Accessibility	2							x								x
Energy																	
ENE 1	Reduction of CO2 Emissions	15	x	x	x	x	x	x	x				6	10			x
	Exemplary performance	1%	x	x	x	x	x	x	x								x
	Exemplary performance	1%	x	x	x	x	x	x	x								x
ENE 2a	Sub-metering of Energy Uses – non residential	2	x	x	x	x	x	x				1	1	1			x
ENE 2b	Sub-metering of Energy Uses - residential								x			1	1	1			x
ENE 4	Energy-efficient external lighting	1	x	x	x	x	x	x	x						x		x
ENE 5	Use of Renewable Energy	3	x	x	x	x	x	x	x				1	1			x
	Exemplary performance	1%	x	x	x	x	x	x	x								x
ENE 6	Building fabric performance & avoidance of air infiltration	1	x	x	x	x	x	x	x							x	x
ENE 7a	Energy-efficient refrigerated and frozen storage – other building types	1		x	x		x	x									x
ENE 7b	Energy-efficient refrigerated and frozen storage – retail and lodging	2	x			x										x	x
ENE 8	Energy-efficient lifts	2	x	x	x	x	x	x	x							x	x
ENE 9	Energy-efficient escalators and travelators	1	x	x	x	x	x	x	x							x	x
ENE 26	Assurance of thermal quality of building shell	1	x	x	x	x	x	x	x								x
Transport																	

TRA 1a	Provision of public transport – office, schools, industrial	2			x		x	x										x
TRA 1b	Provision of public transport – retail, lodging, meeting	4	x	x		x												x
TRA 1c	Provision of public transport – residential	2							x									x
TRA 2	Proximity to amenities	1	x	x	x	x	x	x	x									x
TRA 3a	Alternative modes of transport – non residential	2	x	x	x	x	x	x										x
	Exemplary performance	1%	x	x	x	x	x	x										x
TRA 3b	Alternative modes of transport – residential	2							x									x
	Exemplary performance	1%							x									x
TRA 4	Pedestrian and cyclist safety	2			x	x	x	x								x		x
TRA 5	Travel Plan and Parking Policy	3	x	x	x	x	x	x										x
TRA 7	Travel information point	1	x	x	x	x	x	x										x
TRA 8	Deliveries and manoeuvring	1	x	x	x	x	x	x										x
Water																		
WAT 1a	Waterconsumption – non residential	3	x	x	x	x	x	x			1	1	1	2				x
WAT 1b	Waterconsumption – residential	2							x		1	1	1	2				x
WAT 2	Watermeter	1	x	x	x	x	x	x			1	1	1	1				x
	Exemplary performance	1%			x	x	x	x										x
WAT 3	Major leak detection	1	x	x	x	x	x	x										x
WAT 4	Sanitary supply shut off	1	x	x	x	x	x	x										
WAT 5	Water recycling	2	x	x	x	x	x	x	x									x
WAT 6	Irrigation systems	1	x	x	x	x	x	x	x								x	x
WAT 7	Vehicle wash	2	x			x	x										x	x
Materials																		
MAT 1	Materials specification	8	x	x	x	x	x	x	x			1	1	1				x
	Exemplary performance	1%	x	x	x	x	x	x	x									x
MAT 5	Responsible sourcing of materials	4	x	x	x	x	x	x	x									x
	Exemplary performance	1%	x	x	x	x	x	x	x									x
MAT 7	Designing for robustness	1			x	x	x	x	x									x
MAT 8	Building flexibility	4	x	x	x	x		x										x
Waste																		
WST 1	Waste management on the construction site	3	x	x	x	x	x	x	x									x
	Exemplary performance	1%	x	x	x	x	x	x	x									x
WST 2	Recycled aggregates	2	x	x	x	x	x	x										x
	Exemplary performance	1%	x	x	x	x	x	x										x
WST 3a	Recyclable waste storage – non residential	1	x	x	x	x	x	x						1	1			x
WST 3b	Recyclable waste storage – residential	1							x					1	1			x
WST 5	Compost	1	x	x	x	x	x		x								x	x
WST 6	Finishing elements	1	x	x	x	x	x											x
Landuse en ecology																		
LE 1	Re use of land	5	x	x	x	x	x	x	x							x		x
LE 2	Contaminated land	2	x	x	x	x	x	x										x
LE 3	Existing Wildlife at the Construction Site	2	x	x	x	x	x	x	x									x
LE 4	Plants and Animals as Co-users of the Plan Area	2	x	x	x	x	x	x	x			1	1	1				x
LE 6	Long-term Sustainable Co-use by Plants and Animals	1	x	X	x	x	x	x										x
LE 9	Efficient landuse	1							x									x
Pollution																		
POL 1	Refrigerant GWP - Building services	1	x	x	x	x	x	x	x							x		x
POL 2	Preventing refrigerant leaks	2	x	x	x	x	x	x								x		x
POL 3	Refrigerant GWP - Cold storage	1	x	x	x	x	x	x										
POL 4	NOx Emissions from Heating Sources	3	x	x	x	x	x	x	x									x
POL 6	Suface water Run-Off	3	x	x	x	x	x	x	x									x
POL 7	Reduction of night time light pollution	1	x	x	x	x	x	x								x		x

POL 8 Noise Attenuation	1	x	x	x	x	x	x							x		x	
CASESTUDY													x				

3.4. How to calculate a building's rating

The final BREEAM-NL rating (from Pass to Outstanding) is calculated by the DGBC assessment tool based on the by the assessor entered and verified data. However this does not mean that the assessor can't calculate the rating by hand. To achieve the rating proceed as follows (see table below):

1. Determine the number of points scored per category
2. Determine the percentage per category on the basis of the maximum number of points to be obtained in each category
3. Multiply the percentages with the category weightings; this provides the category score
4. Add the category scores, including the innovation credits if applicable, this provides a preliminary total score
5. Check whether the mandatory credits for the preliminary rating have been achieved. If so, then the preliminary rating equal final rating.
6. An additional 1% can be added to the final BREEAM-NL score for each Innovation credit achieved (up to a maximum of 10%).

Example of calculation of the BREEAM-NL-rating for a Industrial + Office Building with a lift
- Industrial GFA = 12.000 m^2
- Office GFA = 5.000 m^2

Building function	GFA	% of total
Industrial	12.000	70,59%
Office	5.000	29,41%

75,00% x 70,59% = 52,94%
64,26% x 29,41% = 18,90%

Totaal HEA = 71,85%

BREEAM Section	Credits Achieved		Credits Available		% of Credits Achieved		Naar rato	Section Weighting	Section score
	Industrial	Office	Industrial	Office	industrial	Office			
Management	7	7	13	13	53,85%	53,85%	53,85%	12%	6,46%
Health and wellbeing	6	9	8	14	75,00%	64,29%	71,85%	15%	10,78 %
Energy	15	15	26	26	57,69%	57,69%	57,69%	19%	10,96 %
Transport	8	8	12	12	66,67%	66,67%	66,67%	8%	5,33%
Water	6	6	9	9	66,67%	66,67%	66,67%	6%	4,00%
Materials	8	8	13	17	61,54%	47,06%	57,28%	13%	7,16%
Waste	4	4	7	7	57,14%	57,14%	57,14%	8%	4,29%
Land use & Ecology	5	5	12	12	41,67%	41,67%	41,67%	10%	4,17%
Pollution	6	6	11	11	54,55%	54,55%	54,55%	10%	5,45%
Innovation: Exemplary performance + Innovation credits: MAN 3, HEA 1, TRA 3									3%
Total Score									61,60 %
BREEAM-NL rating									3 stars

Minimum requirements for 3 stars	Credit points	Achieved
MAN 1 - Commissioning	1	v
HEA 4 - High Frequency Lighting	1	v
ENE 2a - Sub metering of energy uses - non residential	1	v
WAT 1a - Watyerconsumption - non residential	1	v
WAT 2 - Watermeter	1	v
MAT 1 - Materials Specification	1	v
LE 4 - Plants and Animals as Co-Users of the Plan Area	1	v

3.5. BREEAM-NL Outstandig rating

In order for a building (+ plot) to obtain a BREEAM-NL Outstanding rating the following requirements need to be met:

1. the BREEAM-NL score must be ≥ 85%
2. The mandatory credits must have been achieved
3. A case study must be completed according to the following guidelines

Case study
One of the most important aspects of a BREEAM-NL Outstanding rating will the example of these projects for the rest of the industry. It is therefore important that design teams within the wider industry can refer to a good quality case study.

The design / the principal of the building that achieved the BREEAM-NL Outstanding rating will be asked by DGBC to either deliver a completed case study, or otherwise so much material that DGBC can make the case study by itself. This information will be requested together with the final report of the assessor for the Post Construction Stage.

After approval of the design / the client, DGBC will use the case study for various publications.

If no case study or insufficient material is delivered, then the building will receive a maximum rating of BREEAM-NL Excellent.

Guidelines for a casestudy
It is important that other can learn form outstandig projects, the project is an example for sustainable builing. The following guidelines can be used when making the case study. (also use credit MAN 9 for more guidelines):
• Detailed description of the project, including land and environment
• Design Principles, innovations
• Sustainability aspects (techniques, processes and measures, PPP)
• Bijzonderhden regarding BREEAM certification process; scores
• Cost / benefits of sustainability in this project

• Key figures (per m2 GFA, FTE, etc.)
• What can others learn from this project
• Recommendations for further sustainability in the future.

3.6. Glossary

DGBC – Dutch Green Building Council

Advisory Group – DGBC body forming a broad representation of the construction / building industry; advises the Board of DGBC

Assessor – Qualified person in relation to BREEAM-NL, working for a Licensed Organisation

Expert – Qualified process manager and content expert in relation to BREEAM-NL

Applicant - The person seeking BREEAM-NL assessment of a project

Shell only – Shell / core building where no or limited building installations and / or other finishes are applied.

Fit-out - by developer / client, but possibly also by renter / user to make provision for facilities such as heating, cooling and ventilation, lighting (indoor and outdoor lighting), building control, sanitation, partitions, floor finishes, blinds, soundproof facilities, OV travel information services, field irrigation systems and rainwater reuse systems

Large-scale renovation - renovation with change of building envelope (walls, floor, roof, windows, doors) and equipment (lighting, heating, cooling, ventilation) with the aim of building life extension

Small-scale renovation - Renovations that do not lead to a change in the thermal shell and a change of equipment or use the function of the building.

Floor area - Where BREEAM-NL mentions floor area it is based on the definitions according NEN2580

Assessmenttool Online software tool in which buildings can be registered for assessing and where the overall assessment report is compiled. Only registered projects and received reports trough the assessmenttool are taken into consideration by the DGBC.

1 Management

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 1 Commissioning

Aim
Stimulating a good way of securing performance of installations, so optimum performance under normal conditions is assured.

Credit criteria
Up to 3 points can be awarded.

There should be substantial evidence that:

1	1 point	during construction, sufficient time, people and resources are made available for the commissioning of the installation prior to delivery, ensuring that optimum operation of all systems is guaranteed.
2	1 point	in addition to the above, the commissioning of the installation is carried out in accordance with current practice guidelines and seasonal commissioning is performed in the first year after completion.
3	1 point	the commissioningsmanager has been appointed prior to the final design.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A commissioningsplan that shows that sufficient time, money and manpower are reserved for performance assurance of the installations.
1.2 There is an independent commissioningsmanager appointed to the name of the client that supervises the commission and where necessary re-commissions the installations.
1.3 The responsibilities of the commissioningsmanager are:

- Contribution to the objective, scope and content of the commissioningsplan, whether the installation design in performance will meet the functional requirements defined in for example a program of requirements.
- Input regarding performance assurance of the equipment during the construction phase.
- Ditto during the delivery period and during the maintenance period.

1.4 The performance assurance shall cover at least the following equipment:

- Heating systems.
- Water Distribution systems.
- Lighting systems.
- Ventilation systems;
- Cooling systems.
- Automated control systems.

1.5 Must be carried out in accordance with the most current practice guidelines (see references for indication of guidelines that may be used).

1.6 The independent commissioningsmanager must determine whether the systems meet the functional requirements defined in, for example, a program of requirements and must be justified in a commissioningsreport.

2.1 The first point must be earned.
2.2 The above provisions (criteria requirement 1.1 / 1.6) also include the following seasonal responsibilities for being in service over a period of at least 12 months from the time the building is put into operation:

- Testing of all building services under full load, for example, [including] the heating in the middle of winter, cooling/ventilation systems in the middle of summer, and even under partial load during the spring and fall.
- If applicable, the tests should also be conducted during periods of extremely high or low capacity utilization in terms of users.
- Interviews with building occupants (as so far these have to do with the complex systems).
- The re-commissioning of building systems after adjusting to changing conditions and processing changes in the operating instructions in the operating and use instructions.

2.3 A review of the thermal comfort, ventilation and lighting, at intervals of 3, 6, 9 and 12 months after commissioning, either by measurements or by feedback with users.
2.4 If a building management system (BMS) is specified, the following procedures to run are performed:

- The activation of air and watersystems is performed after all control equipment is installed, connected and working.
- In addition to the measurement results of water and air flows, the results of initiating contain physical measurements of room temperatures and other parameters, as appropriate.
- The building management / control installation should run in auto mode with satisfactory indoor conditions prior to completion.
- If a BMS is present: all BMS-related schedules and signs must be installed with a fully functioning user interface for the delivery.
- The user must be fully trained in the operation of the system.

2.5 If there are specific installations such as fume cupboards, microbiological safety cabinets and building-related refrigeration, the assessor must check if the performance guarantee of this equipment is the responsibility of the commissioningsmanager.
2.6 The independent commissioningsmanager must determine whether the systems meet the functional requirements defined in, for example, a program of requirements and must justify this in a commissioningsreport.

3.1 The first point must be achieved.
3.2 The independent commissioningsmanager been appointed prior to the final design.
3.3 The commissioningsmanager has input regarding performance assurance during design.

Compliance notes

New building

-

Renovation
-
Expansion of existing buildings
-
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
For a hull delivery an assumption must be made, that the building contains HVAC, lighting and water features and should be evaluated as such on both credits.

Approval EPC calculation ENE 1
The commissioningsmanager must assess the actual situation of the EPC calculation after completion of the commissioningsprocess (excluding seasonal commissioning).
For the credit ENE 1 the Commissioningsmanager should give a statement concerning the calculation of the EPC system technical requirements.

End-user is unknown
If the end user is not known, a confirmation of the developer / client has to be delivered that the seasonal performance assurance on behalf of the end user will be performed.
When the developer / client is unable to satisfy this obligation no further points can be awarded.

End User is known
If the end user is known and they do not want the developer to perform the seasonal performance assurance, then the confirmation to perform seasonal performance assurance must come from the end user to assign a point.

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Lodge
-

Meeting Function
-

Schedule of evidence required – design phase

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of a commissioning plan, which confirms that sufficient time is set aside for the entire process of Performance Assurance (start-up, testing and delivery).
B	1.2, 1.3, 3.2	A copy of a letter or outline of responsibilities for performance assurance, in which the (commitment to) appointment is set by the independent commissioningsmanager.
C	1.4 and 1.5	A copy of the specification of the work or a copy of the commissioningsplan with an overview of the standards and guidelines that apply to the performance assurance.
D	2.2	A copy of the specification of the work or the commisioningsplan in which the phasing of the procedure for securing the performance of the building management system is established.
E	1.2 t / 1.6 m	Report by the commissioningsmanager which states that the installations meet the functional requirements.
F	2.3	Evidence of testing requirements 2 & 3 of the first paragraph should confirm; Scope, duties and responsibilities of the seasonal performance assurance
G	3.2	A schedule of the design.

Evidence required – Post construction stage

Proof below is intended to support the explanation of accountability of the project.

H	1.1	Copy schedule of the realized performance assurance (start-up, testing and delivery).
I	1.4. and 1.5	Revision evidencing that no changes have been made since the assessment of the design. If there are any changes after the assessment of the design have been made: a signed statement of the design with an overview of the standards and guidelines that apply to the performance assurance.
J	1.2 t / 2.6 m	Report by the Cx manager, which states: - which commissioning activities have been carried out - statement of the Cx manager that the equipment works as defined in the functional requirements
K	2.2	Reports showing that the performance guarantee of building management / control instruments took place in accordance with the established standards.
L	2.3	Copy of the timetable for the seasonal performance assurance and contract with the commissioningsmanager.
M	3.3	Proof showing that the commissioningsmanager has been involved in the design and has had input on performance assurance.

Definitions

Commissioning / performance assurance

The inspection, testing and commissioning under optimal operating conditions of complex heating, cooling, lighting and ventilation systems with the aim of securing a good performance of the installations, providing optimal performance is guaranteed.

Commissioningsmanager
Specialist who is independent of the executive engineer and qualified to inspect, test all systems and to regulate under operating conditions. This may be a team member of the design team, provided the person is qualified enough and does not work in the same company as the company who performed the installation. The person is not required to perform the tests themselves but must keep supervision and ordering the parties to perform the tests.

Additional Information
None.

References

Heating:

- ISSO Publication 31: Measuring points and measuring methods for air conditioning systems.
- ISSO publication 50: Draft Technical quality requirements for hot water heating systems in homes and residential buildings.
- ISSO publication 68: Energetically optimal heating and cooling curves for air-conditioning systems in office buildings.
- ISSO Publication 71: Selection of optimal heat energy generation systems for office buildings.
- ISSO Publication 80: Manual integrated design of collective systems with heat pumps in residential construction.
- ISSO Publication 81: Manual integrated design of heat pump systems for commercial buildings.
- CEN EN 14336:2004: Heating systems in buildings. Installation and commissioning of water based heating systems.

Water Distribution:

- ISSO Publication 31: Measuring points and measuring methods for air conditioning systems.
- ISSO Publication 56: Adjustment of design flow rates in individual heating systems in homes.
- ISSO Publication 65: Adjustment of design flow rates in hot water heating systems.
- ISSO publication: Tiny tuning (derived from ISSO publication 65).

Lighting:

- BS 12464-1: Light and lighting - Workplace lighting - Part 1: Workplaces inside.

Ventilation:

- ISSO Publication 31: Measuring points and measuring methods for air conditioning systems.
- ISSO Publication 52: Air-sided commissioning of HVAC systems.

- CEN EN 12599: Ventilation for buildings - Test procedures and measuring methods for handing over installed ventilation and air conditioning systems.

Cooling systems and building-related refrigeration:

- ISSO Publication 31: Measuring points and measuring methods for air conditioning systems.
- Model Building Specification for Design, Installation, and Commissioning of Insulated Envelopes and Insulated Floors for and Ambient Temperature Controlled Environments, International Association for Cold Storage Construction (June 2003).

Automated control systems:

- ISSO Publication 31: Measuring points and measuring methods for air conditioning systems.
- ISSO publication 68: Energetically optimal heating and cooling curves for air-conditioning systems in office buildings.
- CEN EN 50491: General requirements for Home and Building Electronic Systems (HBES) and Building Automation and Control Systems (BACS).

In the Netherlands the system for quality control is described in the ISSO / SBR publication 347 Model quality air conditioning systems (MKK).

Sustainable management:

ISSO publication series Sustainable Management and Maintenance.

Relevant websites:

- http://www.isso.nl
- http://www.tvvl.nl *Note: TVVL offers a course to Commissioning.*

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 2 Construction site and surroundings

Aim
Encouraging the responsible management of the site and its impact on the environment.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that:

1	1 point	current practice guidelines for site management are met
2	1 point	the management of the site is ahead of the current practice guidelines for site management.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The project is recognised by Bewuste Bouwers(conscious builders) with a total score of at least 21/28 points.

Or:

1.2 The main contractor has met the requirements checklist A2, the site has been reviewed by the assessor in an independent way and where the score met six items per category contained in checklist A2.

2.1 The first point is achieved.

2.2 The project is recognised by Bewuste Bouwers with a total score of 28/28 points.

Or:

2.3 The main contractor has fulfilled all the requirements of all four categories of checklist A2, where the construction site is tested by the assessor in an independent way.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

-

Hull

-

Contractor not yet known
During the design phase of the evaluation, in which the contractor has not yet been appointed, the client must include the requirement that the contractor must meet the specific Compliance requirements of Conscious Builders or checklist A2.
A general liability to meet the requirements is not acceptable. The assessor must use this information to assess whether it meets the requirements.

Offices
-

Retail
-

Industrial buildings
-
School
-

Residential
-

Lodge
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 & 2.2	An official letter from the client / developer, with the confirmation that: • the work contract will contain a clause stipulating that the requirements of the Bewuste Bouwers certificate must be met; • which of the specific requirements of Bewuste Bouwers must be met • the extent of the work to which the contracting agreement applies.
B	1.2 & 2.3	A copy of the relevant sections of the specification of work demonstrating the requirements of checklist A2 are part of the work

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 & 2.2	A copy of the Bewuste Bouwers certificate and audit report in which the total number of points scored is indicated.
D	1.2 & 2.3	The completed checklist A2

E	1.2 & 2.3	An inspection report prepared by the assessor, with photographic evidence, showing that the contractor has complied with checklist A2.

Definitions
None.

Additional Information
None.

References

Manual Assessment Bewuste Bouwers, http://www.bewustebouwers.nl/bewuste_bouwers .

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 3 Construction site impacts

Aim
Encouraging environmentally responsible site management in terms of environmentally conscious materials, reduce energy consumption and reduce pollution.

Credit criteria
Up to 4 points can be awarded.

There should be substantial evidence that::

1	1 point	All the wood for construction site is produced in a (sustainable) responsible manner and from a legal source.
2	1 point	two or more sections checklist A3 achieved.
3	2 points	four or more sections checklist A3 achieved.
4	3 points	six or more sections checklist A3 achieved.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 All the wood used, including timber molds, fence and other wood used temporarily on the site, has been certified by a certification system approved by the Timber Procurement Assessment Committee.
1.2 The contractor (s) is (are) in possession of a chain of custody certificate from a certification system approved by the Timber Procurement Assessment Committee.

2.1 It meets at least two sections of checklist A3 (Section A-G).

3.1 It meets at least four sections of checklist A3 (Section A-G).

4.1 It meets at least six sections of checklist A3 (Section A-G).

Exemplary performance
The following criterion shows an exemplary performance at which an innovation point may be earned for this BREEAM-NL credit:

1. Evidence shows that all sections A-G checklist A3 are met and the first creditpoint for sustainable wood on the constructionsite is achieved.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
-

Recycled wood
Recycled wood from outside the construction site can be considered equivalent to sustainable and legal sources. However, the reuse of wood formwork should meet the Compliance requirements.

Contractor not yet known
If the contractor is not known during the assessment in the design, the developer should include an paragraph in the work specification that the contractor is obliged to meet the standards as detailed in checklist A3. The criteria have to be specified, a general obligation to adhere to the checklist is insufficient.

ISO 14001 is still in process
If a company is still in the process of obtaining an ISO 14001 certificate, but this is still not achieved, one can meet the design certificate, if it can be proven that the company is currently in the ISO14001 procedure.The burden of proof is the registration or contract with an ISO 14001 certification body, showing that the procedure is started. For the delivery certificate the ISO14001 certificate must be present.

Equivalent to ISO 14001
Also allowed as equivalent of ISO 14001 is:

- CSR Performance Ladder Level 3 or higher.

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t /m 1.2	A copy of the relevant sections of the specification of the work stating:

		• that construction site timber will be procured from suppliers who can issue certificates approved by TPAC.
B	2.1 t / 4.1 m	A copy of the relevant sections of the specification of the work stating: • the obligations of the contractor with respect to any section of Checklist A3.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t/m 1.2	Sale and delivery documents of the certified wood (see Responsibility timber) containing the following information: • Address of the supplier. • Contact details of the customer / receiver. • Date the document was issued. • Description of the product. • The quantity delivered. • Clear indication of the claim of certified timber for each product separately: x% certified. For example: ○ FSC or PEFC 100% 100%; ○ PEFC or FSC Recycled x% x% mix. • The certificatenumber of the supplier. Need only one copy per supplier.
D	1.1 t/m 1.2	A copy of the chain of custody certificate from the contractor (s).
E	2.1 t/m 4.1	A copy of the report in which (where relevant) the following items are monitored and recorded: • Energy use on site / CO_2 emissions. • Deliveries on site. • Water on site.
F	2.1 t/m 4.1	Goals for water and energy on site and transport movements resulting from the construction site.
G	2.1 t/m 4.1	The checklist A3
H	2.1 t/m 4.1	Copies of documented procedures on the construction site are used for managing pollution by the methods of the current practice guidelines.
I	2.1 t/m 4.1	An inspection report prepared by the assessor, with photographic evidence, showing that the procedures for the control and reduction of pollution have been implemented;

Definitions

Construction Site
The site and the work together.

Site
The land on which the project will be realized.

Chain of custody

This is a process in which the way of procuring wood from a certified (production) forest to the end users is monitored and documented. All steps from cutting trees from a certified forest, the production of logs, up to delivery to the end user, must be documented to ensure that the certified woodcan be traced. This way it can be avoided that certified wood is mixed with non-certified wood. (As an additional condition the chain of custody process can be audited in accordance with applicable certification systems.)

Responsibly and legally produced timber
Wood that is certified with a label that has been approved by the Timber Procurement Assessment Committee (TPAC).For a current list: http://www.tpac.smk.nl/

Additional Information

Wood
For the purpose of the assessment of this credit, wood is regarded as wood for the construction site in order to facilitate construction. Including formwork, construction site fence, scaffold boards and other wood used temporarilyon the construction site. Construction wood and wood used for finishing are not assessed here (this is included in MAT 5).

Objectives
These are included in this BREEAM-NL credit to promote the process of setting goals and the monitoring required to achive them.
Because project objectives are specific in nature, BREEAM-NL specifically states no set values.

Energy
Monitoring and reporting on energy consumption on site. With the goal: awareness of energy use during the execution of a construction project.

References
Checklist A3 (see Appendix).

References

- http://www.fsc.nl/ (website of the Dutch Forest Stewardship Council).
- http://www.inkoopduurzaamhout.nl/achtergrond.html .
- http://www.tpac.smk.nl/ .

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 4 User guide

Aim
To encourage the provision of a building manual for non-technical users of the building to enable them to understand the building and efficiently to deal with.

Credit criteria
A maximum of 1 point is awarded.

There should be substantial evidence that::

1	1 point	a simple guideis provided to the tenant / user and non-technical building manager with information about the use of the building and the environmental performance of the building.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 There is a manual developed incorporating the information as described in "User Content" (see Further information).
1.2 The user manual is useful for non-tech savvy users of the building.
1.3 The manual is suitable for (other) stakeholders who will use the building.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
If the facilities are located in the existing building, those facilities must be assessed on the above requirements.

Hull
For speculative developments, it is not possible to provide all the information requested. The manual should be developed to be as comprehensive as possible, including all sections mentioned in the appendix, so that it can be transferred to the finishing team. The finishing team must complete the missing sections in the manual, after which the complete manual can be transferred to the building owner or the user (s).

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
It should be designed with the actual user (non-technical) in mind. For proper use of the property informing the user is essential. In addition, the form and language of the manual for the user is manageable and useful.

Lodge
Guest Feature: concise manual for guests for use of the room (including plan of the building with facilities).

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 3.1 m	A copy of the clause of the specification (of work) in which are laid down: • The requirement to draw up a manual. • The scope and content of the manual mentioned above.
OR		
B	1.1 t / 3.1 m	An official letter from the client / developer confirming: • that the designteam has the obligation to draw up a usermanual; • that the contents of the above manual will be developed in accordance with the requirements of BREEAM-NL.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 3.1 m	• a copy of the user manual; • a written confirmation of the design team that before the occupation of the building the manual is handed over to the building owner, tenant (s); • if applicable, the manual is handed over to the contractor to complete outfitting.

Definitions

User
Manual for the specific target group of the user of the building.

Additional Information

B & O Manual

The presence of a M & M (Management & Maintenance) manual does not meet the requirements for this credit.The M & M manual provides detailed information for the technical manager and maintenance staff / companies. The manual is included in the M & M manual, but must always be separately removable.

Building with multiple tenants

If the building will be divided into separate rentable units, a central manual should be made available for all common areas and shared responsibilities. In addition, a separate manual should be adapted to the status / responsibility of the tenant and his rented unit. Available for each separate subtenant.

User content

The following list shows the composition and the type of information that should be in the manual. Distinct parts to be included are:

- For users: where to find the facilities, how to operate the facilities and who should be contacted if there are malfunctions or complaints? (Described from the user)
- For the building manager: additional operating information on equipment and facilities (described from the building manager's point of view).

1. Information about building installations

Information to be provided:

- Users: general information about the heating, ventilation, cooling, lighting:
    - Which facilities are present in the building, how to operate the facilities and where to find the buttons (For users)
    - Tips about not covering radiators, use blinds, etc., with underlying 'strategies' regarding drafts, temperature settings (in the case of LT-heating, open windows for cooling etc..).
    - Especially for hallways: reporting drafts / broken doors, etc., dealing with lighting, cooling, heating.
- Building Manager: as above, plus a non-technical summary of the management and maintenance of building systems, including building management (if any) and a summary of the operating instruments.

2. Emergency

Information to be provided:

- Users: a get away plan, possibly as part of an emergency response plan, including information about the location of emergency exits and muster points, alarm and fire-fighting systems.
- Building Manager: as above, plus detailed information on the nature and location of emergency and fire-fighting systems, the nearest emergency exits and the location of first aid equipment.
- For additional housing: general emergency numbers police, fire, ambulance etc.

3. Policy on energy conservation and environmental concerns

This part of the manual, provides users and building manager information on energy-efficient facilities and the related energy management of the building. The manual should also include the rationale for these facilities, such as economic or ecological reasons. The manual provides information on:

- User: the operation of innovative features such as automatic blinds or automatic lighting. The manual also contains instructions on how to open outside windows, the use of sun protection and control of lighting and heating.
- Building Manager: as above, plus information on crack density, effect of sunlight on the building energy targets for the building (with references of similar buildings), information on the metering applied and subbemetering and how these metering can be used to monitor, record and present of water and energy to stakeholders.

4. Water

Information to be provided:

- User: details about water-saving facilities, the use and benefits.
- Building Manager: as above, plus information on key system components, control instruments and their use. The need to comply with the legal obligation to implement a legionella management strategy.

5. Transportation Facilities

Information to be provided:

- User: details about parking, bicycle parking, information on public transport, public transport maps and public transport schedules, information on alternative transportation options such as carpooling to work schedules and 'green' transport facilities.
- Building Manager: as above, plus information about access, numbers of parking places and storage, maintenance and appropriate use of the parking facilities and bicycle.

6. Waste and environment

Information to be provided:

- User: information about the locations for storing waste, recyclable materials, and how these should be separated.
- Building Manager: As above, plus background information on recycling and reuse of recyclable materials (including e.g. construction, outfitting and furnishing materials, furniture and office supplies), storage and transportation of waste materials, examples of waste and any cleaning and maintenance measures for particular materials and finishes.

7. Considerations for redevelopment of areas

Information to be provided:

- User: an explanation of the effect of a modified arrangement of furniture in a room, such as the impact on the operation of the inlet or outlet grilles, the effectiveness of sun protection and the impact of higher utilization on the indoor climate.
- Building Manager: as above, plus environmental aspects associated with the reconfiguration. Attention should be paid to BREEAM relevant sustainability issues such as energy, (re) use of sustainable materials and the impact of higher utilization in the interior and on the welfare of the users.The manual should indicate what provisions the original building contains to facilitate future changes.

8. Notification Procedures

Information to be provided:

- Users: contactinformation of the building manager, the maintenance and / or support of facilities management, plus relevant details of any other users of the building.
- Building Manager: as above, plus contact details of contractors / suppliers of equipment or facilities, supplemented with information on their responsibilities for reporting on the operation and any disruptions to their equipment or installations.

9. Training

Indicate which courses are planned for the use of special facilities and building systems. To provide information such as:

- User: training / information evening in the use of existing special or innovative energy saving devices.

Additional for housing: provide opportunity for repetition of instruction / information for new residents. Focusing on the daily use of the house, in addition of innovative installations.

- Building Manager: Training in the use of existing special or innovative energy saving devices, supplemented with information on (statutory) emergency response procedures and information on the commissioning of building services.

10. Links and references

For users and building manager relevant references to websites, publications and organizations.

11. General

Subjects for which the building manager has expressed the need for more detailed information, should be included to relevant sections in the management and maintenance manual.
BREEAM-NL requires a 'manual' that contains the necessary information for the daily use of the building by the user and which is arranged such that the user can understand it easily.
It is very likely that the lack of a good manual will result in improper use of the building and equipment, resulting in dissatisfied users and unnecessary waste of water, energy and materials. For example, a wrong choice of room layout can lead to a suboptimal functioning ventilation system or a spatial illogical lighting switch.
The purpose of this credit is to ensure that the original building and installation design is understood and that this design is respected when making changes during the use phase of the building. It is important to know what changes to the original design may need to be made to maintain the original quality.
The consequences of these changes in terms of time and money should be brought to the attention of the responsible management before a decision can be made on whether or not to implement the changes.

11 Ecological Management Plan

If the credit LE 4 is achieved ecological management has to be part of the manual.

12 Maintenance of property (additional chapter specifically for homes)

Attention for, for example, applied paint systems, sewage pollution, replacement frequency, frequency of maintenance facilities.

In addition, information on low VOC emission materials, information about usage of certified wood etc. for do-it-yourself renovations.
Practical tips for good and proper home maintenance.

13 Informing about sustainable design and use (additional chapter specifically for homes)
Informing users about future possibilities for sustainable use of the property and operation of equipment. Think of appliance labeling, energy efficient lighting, TV switched off and not on standby and using a drying room instead of a clothes dryer, etc.

References

- BS 5509: 1998 User manuals - Content, structure, formulation and presentation.
- SBR publication: National Sustainable Building package, manage U443/S433 Healthy buildings.
- CIBSE Building log book toolkit

- Housing: User Manuals sustainable homes (SEV) 'Residents Guide, documentation systems, separate delivery and installation instruction.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	√	√

MAN 6 Consultation

Aim

The involvement of relevant stakeholders (including building users, businesses, residents and local government) in the designprocess to increase local involvement and to obtain a building that is best suited for its function.

Credit criteria

A maximum of 1 point can be awarded

There should be substantial evidence that:

1	1 point	consultation has taken place or takes place, and feedback is given to the local community and building users.

Compliance requirements

The following demonstrates that the criteria are met:

1.1 During the preparation of the outline the following is undertaken:

- There is a consultation plan that contains a schedule and a plan of action which clearly indicates the points on which the parties contribute and how they will be informed on the progress of the project.
- Members of the local community and relevant stakeholders are identified and the design team has a consultation with these stakeholders.
- Knowledge and experience of existing buildings of the same type are written down in order to find relevant cooperation and networking opportunities. If the building is a new development within an existing community or within a community to build, a representative consultation group will be formed. This group occupies or uses the same type of building in the same area as the new development.
- An inventory of the needs of future users and residents regarding green / ecological structure and use of the outdoor spaces.
- Members of the local community are asked to share their knowledge regarding the presence of plant populations and animal species.

1.2 The consultation shall include at least the following points:

- functionality, building quality and local impact;
- satisfaction of building users and productivity;
- maintenance costs;
- deployment of people and resources for maintenance;
- good and bad examples of buildings of the same type;
- influence of local transport and traffic;
- opportunities for shared use of facilities and infrastructure with the local community;
- possibilities of the building so as to indicate that it can be used for educational purposes;

- the feedback taken from the people who participated, this feedback includes: 1) what was proposed during the public participation, 2) how these suggestions are considered, and 3) the result of the implementation of the suggestions or why the suggestion is not done .

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

In case the facilities are located in the existing building, they should be evaluated for the above requirements.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 & 1.2	An overview of the stakeholders consulted.
B	1.1 & 1.2	A consultation plan with the description of the consultation process and the definition of the consultations.
C	1.1 & 1.2	Copies of meeting agendas and minutes of meetings with stakeholders showing: ○ that the consultation plan is implemented; ○ the project phase in which the consultation(s) took place.
D	1.1 & 1.2	Copies of documentation that shows the feedback from the consultation(s), including (where applicable): ○ newsletters, posters, leaflets and the like; ○ meeting agendas and minutes of meetings with stakeholders.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1 & 1.2	Copies of the results of the consultation(s).

Definitions

Functionality

The way the building is designed for this use, and how the distribution is within the building.

Building Quality

The construction and installation technical performance factors of a building.

Impact
The appearance of the building and the way it can have a positive effect on the local community and the surrounding environment. These include the shape of the building, the material used, the internal environment and external integration.

Relevant institutions
Typical institutions are relevant stakeholders: local government, foundations to preserve cultural heritage and environmental organizations.

Appropriate stakeholders
Appropriate stakeholders may include local residents, (former) students, teachers, local entrepreneurs, members of the design team, local voluntary institutions such as cultural, sports or religious institutions.

Additional Information
In LE 8 (Partnerships with local nature organization) reference is made to this credit. LE 8 is only for schools. So if you have to deal with a school, it might be interesting to obtain both MAN 6 and LE 8

References
None.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 8 Security

Aim
Identifying and promoting effective design measures in vicinity of the project to increase public safety by offering protection against common crime (such as vandalism, occasion burglaries, theft, etc.).

Credit criteria
A maximum of 1 point:

There should be substantial evidence that::

1	1 point	a demonstrably qualified adviser has been consulted, recommendations are incorporated into the design of the building during the design and (where applicable) are included in the design of the parking and the immediate vicinity of the building.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The design team has had discussions with the adviser and the recommendations are incorporated into the design.
1.2 The above discussions took place during the design process.
1.3 The recommendations are both incorporated into the final design in the completed building.
1.4 If the project takes measures other than those recommended by the adviser, the design team provides reason to support the measures. The adviser must agree to ensure that the measures taken provide at least the same level of security.

In case of non-residential
1.5 There are affected construction measures that meet level B2 of the National Assessment BORG.
Or
1.6 There are structural measures taken satisfying level 3B of the National Security Directive (NBR).
Or
1.7 There are security measures that comply with level C of the Transported Asset Protection Association (TAPA)

In the case of housing
1.8 The requirements of the Police scheme “Veilig Wonen” are met.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Lodge
-

Meeting Function
-

Roller or sectional doors
For the purpose of the doors, for example, dock shelters, a lower resistance class may be used than is required according to the NEN 5096.

Requirements for qualified adviser
In possession of at least one of the following qualifications.

For homes:

- Building plan advisor Police Hallmark Veilig Wonen® (no prevention advisor). This diploma is mandatory for counseling at full PKVW ® for homes.

For utility:

- Diploma Crime Prevention Through Environmental Design (CPTED).
- Postgraduate diploma Security Management DHM Security Institute (formerly of The Hague University).
- Diploma CPO (Certified Protection Officer).
- Employed by a BORG or NBR-certified security.

Criminal Opportunity
The advice is first of all against risks of burglary in the building by a criminal opportunity, the kind that usually requires no special preparation beforehand. An opportunity criminal uses no special tools for, for example, forcing a door or window.

Risks
The advice refers to directly noticable risks.These risks should be listed in the advice. Includes risks of common crime such as burglary, theft and vandalism.The measures described in the advice should focus on addressing these risks.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	Copies of correspondence with the prevention advisor and the prevention advice (according to NBR, BORG TAPA, or PKVW) containing: • the size of their advisory work and their involvement. • the design (s) in which the opinion was requested. • a summary of the recommendations.
B	1.3 t / 1.8 m	A copy of the relevant sections of the specification of work showing that structural measures are being made which meet the criteria laid down in the security requirements.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t / 1.4 m	Inspection of the adviser confirming that the building complies with the recommendations. Where alternative measures are in place the safety inspector should confirm that the alternative meets the requirements criteria.
E	1.5, 1.6 and 1.8	A report prepared by a certified company BORG, NBR or PKVW security certificate proving security measures that meet the levels of the Compliance requirements.
E	1.7	A report prepared by an independent security inspection company showing that TAPA requirements are met in accordance with the function matrix or a TAPA security certificate.

Definitions

Secured by (PKVW)
This is a hallmark of the police for homes that are sufficiently protected. Homes that are given the mark have proven that sufficient anti-burglary measurements have been made and have no weaknesses that make it easy for a burglar to enter the home. (The concept comes from England, where it's called *Secured by Design*.)

References

- http://www.politiekeurmerk.nl (website Secured by).
- Manual Safe Design and Management of the Foundation Safe Design and Management, 2008 (www.stichtingvob.nl).
- Publications (including) the Centre for Crime and Security (CCV) in Utrecht, depending on the type of building and location, www.hetccv.nl .

- National Assessment BORG 2005 version 2 + C1 + A1 + A2 + A3 + A4 + A5.Process certificate for the design, installation and maintenance of burglar alarms. 7 December 2011. Center for Crime Prevention and Safety. Utrecht. Including correction and amendments of later date.
- National Security Directive (version 2010) and control (version 2009).
- http://www.tapaemea.com/ (website TAPA security label)

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 9 The development as a learning source

Aim
Stimulation of informing users and visitors about sustainable construction.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	The knowledge of environmental issues of the building and grounds are transferred to users and visitors of the building.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The project-related information as described in Compliance notes is published as a case study using one of the following methods:

- website of the developer, to the public literature or through a press release;
- a website or an information portal sponsored by the business or the (local) government;
- a website or an information portal of an educational institution or educational literature.

1.2 At least two of the following points:

- for future users building site visits are planned regularly;
- (Building) users and other stakeholders are given the opportunity to attend design team meetings;
- (Building) users and other stakeholders receive periodic presentation on the progress of the design / construction;
- online information and current information available about the design and implementation of the project.

1.3 There is a small exhibition inside the building, that shows future users the impact of the building on the environment and use of the building, and how the building and / or terrain in question reduces impact on the environment. Because of the subjectivity of the subject and the situation of each individual project, there are no strict criteria. The points mentioned are suggestions for additional information to meet the requirement.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
-

Case Study
The following project-related information is published in the case study:

- a simple description of the project and the building;
- BREEAM rating and score;
- the main innovative and environmentally friendly design of the building measures;
- gross floor area in m² (NEN 2580);
- total surface area of the site in hectares;
- floor surfaces to function and their dimensions (NEN 2580);
- traffic areas in m² (NEN 2580);
- storage in m² (NEN 2580);
- % Of surface areas for use by the (local) community (if applicable);
- % Surface area of buildings to be used by the (local) community (if applicable);
- expected energy consumption in kWh / m² GFA;
- expect fossil fuel consumption in kWh / m² GFA;
- expected use of renewable energy in kWh / m² GFA;
- expected water in m^3 / person / year;
- expected% of water that is involved through rainwater or gray water;
- the steps taken during the construction process to reduce the impact on the environment, for example through innovative construction methods;
- a list of progressive / unrealized sustainable measures in the social or economic nature.

Furthermore, the following BREEAM-related aspects should also be included in the case study:

- ambitions, planning
- technical solutions
- process, organisation
- BREEAM credits
- cost / benefit
- tips for next project

Offices
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Retail
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Industrial buildings

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School

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Lodging

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Meeting

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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A concept case study of the designteam containing: • The case study. • The publishing medium, so that the assessor can verify that the information is published at the time of design assessment.
B	1.2	Be provided (if applicable): • A schedule setting out dates for the site visit by users / stakeholders. • A timetable showing the dates on which users / stakeholders attend design team meetings. • A timetable showing the dates on which presentations are / are given. • A brief description of the theme of the presentation, or a copy of the presentation. • The web address that the public can access for information about the progress of the design and construction process.
C	1.3	A drawing showing the place indicated for the exhibition.
D	1.3	An overview regarding project-specific components that will be exhibited on the building and grounds.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1	A copy of the published case study.
F	1.2	(If applicable) to be supplied: • an official letter from the design team or the main contractor with dates on which users / stakeholders have visited the construction site or attended the design team meetings.

		• A copy of the presentation. • An audit by the assessor of the website, to validate the accuracy and timeliness of project information.
G	1.3	An inspection report prepared by the assessor, with photographic evidence, showing that the exhibition is arranged.

Definitions
None.

Additional Information

Publication of building information
The DGBC may provide, in consultation, the information available on the project website or publish this in magazines.

Education about the building

1. The explanation of the use of for example:
   - a functioning renewable energy source such as photovoltaic cells or wind turbines with a description of the technology, current information about the delivered energy and CO_2 emissions thereby prevented;
   - alternative heating sources such as wood, solar thermal or geothermal energy with a description of the technology, current information about the delivered energy and CO_2 emissions thereby prevented;
   - collection of rainwater with current metering, a simple description of the system and the environmental benefits.
2. Showing the materials used, for example, with a cutaway building component, so that the insulation material used is visible, plus indoor and outdoor temperature measurement. Alternatively, the innovative materials technology can be made visible, such as the use of building materials from recycled raw materials.
3. A permanent showcase with:
   - information about the building design, construction and environment-saving measures;
   - general information on the impact of the building on the environment;
   - environmental (building)solutions and materials that can be prescribed in contemporary design and practical implementation to reduce detrimental effects on the environment.
4. Where pulse-generating energy and water meters have been used, the data can be displayed in combination with a description of the operation of the system.
5. The presentation / information about the building is exhibited in a part of the building that is visited frequently, for example in central traffic areas, auditoriums, meeting rooms and group rooms.

Education on the grounds

1. On-site or in an area immediately next to the site there is an exhibition that displays:
   - allows creation and management of a natural habitat or wetland;

- allows creation and management of an area for organic farming and / or organic livestock.

References

Reference is only a preliminary example, in the absence of BREEAM-NL-equivalents:

- http://www.constructingexcellence.org.uk .

Case studies are posted on:

- http://www.breeam.nl/projecten/ .

Project Information Form

- http://www.dgbc.nl/images/uploads/project_informatie_website.doc .

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	√	√

MAN 11 Easy of maintenance

Aim

Encouraging the design of a building and of (building) installations that can be maintained in a simple manner throughout their life cycle.

Credit criteria

A maximum of 1 point.

There should be substantial evidence that:

1	1 point	an efficient and easy way of maintenance is considered, as usual with accepted best practice methods, during the preparation of the technical specifications for the building, equipment and grounds.

Compliance requirements

The following demonstrates that the criteria are met:

1. The main issues during the purchase/tender procedures have been adressed; see the checklist 'Design Guide for maintenance buildings' (Appendix 2 A1, CIBSE guide to ownership, operations and maintenance of building services).
2. There has been a critical assessment prior to the tender process on the implications of the maintenance for the various design options.This review must meet:
    - a maintenance plan in accordance with ISO 15686 (Buildings & Structures, Maintenance, part 1).
3. Following the critical assessment a maintenance strategy is developed during the design and formalised. The maintenance strategy should include to what extent maintenance aspects can be included in the design and what assistance systems should be in the specification of the design to enable efficient and cost effective operation and maintenance.The strategy should give an indication of the removal and replacement of major plant components during the lifetime of a building, of facilities or of land, including the required access, vertical transport required and the main routes between the plant areas and areas where the system components are to be delivered.
4. If a management plan exists for site arrangement (eg as part of credit LE 6) it is required to make this plan part of the maintenance strategy.
5. There is storage space available for storing cleaning agents and general maintenance products. This space should be divided evenly throughout the building and / or site. Per floor, at least one storage should be available.

Compliance notes

New building

For new construction projects, there are no additional or different requirements to the above requirements.

Renovation

For renovation projects, there are no additional or different requirements to the above requirements.

Expansion of existing buildings
For expansion of existing projects, there are no additional or different requirements to the above requirements.
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
For Hull there are no additional or different requirements to the above requirements.

Offices
-

Retail
-

Industrial buildings
-

School
-

Lodge
-

Meeting Function
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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	An official letter from the design team: • confirmation of the use of and compliance with the CIBSE checklist prior to the procurement process; • a completed copy of the checklist for the project phases used, the copy must be signed and include a date; • examples of how items on the checklist are performed at each stage of the design process.
B	1.2	An official letter from the design team: • agreement between the results of the assessment with the relevant standards.
C	1.3 and 1.4	A copy of the concept maintenance strategy (including the layout area, if applicable).
D	1.5	To produce: • drawings, which includes the location and size of storage.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1	An official letter from the design team: • confirmation of the use of and compliance with the CIBSE checklist during the various stages of the implementation process. • a completed copy of the checklist for the project phases used. The copy must be signed and dated. • examples of how items on the checklist are performed at each stage of the implementation process.
F	1.2	An official letter from the design team: • agreement between the results of the assessment with the relevant standards.
G	1.3 and 1.4	A copy of the maintenance strategy (including the field device, if applicable).
H	1.5	An inspection of the building by the assessor, with photographic evidence of the location and size of the storage (for cleaning products).

Definitions
None.

Additional Information
None.

References

- Guide to ownership, operation and maintenance of building services. CIBSE 2000.

http://www.dgbc.nl/images/uploads/CIBSE_Guide_M_Appendix_pag25-26.pdf.

- ISO 15686: Buildings and constructed value. Planning of lifespan. New version already available.

- Part 1: General Principles 2000.
- Part 2: Service Life Prediction Procedures, 2002.
- Part 3: Performance audits and reviews, 2002.
- Part 6: Procedures for considering environmental impacts, 2004.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

MAN 12 Life cycle costing

Aim

Encouraging a life cycle cost analysis is performed during the design phase, so that the design and implementation over the lifecycle of the building, including maintenance and management are optimized.

Credit criteria
Up to 2 points are can be awarded.

There should be substantial evidence that::

1	1 point	in the design phase a life cycle cost analysis at strategic level is performed to optimize the design.
2	1 point	the recommendations from the first life cycle cost analysis are implemented and are supported and improved by a second detailed life cycle cost analysis at the system level.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 An initial life cycle cost analysis is performed in the design phase, in which various proposals and variants of the concept design of the building are fully analysed.
1.2 The life cycle cost analysis is performed and the following components during the lifetime of the building are shown:
- construction costs including interest costs;
- maintenance cost, including at least: planned maintenance, replacements and repairs;
- operational costs including at least: utilities, cleaning and management.

1.3 The life cycle cost analysis uses a calculation period of 20 and 50 years.The values of these are expressed in real, discounted and undiscounted cash flows.
1.4 The life cycle cost analysis shows that at the strategic level the following building components are examined:
- support structure
- building fabric
- installations

1.5 The life cycle cost analysis includes a project-specific integrated assessment at the building level taking into account the relationship between the different parts. For example, the effect of another building fabric on the facilities and support structure taking into account both construction costs, maintenance and operational costs.
1.6 The option (s) with the lowest discounted life-cycle costs is (are) preferred, assuming that option (s) yields (yield) one of the following results:
- The lowest energy consumption throughout the life of the building.
- A reduction in maintenance requirements / frequency.
- Extending the life of internal systems and equipment.

1.7 The recommendations will be taken to the design and it is argued why they may or may not be implemented in the design.

2.1 The first point is achieved.
2.2 A second, detailed life cycle cost analysis is performed, based on the preliminary design.
2.3 The life cycle cost analysis is performed and the following components are shown during the lifetime of the building:
- construction costs including interest costs;
- with minimal maintenance: planned maintenance, replacements and repairs;

- operational costs with minimal: utilities, cleaning and management.

2.4 The life cycle cost analysis uses a calculation period of 20 and 50 years.The values of these are expressed in real, discounted and undiscounted cash flows.

2.5 The life cycle cost analysis shows that at the system level, the next building components are examined:

- (Main) bearing structure
- building fabric
- installations
- finishes, including tenants Facilities

2.6 The life cycle cost analysis includes a project-specific integrated assessment at the building level taking into account the relationship between the different parts.For example, the effect of another building fabric on the facilities and support structure taking into account both construction costs, maintenance and operational costs.

2.7 The option (s) with the lowest discounted life-cycle costs is (are) preferred, assuming that option (s) yields (yield) one of the following results:

- The lowest energy consumption throughout the life of the building.
- A reduction in maintenance requirements / frequency;
- Extending the life of internal systems and equipment.

2.8 The recommendations of the analysis have been incorporated into the final design, the specifications of the work and eventually completed building.

Compliance notes

New building

-

Renovation

In renovation projects the new situation should be the reference point.

Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

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Offices

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Retail

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School

-

Residential

-

Lodge

-

Meeting Function

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.4 m	To produce: a copy of the life cycle cost analysis during the design phase.
B	1.5 t / 1.6 m	An official letter from the design or cost expert containing: • the preferred option. • a summary of argumented recommendations that may or may not be included in the design.
C	2.1 t / 2.5 m	A copy of the life cycle cost analysis based on the preliminary design.
D	2.1 t / 2.5 m	The data of the expert that the above-mentioned cost analysis was performed.
E	2.6 & 2.7	An official letter from the design or cost expert containing the preferred option.
F	2.6 & 2.7	a summary of argumented recommendations that may or may not be included in the final draft;

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

G	1.2 t / 1.4 m	An inspection of the assessor confirming that the chosen option (s) in the building is / are applied.

Definitions

Analysis at the strategic level and system level

The analysis at the strategic level includes, among others, functional issues such as location, external environment, maintenance sensitivity, internal environment, etc.

The analysis system-level includes technical issues such as foundations, walls, floors, energy used, ventilation, water capacity etc.

Both analyses should be carried out at the earliest possible stage of the design decisions that have no adverse effect on the (initial) budget or time planning of the design.

It is also important that these analyses be repeated at certain times in the design process to ensure that the most optimal solution remains intact during the elaboration of the design.

Life Cycle Cost Analysis

An evaluation technique in which the total cost for the construction, maintenance and demolition of a building shall be determined. The report should include at least the following components:

1. Define problem and purpose.
2. Research alternatives.
3. Set generic assumptions and variables.

4. Window costs and timing for each alternative.
5. Make cash flows visible.
6. Calculate NPV for each alternative.
7. Do a sensitivity analysis.
8. Take into account additional effects that may not be expressed in money.
9. Take decisions.

Additional Information

A life cycle cost analysis is not an LCA analysis with the aim to determine the environmental impact of a building. A life cycle cost analysis aims to optimize the design at an early stage, so that the full costs throughout the life cycle (including energy and maintenance costs) are minimized. Analysis of the environmental impact of a building based on LCA tools is rated in the materials credit MAT 1.

References

- NEN 2634: Terms, definitions and rules for transmitting data on costs and quality of construction projects (to be shortly replaced by NEN 2639-in development).
- ISSO / SBR publication 347: Model quality air conditioning systems (MKK).
- ISO 15685-1: Buildings and Constructed value.Planning of life.
- Building is ahead - Theory and practice of lifetime - Regieraad Construction, Construction PSI.
- BS ISO 15686-5:2008 Buildings and constructions - Planning of life - Part 5: Maintenance and lifecycle.

2 Health

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	-	√	√	√	√

HEA 1 Daylighting

Aim
Providing adequate daylighting in residential areas and accommodation areas for the benefit of adequate visual performance and well-being.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	the degree of daylight within accommodation spaces and / or residential areas meets the requirements of visual comfort.

Compliance requirements
The following demonstrates that the criteria are met.

1.1 The amount of daylight for every distinguished building function satisfies for all occupied spaces (with a mimumum percentage for the available floor space according to Table 1):

- An average daylight factor higher than the minimum values in Table 1.
- A uniformity ratio of at least 0.4 or a point daylight factor of at least 0.8% (For rooms with a transparent roof such as an atria as a uniformity ratio of at least 0.7 or a minimum point daylight factor of 1.4%).

Table 1: Minimum Limits average daylight factor per distinguished building function

Building Function	*Minimum average daylight factor (%) per stay room*	*Minimum precentage of total floor space to assess (see also the percentage of the area to be evaluated)*
Office	2.0%	80%
School	2.0%	80%
Retail	2.0%	35%
Residential (Kitchen)	2.0%	80%
Residential (living room and / or dining room)	2.0%	80%
Lodging	2.0%	50%
Meeting		
- Babysitting	2.0%	80%
- Other	2.0%	35%

Exemplary performance

The following criterion shows an exemplary performance and makes it possible to earn this BREEAM credit-1 innovation point:

- Evidence shows that the building functions listed in Table 1 are met with an average daylight factor of at least 3.0%.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

For expansion of existing buildings only that part of the expansion is part of the assesment.

Hull

This credit can only be used for Hull construction if the required data from the daylight openings (eg LTA) are known. In new buildings a reflection factor of 0.3, 0.7 and 0.8 are held respectively for floors, (light) walls and (light) ceiling.

Offices

-

Retail

-

School

The gym at a school may be disregarded.

Residential

As an alternative to criteria 1.1, the room depth criterion d/w +d/HW < 2/(1-RB) is satisfied. Where d = room depth, w = room width, W = window head height from floor level, RB = average reflectance of sur-faces in the rear half of the room.

Table 2:

Reflectance (RB)	0.4		0.5		0.6	
Room Width (m)	3.0	10.0	3.0	10.0	3.0	10.0
Window Head Height (m)	-	-	-	-	-	-
2.5	4.5	6.7	5.4	8.0	6.8	10.0
3.0	5.0	7.7	6.0	9.2	7.5	11.5
3.5	5.4	8.6	6.5	10.4	8.1	13.0

Lodge

-

Meeting Function

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	Copies of design drawings in which all residential areas with the function per occupied area are indicated for each floor of the building.
B	1.1	Daylight calculations confirm that: • The daylighting of all applicable occupied areas is reviewed • The necessary daylight parameters investigated • The average daylight factor for any applicable occupied area • Compliance with the requirements relating to the uniformity ratio • The percentage of the total rated floor surface that conforms to an average daylight factor requirements of Table 1.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	An inspection of the assessor confirming that window size and layout of the accommodation areas match the specifications from the design phase and a letter from the design team stating that the building at the time of completion was not changed from the original design.
D	1.1	If the completed building has been changed from the original design, the evidence required for the design needs to be submitted again.

Definitions

Building Function
The functional use of spaces in a building, as defined by the Building Act.

Average daylight factor
Ratio of the average illuminance (daylight) on a work surface in space and simultaneously - in the open field - acting illuminance outside on a horizontal starting plane of a cloudy sky (overcast sky - Commission Internationale de l'Eclairage).

Point Daylight Factor
The point daylight factor is the ratio between the illuminance (daylight) in a specific point on the work surface in a room and the same - in the open field - acting illuminance outside on a horizontal plane assuming a cloudy sky (overcast sky - International Commission l'Eclairage). The minimum point daylight factor is the lowest point daylight factor in the space that is not located within half a meter

from a wall. Computer simulations using a validated daylight calculation are necessary to calculate point daylight factors.

Uniformity Ratio
The ratio between the minimum illuminance (daylight) on the work surface in a occupied area (or minimum daylight factor) and the average illuminance (daylight) on the same plane (or average daylight factor).

Occupied areas
Space intended for the stay of people for at least a period of 30 minutes per day or where for that use function characteristic activities take place. An occupied area meets the minimum criteria regarding size and height of the Bouwbesluit(Building Act).

Illuminance
The amount of light falling on a unit area measured in lux.

Work surface
The horizontal, vertical or inclined plane in which the visual tasks are performed. A work surface is normally based on a horizontal plane, for example offices at 0.7 m and for the industry at 0.85 m above the floor.

Additional Information

Percentage of the area to be assessed
To evaluate floor area of all residential areas which satisfies the requirement for the credit average daylight factor. If at least a total of six areas of 150 m^2 each (a total of 900 $m^{2)}$ should be assessed then at least 720 m^2 should meet the daylight requirements.That equals 4.8 areas. The number of space must always be rounded up in that case. In this case, five areas need to be assesed to meet the Credit criteria.

Equivalence of living quarters
The minimum portion of the total floor space of all residential areas that must meet the requirements. If certain residence spaces are equivalent with regards to daylight (such as size, shape, window area, transmission factor, sky view angle reflectance etc.), daylight calculation is performed only for one of the similar premises. On copies of design drawings and an overview of all accommodation areas it should be clearly indicated for which spaces daylight calculations have been made and which living quarters are equivalent to each other.

Occupied areas where daylight enters through other spaces
Occupied areas that exclusively receive daylight from another occupied area, and that are separated by an inner wall of at least 50% of clear glass or other transparent material, are considered as a single entity for the purposes of this credit. This inner wall and specific properties (LTA) should be included in the daylight model.

Other than or different types of windows for daylighting
Other than or different types of windows for daylighting, eg roof windows, skylights, frosted glass, skylights, "solar tubes", "sun pipes' etc. count in determining the daylight factor and uniformity ratio, provided that the contribution to daylighting is integrally calculated using a validated daylight calculation.

Open plan offices

Traffic routes within open plan offices are allowed and need not be included in the daylight calculations provided it is clear that there are no workstations located (examples are different color flooring, false ceiling).

Barriers

In deviation to the NEN 2057 the real barriers should be included in the modeling phase. This means that the barriers caused by the surrounding land should also be included.

BREEAM takes this beyond the Building Act, in which, from the perspective of equality, it is always required to use te minimal hindrance factor.

References

- Average daylight factor: a simple basis for daylight design, Information Paper 15/88, Building Research Establishment, Watford, UK.
- BS 2057: Daylight Openings of buildings - Determination of the equivalent daylight area of a room

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	-	√

HEA 2 View out

Aim
Encouraging to ensure that relevant workplaces in occupied areas have an unobstructed view. This to benefit visual comfort and to provide a break to a monotonous indoor environment.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	Relevant workplaces in usable floor area feature a sufficient "free view out '.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 All relevant workplaces within living areas are located within a distance of Xm of a facade with windows or permanent openings with an unobstructed view to the outside as described in Table 1.
1.2 If the window or wall opening look at an atrium, courtyard, garden or courtyard, or in other buildings; the distance, direction perpendicular from the window or door opening to the rear wall of the atrium, courtyard, garden or courtyard, respectively the facing facade of the other building amounts to at least 10 meters.
1.3 In view of an atrium, courtyard, garden or courtyard, these should be provided with any decor, such as landscaping, planters, furniture, artifacts and the like.

Table 1: Size of the window / facade opening required, as a percentage of the wall surface in which the window is located, in relation to the distance from the workplace to the window / facade opening

Distance from window or door opening to workplace	Size window / door opening (as a percentage of the façade area)
≤ 7 meters	20%
> 7 meters and ≤ 11 meters	25%
> 11 m and ≤ 14 m	30%
> 14 meters	35%

Compliance notes

New building
-

Renovation

-

Expansion of existing buildings

-

Hull

If it is not possible to make clear which usable floor areas include workstations, all residential areas are to meet the above requirements within the building.

Offices

-

Retail

This credit only applies to all workplace relevant areas of retail projects. Refer to definitions for definition of workplace relevant usable floor area.

Industrial buildings

This credit only applies to all workplace relevant areas of industrial projects.

School

For schools, this credit applies to classrooms and library spaces (offices fall under the office function). Auditoriums may be disregarded. The work of teachers or other school staff as well as pupil desks belong to the scope of this credit.

Lodge

-

Meeting Function

This credit applies only to group rooms for childcare.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of the design specifications or drawings showing the location of the openings and information about dimensions / distances to workplaces are indicated, including any architectural barriers such as floor elevations, columns or interior walls. If no final layout drawing is present, a possible layout drawing of workplaces sufficient.
B	1.1	Calculation of the windows / openings in relation to the total facade in which the window / the facade opening is located.
B	1.1 and 1.2	Drawings of the situation surrounding the building and the distance to the adjacent structures including indications or descriptions of any obstacles.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 1.3 m	A report from an on-site inspection by the assessor and photographic evidence confirming compliance with the requirements. Regarding the

		photographic material, photographs with a representative sample of all available workstations will suffice. If changes are made, the design team clearly indicates this using additional drawings and relevant sections of the specification of the work it. The assessor shall assess to what extent the changes still meet the requirements.

Definitions

Relevant workplaces for living areas regarding outside view
A workplace in a living area is relevant if a workplace is likely to be occupied for 30 minutes or more by a building user and the building user performs activities to a desk, table or counter.

The following areas may be left for the credit HEA 2 out of consideration:

- Conference rooms;
- Lecture theaters;
- Auditoriums;
- Sports halls;
- All areas where the exclusion or limitation of natural light is a functional requirement, such as a media room.

Clear view
A clear view is defined as a free and direct view which is at eye level (in case of a seated workplace approximately 1.2-1.3 meters in height) to the outside, which provides view of:

- a landscape (the sky dome not only), *or*
- objects, including buildings near and far.

Window
A window is a set of glass in a frame. A window may further be defined on basis of whether or not the window can be opened; open window or fixed window. If a window spans the whole facade (whether or not to open or fitted with a door), we call that a front. With panes only the glass is intended.

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	-	-	√	-	-	√

HEA 3 Glare control

Aim
The prevention of nuisance within accommodation areas due to reflection or glare from incident light by the application of blinds etc.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	Blinds, operated by the user are used in all residential areas that will adequately keep light nuisance at bay.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A system fo blinds operated by the building user is applied to all existing glass parts in all living areas that have a direct separation outwards or a seperation to another room where light can come in and, in accordance with the 'geographical orientation' of the building light nuisance, may encounter radiating sunlight.
1.2 The systems used for blinds allow a continuously variable control by the individual building users (partial to full coverage of the irradiation area of the outside light).
1.3 The systems used for blinds meet with regard to 'glare control' in class 3 or 4 of EN 14501:2005 (where the transmission measurement complies with EN 14500:2008).

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
If there is evidence that a system is used for blinds, according to the above requirements may be granted credit. If the application of a system for blinds is (still) not specified, the credit may not be granted.

Control by individual occupants
The building users who benefit from the blinds (generally office workplaces in the immediate vicinity of the blinds), have the opportunity to operate them. If the blinds' operation is physically located on the facade or that, for example, every office workplace has its own controls, is at the discretion of the project team.

Offices

-

School

For classrooms the individual user operation applies only for teachers in these areas. The requirements do not apply to gymnasiums.

Lodge

-

Meeting Function

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3	A copy of design drawings, specifications, respectively, in which the different building functions and the need for preventing light pollution are indicated.
B	1.1 t / 1.3	A copy of the relevant sections of the specification of the work in which the system including light-security operation is described, and the places where it is applied.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 1.3	A report from an on-site inspection by the assessor and photographic evidence confirming that the prescribed light systems are installed. Regarding the photographic material a representative sample will suffice.
D	1.3	Specifications of the glarecontrol system showing that it meets class 3 or 4 of EN 14501:2005

Definitions

Geographical orientation

Geographical orientation can be defined as the way in which the building is situated to the east / west direction of the rising and setting of the sun. In the application of this credit the east and west sides of the building will generally be brighter lit by the sun in the morning or afternoon and early evening. Lower and higher, respectively sun in the winter and the summer should also ben taken into account.

Luminance

The luminance (brightness or brightness impression) is a measure of the impression of brightness of a light source or an illuminated surface that the eye sees. Unit: candela per square meter (cd / m²).

Luminance of the light-security

The luminance of the light resistance is measured (or calculated) luminance of the light barrier.

Occupied area
Space for the stay of people for at least a period of 30 minutes per day or where for that use function characteristic activities. An occupied area meets the minimum criteria in respect of surface and height of the building.

Additional Information

- This credit focusses on combating light pollution.

- Light pollution can also occur due to reflection of artificial light, especially on computer screens.This aspect has been included in credit H EA 5 Lighting levels inside and outside.

Glare control class 4
The prescribed class 4 from NEN-EN 14501:2005 corresponds to 100% obscuration if the light resistance is completely closed, with the possibility of 2% diffuse light.

References

- BS EN 14500:2008: Blinds and shutters - Thermal and visual comfort - Test and calculation methods.
- BS EN 14501:2005: Blinds and shutters - Thermal and visual comfort - Performance characteristics and classification.
- CIE 117 Discomfort glare in interior lighting.
- SBR publication: Practice Book healthy buildings, Cahier 2 indoor environment performance requirements office.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	-	√

HEA 4 High frequency lighting

Aim
Increase the visual comfort through the use of high-frequency lighting in the usable floor area of a building.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	All artificial lighting in usable floor area of a building is in HF under normal operating condition and dimmed condition.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Use of the following lighting techniques:
- Fluorescence and gas discharge lighting are fitted with high frequency ballasts.
- LED lighting without dimming technology.
- Dimmable LED lighting with drivers for dimming is on basis of control of the current;
- Incandescent and halogen lamps automatically meet the criteria of high frequency lighting.

Compliance notes

New building
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Renovation
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Expansion of existing buildings
If the existing building is part of the assessment, lighting involved in those components should be considered in the assessment of this credit. If only the extension of the building is the subject of the assessment, restrict the evaluation of the credit to this component.

Hull
If in an hull development tenants are responsible for the choice of the lighting in the rooms to rent, these areas can meet the requirements if:

1. at least 50% is usable floor area for which the usage of HF transformers is guaranteed by the inclusion of mandatory application of these high frequency transformers
in the rental contracts

or
the mandatory application of these high frequency transformers is included in the standard lease terms that apply to all rooms to rent;

2. in the remaining areas to let, the application of these high frequency transformerss is stimulated by inclusion of information

and / or
the user is handed a user manual upon completion;

3. the usable floor areas not designated for rent, meet up to the standard 4-HEA requirements.

Offices
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Retail
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Industrial buildings
-

School
-

Lodge
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A technically specified lighting plan, which clearly identifies what type of lighting is applied where, specified to the building/area function.
B	1.1	A copy of the relevant sections of the specification of the work with drawings of electrical installations including fixtures list.
C	1.1	A statement from the supplier of the proposed lighting showing that the credit requirements are met.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1	If changes have occurred after design, the evidence as per design.
E	1.1	Because of the wide variety of commonly used fixtures in a building it is sufficient if the assessor randomly checks specifications of fixtures in the design and verify that it meets the Compliance requirements.
F	1.1	A report from an on-site inspection by the assessor and photographic evidence that the prescribed frequency lighting is installed according to standards for usable floor areas. This can be achieved with a representative sample of the lighting provided.

Definitions

Usable floor area
Space for the stay of people for at least a period of 30 minutes per day, or where for that use function characteristic activities. An occupied meets the minimum criteria regarding size and height of the Building.

Additional Information

High frequency ballast
High frequency ballasts increase the frequency of the power coming from the grid (50Hz) to a frequency optimising the performance of fluorescent lamps, typically around 30kHz. There are several advantages to running fluorescent lamps at higher frequencies. At 30kHz, the frequency of re-ignition of a fluorescent lamp is too quick to be detected by the human eye, therefore reducing visible flicker that some fluorescent lamps running on mains frequency fail to do. Additionally, 30kHz being above the audible range of the human ear, the buzzing noise coming out of low quality main frequency ballasts is avoided. Finally, the luminous efficacy of fluorescent lamps increases with frequency; it can be improved by up to 10% when they are running at 30kHz compared to those operating at 50Hz.

References

- ASSIST, Flicker Parameters for Reducing Stroboscopic Effect from Solid State Lighting Systems, Volume 11, Issue 1, May 2012. http://www.lrc.rpi.edu/programs/solidstate/assist/pdf/AR-Flicker.pdf .
- ASSIST, Minimizing Flicker from SSL Systems, http://www.lrc.rpi.edu/programs/solidstate/assist/flicker.asp .
- Herschberger, Visualizing the perisaccadic shift or spatiotopic coordinates, 1998.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	-	√

HEA 5 Internal and external lighting levels

Aim
Ensure that the existing artificial lighting ensures a high level of visual comfort for both indoor and outdoor spaces.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	the lighting used meets the minimum requirements in terms of comprehensive lighting levels, uniformity, limitation of glare and color rendering of the light sources used.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Usable floor areas meet the criteria laid down in the Dutch standard NEN-EN 12464-1 Light and lighting - Workplace lighting - Part 1: Workplaces inside.
For the purposes of this credit, the lighting design of the usable floor areas is assessed against the following photometric parameters of the standard:

- Practice horizontal illuminance ($E_{m)}$)
- Practice vertical illuminance ($E_{m)}$)
- Glare Reduction: UGR value ($UGR_{L)}$)
- Uniformity ($U_{o)}$)
- Colour Rendering Index ($_{(Ra}$ value)

1.2 The outdoor spaces to distinguish meet the criteria laid down in the Dutch standard NEN-EN 12464-2 Light and lighting - Workplace lighting - Part 2: Workplaces outdoors.
- For sports lighting BS EN 12193 applies.
- When seperate pedestrian/bycicle lanes are present in the outdoor spaces, ROVL-2011 may be used.

For the purposes of this credit, the lighting design of the outdoor is assessed according to the following photometric quantities, to the extent set out in the relevant standard:

- Practice horizontal illuminance ($e_{m)}$)
- Uniformity ($U_{o)}$)
- Glare Value VW / GR_{L}
- Colour Rendering Index ($_{(Ra}$ value)

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

If the existing building is covered by the scope of the assessment, it should be involved in the evaluation of the credit. If the assessment consists of only the building extension itself, simply input the new building section to be involved in the assessment of the credit.

Hull

If the internal and external lighting, due to the speculative character of the building, is not specified yet so it is unknown which lighting levels will be applied, the credit will not be granted.

Mood lighting

If, in a specific room, it is not desired to meet the lighting requirements due to ambience lighting, it is required to provice substantial evidence from the expert and an evaluation of the assesor. For instance, this may be the case for a company restaurant or atrium.

No presence of outdoor areas with lighting

If in the building no outdoor area is present for which lighting is applied under own management, the credit requirements for outdoor are disregarded and the credit can be fully granted if compliance with the credit requirements for indoor lighting are met.

Offices

-

Retail

In case of commercial premises just the checkout and packing area have to meet the requirements. The sales area need not comply to the lighting requirements.

Industrial buildings

-

School

-

Meeting Function

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.2 m	A technically specified lighting plan, which clearly identifies which lighting is applied to which spots, according to building/area function.
B	1.1 t / 1.2 m	Specification of the luminaires and light sources from which the color rendering index can be read
C	1.1	For each type of living space (the most critical area) a light computation containing fixtures used as specified in the lighting plan, from which required practice illuminance, uniformity and degree of glare reduction can be read.

D	1.2	Representative calculations of each type of outdoor lighting. In the lighting calculation is clearly stated what type of outdoor space from the relevant standard is taken as a starting point, the requirements applicable to them and whether it is fulfilled.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

F	1.1 t / 1.2 m	a copy of the lighting plan and sections of the specification of the work, the drawings or technical specifications on all fittings, showing compliance with the requirements.

Definitions

Outside of the building
These include eg. car parks, access roads, walkways, areas for storage, inspection of goods, etc. The credit requirements, however, apply only to the lighting of the outdoor spaces of the building where it is made under own management. Public street is therefore outside the scope of this credit.

Uniformity of illuminance
Quality Criterion that indicates the transition of the illumination on the work surface.
An evenly lit workspace is an important indicator of the quality of the *lighting.* The uniformity, among others, depends on the light distribution of the luminaire, the position of the fixtures relative to the work surface (or the road surface), and the mutual distance between the fixtures. When we speak of an interior evenly lit work surface if the ratio between the lowest illuminance (E_{min}) and the average illuminance (E_{avg}) is reasonably balanced. This value is a number between 0 and 1, and is calculated by dividing the minimum illuminance by the average illuminance. In formula: $U = E_{hor\ min} / E_{hor\ gem.}$

Usable floor area
Space for the stay of people for at least a period of 30 minutes per day, or where for that use function characteristic activities. An usable floor area meets the minimum criteria regarding size and height of the building.

Illuminance (E)
This is the amount of light falling on a standard area unit. The unit of illuminance is lumen / m^2 or lux (lx).
In formula: E (lux) = luminous flux Φ (lumens) / area A (m^2) illuminance
The illumination is independent of the reflection factor of the plane or the planes on which the light falls.

Average illuminance (E_{avg})
The average illuminance can be determined using the arithmetic mean of the illuminance in a large number of regularly distributed points over the surface.

Color rendering index $_{(Ra)}$
The ability of a light source to produce colors faithfully, without disturbing the original hue of the object. The color is expressed as an index (number between 1 and 100, where 1 is the worst color represents and 100 a 100% perfect color reproduction) and so in this sense as a percentage of how well (or equally) the color appearance of objects by the rated light source is reproduced.

Task
The working area is the part of the workplace or workspace where tasks are performed.
If it is not known in which part of the workplace the task will be performed, an assumption is made for the portion of the space where the task could be located. It is often that the whole space is included minus a border zone of about 50 cm.

Practice Illuminance ($E_{m)}$
The practice illuminance is the lowest value of the average illuminance on the working area in the period between two maintenance visits. In practice, this is achieved at the moment that all of the old lamps of an installation are to be replaced, whereby also the fittings will need to be cleaned.

Glare Reduction - Interior
Measure for reducing glare from the light emitting from a fixture.
The measure of glare is the so-called Unified Glare Rating (UGR), indicating the extent to which fixtures and their lighting effect , causes light pollution from the eye position and viewing direction of the user based on a regular pattern in length and width of fixtures.

Glare Reduction - Outdoor
Danger of glare appears in the NEN 12464-2 with Glare Rating (GR) or glare value VW. This is a number between 10 and 90 that reflects the degree of glare from a light source viewed on a horizontal plane.The higher the number, the higher the degree of glare. For illumination of outdoor spaces, this figure corresponds to a large number of grid points determined in different directions.The highest value found is valid.

References

- BS EN 12464: Light and lighting - Workplace lighting - Part 1: Workplaces inside.
- BS EN 12464: Light and lighting - Workplace lighting - Part 2: Workplaces outdoors.
- BS EN 12665: Light and lighting - Basic terms and criteria for capturing lighting requirements.
- ROVL-2011: Guidelines for Public Enlightenment.
- BS EN 12193: Sports lighting.
- Secured by.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	-	-	√	-	√	√

HEA 6 Lighting zones and controls

Aim
Ensure that the building users have a simple and accessible way to operate the lighting within each space in a building where work takes place.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	the lighting, in all rooms in the building where work is taking place, can be enabled by individual users per zone.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The light control in all areas with the following usage is zoned, accessible to the user and easy to operate:

Office Function:

- For offices, an area of 40 m ^{2} maximum counts as a zone.

Education Function

- In classrooms, college and auditoriums the presentation part and the audience space can be operated separately in the zone.

Meeting Function

- In library spaces the book shelving, reading corners and the counter are zoned separately.
- Meeting rooms are zoned separately.
- Group spaces in childcare are zoned separately.
- In restoration areas, the serving area (kitchen) and the seating area zoned separately.
- In conference rooms the presentation part and the audience space can be operated separately in the zone.
- Other accommodation areas: as a zone, a maximum area of 60 m $^{2.}$

Lodge

- Zoning to hallway / bathroom / bedroom per room.

1.2 The lighting control of traffic areas is zoned separately but not necessarily user-accessible, and easy to operate.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

-

Hull

In the case of Hull construction, if the tenant and the layout are known, the design of the lighting should have the capacity and the possibility built in for a zoned lighting control system in accordance with the credit requirements.

Presence detection:

The user must be able to operate the artificial lighting in the workspace by a, for example, remote control of a wall mounted switch. A presence detection system alone is not enough due to the lack of individual control.

Offices

-

School

-

Lodge

-

Meeting Function

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of the relevant sections of the specification of the work and drawings of electrical installations which clearly indicated that adequate switching capabilities are applied so that the lighting can be individually controlled in different areas of the building.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A report from an on-site inspection by the assessor and photographic evidence confirming compliance with the requirements. The photographic evidence with a representative sample of all available workstations will suffice. If changes are made, the design team clearly indicate using additional drawings and relevant sections of the specification of the work it. The assessor shall assess to which extent the requirements are still met.

Definitions

None.

Additional Information

The design and layout of workplaces are not yet known

If the design and layout of workplaces are not yet known, the light control should be zoned according to a spatial grid of units of up to 40 m^2 each, with the assumption of one user per 10 m^2 utilization.

The building consists exclusively of small office spaces

If a building is composed exclusively of small office spaces (i.e., that the floor space in an area is less than 40 m^2) which do not require further subdivision in lighting zones, the credit can be assigned, provided that each of these spaces is provided with a lighting control system which complies with the credit requirements.

References

None.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	-	-	√	-	√	√

HEA 7 Natural Ventilation

Aim
An additional possibility for the users to (temporarily) vent, directly to the outside air in addition to the basic ventilation in the building.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	Usable floor areas can be naturally ventilated sufficiently by users by opening windows.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Usable floor areas can be ventilated by means of natural ventilation.
1.2 Each usable floor area contains at least one window that can be opened.
1.3 The windows open to give at least a certain capacity according to DIN 1087 for natural vent for a residential area and a usable floor area area as shown in Table 1.
1.4 In usable floor areas containing workplaces that are more than 7 meters away from the nearest vent, the opposite wall should also be able to open windows or equivalent facilities, so that the distribution on both fronts ensures an adequate flow of ventilation air.
1.5 The windows can be easily operated by the user. This operation provides a stepless control or a system with at least three positions, of which one of those is the possibility to stand ajar.

Table 1: Minimum capacity natural vent usable floor areas per user function

Use Function	Minimum capacity per occupied (dm^3 / s per m^2 floor space occupied)	Minimum capacity per usable floor area (dm^3 / s per m^2 floor usable floor area)
Office Function	6 dm^3 / s per m^2	3 dm^3 / s per m^2
Education Function	9 dm^3 / s per m^2	6 dm^3 / s per m^2
Lodge	6 dm^3 / s per m^2	3 dm^3 / s per m^2
Meeting Function		
- Babysitting	9 dm^3 / s per m^2	6 dm^3 / s per m^2
- Meeting Rooms	9 dm^3 / s per m^2	6 dm^3 / s per m^2
- Canteen (no catering)	9 dm^3 / s per m^2	6 dm^3 / s per m^2
- Remaining	-	-

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
If the existing part is also part of the assessment, the requirements also apply to this section. If this is not the case, the requirements apply only to the extension.

Hull
-

Offices
-

School
-

Lodge
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.5 m	Floor plans and facade plans, that shall identify: ○ Dimensions of residential areas and accommodation areas. ○ Placement of windows that can be opened. ○ Capacity of windows that can be opened.
B	1.1 t / 1.5 m	A calculation of the capacity of natural ventilation according to NEN 1087.
C	1.1 t / 1.5 m	If necessary, a written, technically substantiated explanation by the building designer on the non-application of natural ventilation for reasons of structural and / or building physical nature.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t / 1.5 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the requisite facilities for natural ventilation are provided in all accommodation areas. A representative sample of the usable floor areas present will suffice regarding the photographs. If changes have occurred: the technical specifications of these amendments and the 'as built-calculation of the capacity of the natural

		vent according to NEN 1087.The assessor assesses whether these changes meet the requirements.

Definitions

Occupied area
The portion of a user function with at least one usuable floor area , consisting of one or more , adjacent spaces located on the same floor,other than a toilet, a bath room, a utility room or a traffic space.

Usable floor space
Space for the stay of people for at least a period of 30 minutes per day, or where for that use function characteristic activities. A usable floor area meets the minimum criteria regarding size and height of the Building Act.

Additional Information

Atrium or 2nd-skin facades
Open windows atria or 2nd-skin facades comply with the purposes of this credit even if adequate provision for natural ventilation if the temperature in the adjacent room (the atrium or double wall) - at an outside (Toutside) of more than 20 ° C - no more than Toutside + 3 ° C and otherwise meets the Credit criteria.

Mechanically ventilated / cooled buildings
The purpose of this credit is to ensure that users of the usable floor space can regulate natural ventilation with operable windows. If the requirements are met, this credit can be also assigned to mechanically ventilated / cooled buildings. If a situation with open windows because of the type of ventilation is not desired, and thus no operable windows will be applied, this credit can not be achieved.

Tall buildings
Tall buildings (with an occupied space or usable floor areas located at greater than 12 meters height) should be fitted out with hybrid ventilation, so a combination of natural and mechanical ventilation, in which the natural component complies with the credit requirements and the mechanical component is provided with an automatic capacity control on basis of an automatic alert if the CO_2 content in the indoor air is too high (over 800 ppm). The latter to ensure that if the users completely close means of natural ventilation due to e.g. high wind, adequate ventilation is guaranteed because it is automatically taken over by the mechanical ventilation.

Buildings in a noisy environment or in an environment with increased air pollution
Buildings in a noisy environment or in an environment with increased air pollution, eg buildings in a city or near busy roads, should be fitted out with hybrid ventilation, so a combination of natural and mechanical ventilation, the natural component meets the credit requirements and the mechanical component is provided with an automatic capacity control on the basis of an automatic alert if the CO_2 content in the indoor air from becoming too high. The latter to ensure that if the users completely close means of natural ventilation due to e.g. high wind, adequate ventilation is guaranteed because it is automatically taken over by the mechanical ventilation.

Importance of natural ventilation
In buildings with purely mechanical air treatment, users show nearly twice the amount of sensitivity to temperature changes compared to naturally vented buildings and will lead to an uncomfortable environment much faster.

Tall buildings
High-rise buildings may be provided with opportunities to natural ventilation, provided that the windows on the higher floors are also made to be opened. This does not relevant when structural and / or structural concerns apply to opening windows. As additional Credit criteria it is indeed stated that the users can influence the presence and degree of natural ventilation themselves.
When there is too much wind nuisance the user can and indeed will stop the flow of natural ventilation.

Buildings in areas with high noise load or a high level of air pollution
Buildings in areas with high noise load or a high degree of air pollution can also be provided with opportunities for natural ventilation. Arguments against natural ventilation in such situations are that this would affect the internal air quality (intake polluted air) or would cause too much noise. Regarding the internal air quality, most mechanical ventilation systems do not contain filters that filter the main sources of outdoor air pollution, NOx, SO_2 and CO_2. The internal air quality of buildings is more often worse than outdoor air quality according to extensive research.
As additional credit criterion is also included that the user can influence the presence and degree of natural ventilation. In the case of contaminated air or noise pollution, the user can indeed stop the flow of natural ventilation. In that case, it is necessary, that the airflow is taken over by a mechanical ventilation system automatically.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

HEA 8 Internal air quality

Aim
To recognise and encourage a healthy internal environment through the specification and installation of appropriate ventilation

Credit criteria
2 points can be awarded.

There should be substantial evidence that::

1	2 points	the amount of fresh air is sufficient for a healthy indoor climate *AND* that the supplied air is not polluted by external or internal sources of indoor air pollution and where the building is protected from internal sources of air pollution.

Compliance requirements
The following demonstrates that the criteria are met (it is ***not*** possible to achieve 1 point with this credit):

In the case of a sufficient degree of ventilation:

1.1 All living areas have a provision for ventilation, consisting of a component for the supply of fresh air and a component for the removal of indoor air.The (used) indoor air in all living areas, depending on the operating mode, the floor, the maximum number of people present and capacity utilization, are at least renewed to the extent as shown in Table 1. Determining the capacity of facilities for air listed in Table 1 takes place in accordance with NEN 1087 Ventilation for buildings - Calculation methods for new construction, respectively, in accordance with NEN 8078 Ventilation for buildings - Calculation methods for existing buildings.

1.2 In usable floor areas with highly variable occupancy (meeting functions, shop functions etc.) an automated monitoring system is provided that measures the concentration of CO_2 in the indoor environment and, in the case of mechanical ventilation, controls the flow rate of air automatically in a manner that does not exceed the amount of CO_2 concentration of 0.08 vol% (800 ppm) in indoor air. If the building is naturally ventilated, an alarm should go to the (technical) manager of the building, so that appropriate action can be taken regarding the ventilation of the building.

Explanation 1 2:. In practice the occupation in the usable floore areas varies greatly, so there are many times in which it is sufficient to only use limited ventilation. Examples of such areas: meeting rooms, lecture halls, auditoriums, waiting rooms, restaurants, cafeterias and fitness and gym areas.

Table 1: Limits capacity air

Use Function	Ventilation capacity limits

	usable floor area	
	[M 3 / h pp]	[M 3 / h per m 2]
Meeting Function		
- childcare	45	
- remaining	35	
Industry Function	45	
Office Function	35	
Residential Function		5.6
Lodge	45	
Education Function	45	

In respect of preventing the contaminated or used air is taken:

1.3 If the building applies mechanical ventilation: all air inlets of the mechanical ventilation of the building have a, near the inlet opening, NEN 1087 dilution factor of emissions of other air discharge and the exhaust duct does not exceed the value given in Table 2.
1.4 If the building applies mechanical ventilation: all air inlets of the mechanical ventilation of the building must be at least 20 meters away from 'external sources of air pollution.
1.5 If the building is naturally ventilated: all vents for ventilation, drainage and all windows that can be opened from inside the building are at least 10 meters away from 'external sources of air pollution.
1.6 Within the mechanical ventilation of the building is no recirculation system used, no internal insulation of air ducts, and a humidification system consisting of a steamdampener or adiabatic humidification that meet additional requirements (see Further information).
1.7 Filters are applied with a minimum quality and class in order to meet BS EN 13779 Ventilation for non-residential buildings within mechanical ventilation systems - Performance requirements for ventilation and air conditioning systems.
1.8 In rooms containing an internal source of air pollution, such as specialy designated smoking rooms and rooms for printers and / or copiers, air is extracted separately, thereby preventing exhaust air from these areas is mixed with air that elsewhere in the building is used for ventilation.

Table 2

	Type of discharge	**Dilution Factor**
Own building	Ventilation	0.0075
	Provision for exhaust gas to gas-fired appliances	0.0075
	Provision for exhaust gas in sets with other fuels	0,001
Unlike own building	Ventilation	0.0033
	Provision for exhaust gas to gas-fired appliances	0.0033
	Provision for exhaust gas in sets with other fuels	0.0005

Compliance notes

New building
NEN 1087 is applied.

Renovations
NEN 8087 is applied.

Extension of existing building
For expansion of existing buildings only the portion of the extension counts and there are no additional or different requirements to the above requirements.

Hull
If the function in building commissioning has changed compared to the original Hull design (eg a few shops in what was originally designed as an office), should be whether the requirements for ventilation and air quality are still met for the controlled new (mixed) function (s).

Air filters
The use of filters is not considered a sufficient protection from internal or external sources of air pollution. Air filters can therefore not be considered as an alternative for the requirements of Credit criteria 6, the second point of the credit.

Offices
-

Retail
For clothes that hang directly in the store is very important that there is sufficient ventilation to get all chemical vapors away. For clothingstores the requirement of control based on CO_2 (criteria requirement 1.2) does not apply.

Industrial buildings
-

School
-

Lodge
-

Meeting Function
-

Residential
Requirement 1.5 does not apply to dwellings, only for residential buildings.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of the relevant sections of the specification of the work in which the requirements for the ventilation capacity of the facilities in the building are included in accordance with NEN 1078 NEN 8087 respectively, differentiated according to the usage mentioned in the Compliance requirements.

B	1.1 and 1.2	A copy of the relevant sections of the specification of the work showing that an automatic monitoring system for CO_2 content of the indoor air is installed within the building if present, the flow rate of the mechanical ventilation automatically controls or, if the building is naturally ventilated, has been linked to signaling the building manager.
C	1.3 t / 1.6 m	Drawings of the building or a site plan of the asset on which the inlet and outlet of air, the location of open windows and / or other provisions for natural ventilation are indicated, together with any existing sources of air pollution on the private plot and in the vicinity of the property (up to a circumference of 30 meters) and the distance determination of the inlets of mechanical and natural ventilation compared to these "sources of air pollution".
D	1.3	A copy of the calculations, that show that the dilution factor at the location of the inlet of the air meets the requirements.
E	1.6	A copy of the relevant sections of the specification of the work showing that no system of recirculation, no internal insulation of air ducts and no humidification system or only a steam humidification system or adiabatic humidification applied.
F	1.7	A copy of the relevant sections of the specification of the work or a formal specification of the manufacturer, showing that the filters in the mechanical installation for ventilation to meet the requirements BS EN 13779.
G	1.8	Design drawings showing that the air of areas with an internal source of air is extracted separately and can not mix with ventilating air elsewhere in the building.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

I	1.3 t / m 1.7 and 1.9	An inspection of the assessor confirms that: • that the in-and outlet openings, and open windows for ventilation are at the correct distance in respect to each other and are installed away from external sources of contamination; • that the installation meets the hygiene and cleanliness requirements; • that spaces with an internal source of air contaminates are extracted separately. • that the required filters are applied. If changes have taken place, evidence as described for the design should be delivered again for the modified parts for the new situation and judged accordingly.

Definitions

External sources of air pollution

These are:

- Nearby roads.
- Adjacent parking.
- Loading and unloading platforms.
- Nearby outlets or industrial farms and the like.

Roads with limited access and infrequent use, which probably have an insignificant impact on air quality, are not covered by external sources of pollution (eg a road only used by a garbage truck to collect waste).

Usable floor area

Space for the stay of people for at least a period of 30 minutes per day, or where for that use function characteristic activities. A usable floor area meets the minimum criteria regarding size and height of the Building Act.

Areas with unpredictable or highly variable occupancy pattern, such as:

- Auditoriums.
- Fitness and gym areas.
- Retail areas.
- Meeting rooms, lecture halls and auditoriums.
- Waiting areas.
- Restaurants / canteens.

Additional Information

Adiabatic humidification

A ventilation system with adiabatic humidification is also allowed if it meets the conditions in the ISSO 55.3 and has a VDI 6022 hygiene certificate.

References

- BS EN 13779: Ventilation for non-residential buildings - Performance requirements for ventilation and air conditioning systems.
- Safety Policy: 6.2 Ventilation Policy.
- Health and Safety Data Sheet 24 indoor environment.
- Building Regulations, current version.
- GWI / ISSO: Design and installation advice.Newly built single family homes and apartment buildings, 2008.
- BS EN 15243: Ventilation for buildings.
- BS EN 15251: Indoor related input parameters for design and assessment of energy performance of buildings for indoor air quality, thermal comfort, lighting and acoustics.
- BS EN 1886: Ventilation for buildings - Air handling units.
- NEN 1087: Ventilation for buildings - Calculation methods for new construction.
- BS 1089: Ventilation of school buildings - Requirements.
- BS 8087: Ventilation for buildings - Calculation methods for existing buildings.
- BS EN 13779: Ventilation for non-residential buildings - Performance requirements for ventilation and air conditioning systems.
- NPR-CR 1752: Ventilation for buildings - Design criteria for the indoor conditions.
- ISSO Publication 61: Draft Technical quality for domestic ventilation.
- ISSO Publication 62: Requirements for balanced ventilation with heat in homes.

- REHVA Guidebook 8: Cleanliness of ventilation systems, Federation of European Heating and Air-conditioning Associations.
- REHVA Guidebook 9: Hygiene requirement for ventilation and air-conditioning, Federation of European Heating and Air-conditioning Associations.
- VDI 6022: Hygienic Anforderungen an Raumlufttechnische Anlagen und Geräte, Verein Deutscher Ingenieure.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	√	√

HEA 9 Volatile organic compounds

Aim
Promoting a healthy and good indoor air quality because the used building- and finishing materials cause a low emission of harmful volatile organic compounds and other harmful substances.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	a healthy and good indoor air quality is achieved by the use of finishing and building materials that have a low emission of harmful, 'volatile organic compounds'.
1	1 point	a healthy and good indoor air quality is achieved because the indoor air at delivery has a low level of harmful volatile organic compounds.

Compliance requirements
The following demonstrates that the criteria are met:

The emission of volatile organic compounds from the used building and finishing materials shall meet the following requirements:

1.1 Chip plates, MDF, particle boards, wood wool, plywood, hardboard, solid wood panels and sound insulating board meet emission category E1 (formaldehyde) in EN 13986:2010, the emission concentration is determined according to EN 717-1 / 717-2 or, alternatively, a universally recognized health label can be provided.
1.2 Glued pieces of wood and laminates meet the emission category E1 (formaldehyde) in EN 14080:2005, the emission concentration is determined according to EN 717-1 / 717-2 or, alternatively, a widely recognized health label be submitted.
1.3 Parquet flooring and glued meet the emission category E1 (formaldehyde) from EN 14342:2005, the emission concentration is determined according to EN 717-1 / 717-2 or, alternatively, a widely recognized health label be submitted.
1.4 Resilient fabric (textile) or laminated floor coverings, such as vinyl, linoleum, cork, rubber, carpets and laminate flooring, meet the emission category E1 (formaldehyde) from EN 14041:2004, the emission concentration is determined according to EN 717-1 / 717 -2 or, alternatively, a universally recognized health label can be provided.
1.5 Ceiling tiles meet the emission category E1 (formaldehyde) in EN 13964:2004, the emission concentration is determined according 717-1 / 717-2 or, alternatively, a widely recognized health label be submitted.
1.6 Flooring Adhesives and sealants meet the emission C1, C2 or C3 described in annex A of EN 13999:2007 Part 1, the emission concentration is determined in accordance with EN 13999:2007 Part 2 t / m 4, or meet the EMICODE EC1 PLUS.
1.7 Paints, varnishes and lacquers comply with the emission standards of up to phase 2 for organic solvents from the European Deco Paint Directive 2004/42/EC, with the VOC content determined according to the applicable standards specified in the law for that product category.
1.8 Gietvloeren meet the EMICODE EC1 or, alternatively, a universally recognized health label can be provided.

2.1 The formaldehyde concentration after construction (but prior to occupancy) ≤ 100µg/m3 is measured and averaged over 30 minutes.
2.2 The total volatile organic compounds (TVOC) concentration is measured after construction (but prior to occupancy) and is, over a period of 8 hours, ≤ an 8 g/m3.
2.3 If values are found exceeding limits a plan should be drawn up to bring (prior to occupancy) the formaldehyde and TVOC values within the prescribed limits. It should be re-tested in order to show compliance.
2.4 Testing and measuring the criteria named in 1.9 t / m 1:11 emissions (if applicable) in accordance with the following standards:

- BS ISO 16000-3:2011: Indoor air - Part 3: Determination of formaldehyde and other carbonyl compounds in indoor and test chamber air - Active sampling
- BS ISO 16000-4:2011: Indoor air - Part 4: Determination of formaldehyde - Diffuse sampling
- BS ISO 16000-6:2011: Indoor air - Part 6: Determination of volatile organic compounds in indoor and test chamber air by active sampling on Tenax TA sorbent ®, thermal desorption and gas chromatography using MS / FID
- BS EN ISO 16017-2:2003: Indoor, outdoor and workplace atmosphere - Determination of volatile organic compounds on adsorptiebuizen sampling, thermal desorption and capillary gas chromatography - Part 2: Diffuse sampling

Compliance notes

New building
-

Renovation and / or reuse of existing building and finishing materials
In the case of renovation and / or reuse of existing building and finishing materials the recycled materials that are older than five years do not have to be tested for volatile organic compounds.

Expansion of existing buildings
-

Hull
For Hull construction above requirements apply only to the prescribed at the time of assessment or applied construction and finishing materials.

Random emission measurements
The measurements shall be carried out in representative usable floor areas, not every space in a building should be measured. For example: In an office building, a measurement of a mechanically ventilated office unit will suffice if the entire building consists of approximately the same type of office units. If different usable floor areas are present, such as an open plan office, is present it should also be measured and meet the criteria.

Prior to the measurements, the climate control and ventilation system, should be operated between 12 and 24 hours so that the indoor environment has reached equilibrium in operation.

Examples of representative accommodation areas are:

Naturally ventilated office with carpet, mechanically ventilated meeting room with a vinyl floor, workshop, living room, bedroom.

Examples of compartments that do not need to be taken into account when the sample measurements are as follows:
Toilets, utility room, bathroom, stairwells, traffic areas. However, if for example, a traffic area is in open connection with an open plan office, the office or garden should be measured.

Offices
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Retail
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Industrial buildings
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School
-

Lodge
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.4 m	A copy of the relevant sections of the specification of the work in which is included that the applied construction and finishing materials must comply with the relevant requirements in the field of emissions of volatile organic compounds, specified for all project related materials.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 1.7 m	For any applied construction or finishing material a copy of the data supplied by the manufacturer or vendor specifications indicating: • By which standards the emission of volatile organic compounds is determined • the related emissions of volatile organic compounds • confirmation that emissions comply with the set standards.

		Alternatively, a copy of an internationally recognized health label that is applied by the manufacturer or supplier for any applied construction or finishing material is delivered.
B	2.1 t / 2.4 m	Test results of the TVOC test and formaldehyde test demonstrating that the Compliance requirements are met with an explanation of sampling and test results.

Definitions

Construction and finishing materials

Construction and finishing materials in regard of this credit mean the materials listed under the Compliance requirements.

Volatile organic compounds (VOCs)

Volatile organic compounds (VOCs) include a variety of substances that can be found in buildings and derived from used materials, including finishing materials such as fabrics, wall and floor coverings, used adhesives and sealants, paints and varnishes. These substances have been shown to cause irritations with inhalation in certain concentrations, and above certain concentrations, even health issues, such as the 'sick building syndrome'. In determining this credit VOC means the substances listed in the EU Directive 1999/13/CE solvents. In this case VOCs also includes SVOC, or 'semi-volatile organic compounds.

Additional Information

Device

This credit is not applicable to the design of buildings, such as furniture, but only on the construction and finishing materials of structural nature.

References

- EN 717-1: Wood-based panels - Determination of formaldehyde emission by the chamber method.
- EN 717-2: Wood-based panels - Determination of formaldehyde release - Part 2: Formaldehyde emission determined by the gas analysis.
- EN 13986: Wood-based panels for use in construction - Characteristics, evaluation of conformity and marking provisions.
- EN 14080: Timber structures, glued laminated timber - Requirements.
- EN 14342: Wood flooring - Characteristics, evaluation of conformity and marking provisions.
- EN 14041: Resilient textile and laminate flooring - Essential characteristics.
- EN 13964: Suspended ceilings - Essential characteristics.
- AND 13999-1/4: Adhesives - Short term methods for measuring emission properties of adhesives with little or no solvent after treatment.
- European Deco Paint Directive 2004/42/EC - Annex 2: Emission standard for paints, lacquers and varnishes phase 2.
- Directive 2004/42/CE: Hazardous substances in the European Union on the limitation of emissions of volatile organic compounds due to the use of organic solvents in paints, varnishes and lacquers spray.
- Directive 2004/67/CE: Substances Directive of the European Union concerning the classification of chemical substances and preparations.

- Directive 1999/13/CE: solvents Directive of the European Union concerning the limited use of organic solvents.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

HEA 10 Thermal comfort

Aim
Ensure a good thermal comfort.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that::

1	1 point	good thermal comfort is assured.
2	1 point	The control strategy is based on a full dynamic analysis.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Exceeding temperature and cooling load calculations are performed, where use has been made of:

- the adaptive temperature range, as described in the ISSO 74;

or

- the PMV and PPD indices (PMV = predicted mean vote, PPD = predicted percentage of dissatisfied) in accordance with NEN-ISO 7730: 2005, taking into account seasonal variations.

1.2 The criteria for the local thermal discomfort from NEN-ISO 7730: 2005 were used to determine the level of local thermal comfort in the building.

1.3 The levels of general thermal comfort and local thermal discomfort meet:

- Category B of ISSO 74;

or

- category B of Annex A of BS ISO 7730: 2005.

1.4 Analytical measurement and evaluation of the level of general thermal comfort of the building are performed.

2.1 The first point is achieved.
2.2 The control strategy for the temperature of the building and the users is based on a full dynamic thermal simulation with an excess temperature and cooling load calculation. For additional information, please refer to ISSO-32 Principles temperature simulation calculations.
2.3 The strategy for the proposed heating/cooling systems show that the following has been taken into account:

a) Climate technical zoning in the building and the way in which the installations function efficiently and in accordance with the use of these heating and cooling zones. This could for

example take into account different requirements for the core of the building and spaces located on outside walls with windows.

b) The degree of user influence of these zones, based on discussions with the end users (or user manuals for specific building types or building use, practical research, feedback) and taking into account:

- knowledge of the users about the building services;
- type of user, area functions (and matched by appropriate degree of user influence);
- how users use the systems and interact with them. For example, the use of operable windows, thermostatic radiator valves and settings of air conditioning systems;
- the expectations of the user (this may be different in summer and winter, users accept higher temperatures in summer) and the degree of individual influence of the environment (the search for balance in the preferences of users, some users like fresh air, while others may experience this as a draft).

c) How the proposed systems influence each other (if more than one system) and how this affects the thermal comfort of the users.

Compliance notes

New building

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Renovation

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Expansion of existing buildings

-

Hull

Assuming a realistic projected default format for the simulation calculations is acceptable for granting this credit. If the simulation calculations not could be carried out or carried out incompletely as a result of the speculative nature of the building, the credit is not allocated.

Buildings with simple heating and cooling

In buildings with less complex heating/cooling systems criteria requirement 2.3c is rendered void.

Offices

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Retail

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Industrial buildings

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School

-

Residential
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Meeting Function
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Lodge
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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	A copy of the report in which the results and principles of thermal comfort analysis are presented, showing that they meet the Compliance requirements.
B	2.1 t / 2.3 m	A copy of the report confirms that: • a temperature simulation computation research has taken place in accordance with the credit requirements; • the proposed control strategy; • the name and description of the type of software that is used.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 1.4 m	Copy of the report of the analytical measurement and evaluation of the level of general thermal comfort.
D	2.1 t / 2.3 m	Reporting of analytical measurement.

Definitions

Dynamic thermal simulation
A model that simulates the heat balance of a building dynamically in relation to the future heat demand, given the parameters entered in respect of the heat generation, building fabric, HVAC systems used and other relevant input. The software meets at least the requirements of simulation calculations in accordance with NEN-EN-ISO 13792. Examples of dynamic simulation calculation models are: VABI-VA114, TRNSYS, IDA ICE (Indoor Climate and Energy), TASE, Energy + WEI model (ECN) and DYWAG (Dynamic Heat Use in Buildings).
Note: NL-EPBD certified software for the determination of the energy certificate or the creating of a customized advice does not meet the requirements of a dynamic thermal simulation.

PMV
PMV is the abbreviation for Predicted Mean Vote, with the temperature simulation predicted (forecast) average experience of the interior of a large group of people, and in that sense provides a prediction about the thermal sensation of their (building) environment.The PMV should remain within a certain

range typically -0.5 <PMV <+0.5 for non-residential and PMV <+0.5 for homes. There is also a value that indicates the prediction of the percentage of people that are expected, if the building stays within PMV limits, to feel uncomfortable within that environment. The latter is expressed in the so-called PPD value.

PPD
PPD stands for Predicted Percentage Dissatisfied, with a temperature simulation predicted percentage of people that will feel uncomfortable within the simulated climatic conditions.

Radiant Temperature Asymmetry
Difference between cooling of the two different sides of the body (the side which is away from and the side which is turned to a heat source, respectively).

Thermal comfort
The state in which people are satisfied with the thermal environment, no need for a warmer or cooler environment, and where this does not or just slightly interferes with normal activities (living, performing work, relax, sleep, etc.).Hereby the thermoregulation of a human plays a central role. This thermoregulation is determined by both personal factors (activities, clothing, basic physical metabolism) and thermal environmental conditions (air temperature, radiant temperature, air velocity and humidity).In addition, different adaptation mechanisms play a role. Most important here is the expectation that one has of the climate in the building, based on the ambient temperature and that of the previous days.

Usable floor area
Space for the stay of people for at least a period of 30 minutes per day or where for that use function characteristic activities take place. A usable floor area meets the minimum criteria regarding size and height of the Building Act.

Occupied area
The portion of a user function with at least one usable floor area, consisting of one or more on the same floor located adjacent spaces other than a toilet, a bath room, a utility room or a traffic area.

Additional Information

Expansion of existing buildings
Only new rate as other areas are left intact.
If modified existing buildings also take this.

References

- BS 5060: Hygrothermal performance of buildings - Reference Climate data.
- BS 7726: Ergonomics of the thermal environment - Instruments for measuring physical quantities.
- NEN-EN-ISO: 7730 Moderate thermal indoor conditions.Provisions of the PMV and PPD value and specification of the conditions for thermal comfort.
- NEN-EN-ISO: 13792 Thermal performance of buildings - Calculation of internal temperatures of a room under summer conditions, without mechanical cooling - Easy methods.
- BS EN 15251: Indoor related input parameters for design and assessment of energy performance of buildings for indoor air quality, thermal comfort, lighting and acoustics.
- NPR-CR 1752: Ventilation for buildings - Design criteria for the indoor conditions.
- GIW / ISSO publication Installation requirements for new Residential and apartments.

- ISSO Publication 32: Principles temperature simulation calculations.
- ISSO Publication 74: Thermal comfort - Requirements for the indoor temperature in buildings.
- ISSO Directive Shorty Indoor.
- SBR publication Praktijkboek healthy buildings, Cahier 2 indoor environment performance requirements office.
- SenterNovem Guidance fresh new schools, 2008.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	-	-	√	-	√	√

HEA 11 Thermal zoning

Aim
Providing ample opportunity for temperature control (heating and cooling) within usable floor areas by individual building users.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	within each usable floor area features are present so that the building user can set the temperature to the individual need and comfort requirements.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The heating and cooling systems are designed so that the ambient temperature in both the warm (cooling) and the cold (heating) seasons can be adjusted by the individual building users within zones (as defined below) for all existing living areas with a temperature range of at least -2 ° C to +2 ° C. : For each use distinct function zoning, the following definitions

- Offices a zone is an area of maximum 40 m^2.
- Schools: a zone is any room where lessons are given and each office present.
- Meeting rooms: a zone is an area of maximum 40 m^2.
- Group spaces in childcare: a zone is every group space.
- Lodge features: a zone is any individual accommodation function.
- Meeting Function - other types: a zone is an area of maximum 60 m^2.

1.2 The temperature control should be simple and understandable to operate for the average user.

Compliance notes

New building

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Renovation

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Expansion of existing buildings

For expansion of existing buildings; if the existing building will also be part of the assessment, the entire building must meet the required specifications. If only the new construction will be assessed, only that portion needs to meet the required specifications.

Hull
For Hull construction the credit may only be granted if the heating and cooling systems are included in the specifications of the work or the building design and meet the requirements listed under 'Credit criteria.If the arrangement of the cooling and heating is not yet known due to the speculative nature of the building, the credit can not be awarded.

LTV-heating
This credit can only be awarded if the LTV system provides the basic heat requirement and secondary heating elements are provided per zone which can be individually regulated in accordance with the requirements of this credit.

Open-plan offices **or spaces larger than 40 m ^{2}**
In the case of open-plan offices or spaces larger than 40 m ^{2,} it should be at least demonstrated that the technical installations are present at room level, to ensure that any future division of the open space into smaller units, it is possible to regulate the temperature per 40 m ^{2} within a range of at least -2 ° C to +2 ° C. The necessary technical installations must physically be present already. While the controls do not need to be installed yet if the space is not divided, the installation of a control unit has to be possible.

Offices
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School
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Lodge
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Meeting Function
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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of the relevant sections of the specification of the work showing that the heating and cooling system (s) are equipped with temperature control per distinguished building function in defined areas, which can be operated by the individual building user in accordance with the requirements under 'Compliance requirements' listed above.
B	1.1 and 1.2	A copy of the relevant sections of the specification of the work, or a specifiation the supplier of temperature systems, showing the type of temperature control is applied.
C	1.1 and 1.2	In Hull construction where a standard application in heating is not provided and where it is left to the future user, a written statement of the prospective user that the required specifications wil be met.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 and 1.2	A report of an inspection by the assessor of the building containing therein photographs clearly showing compliance with the requirements under 'Compliance requirements' listed above. If it is a large building, it need not be a picture of each space, a representative sample will suffice.

Definitions

LTV-heating
With low temperature heating systems (LTV) temperature control is achieved via the structural parts of the building. An example of this is under-floor heating, wherein the floor is used in order to dispense heat evenly. Heat dispension is delayed in this case. One consequence is that such a system does not respond directly to the individual temperature zones within areas of use by the building occupants.

Temperature
In the context of this credit the following systems of temperature control are considered:

- Thermostatic valves on radiators and convectors.
- Control buttons on electric stoves and heaters.
- Control buttons of air conditioners and other cooling devices.
- Sliders or adjustable air vents on heating or cooling equipment or ventilation systems.

Usable floor area
Space for the stay of people for at least a period of 30 minutes per day, or where for that use function characteristic activities. A usable floor area meets the minimum criteria regarding size and height of the Building Act.

Workplaces in relevant usable floor areas
A workplace in a usable floor area is relevant if a workplace is where people stay longer than two hours per day (in accordance with health and safety legislation).

Additional Information
None.

References
SBR / ISSO Publication 354: Indoor Environment for offices.
1

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	-	-	√	√	√	√

HEA 13 Acoustic performance

Aim
A good sound insulation and soundproofing to prevent as much as possible of noise irritation and noise pollution within a building. And if necessary to reduce this to an acceptable level, to achieve a high degree of acoustic comfort inside the building.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	Within all areas of the building, sufficient noise insulation and soundproofing measures have been applied and thus acceptable noise levels are achieved in terms of airborne and impact sound. AND Between noise-sensitive usable floor areas and other areas sufficient sound insulation have been applied, through which sufficient privacy can be guaranteed.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The acoustic design calculations for the building are made in accordance with BS EN 12354 and BS 5077, in which the following is calculated:

- The characteristic sound insulation of the facade ($G_{A,k}$) against outside noise in all usable floor areas within the building, which must be based on NEN 5077. The noise distinguished by external sources of noise hindrance, as defined in the Noise Abatement Act, shall be calculated according to the Calculation and Measurement Regulations 2006.
- The characteristic air-sound level difference ($D_{nT,A,k}$) between all usable floor areas available within the building itself, in accordance with NEN 5077.
- The weighted contact sound level ($L_{nT,A}$) between all usable floor areas available within the building itself.
- The typical installations sound level ($L_{I,A,k}$) from control systems within and outside the existing building.

1.2 The level of the characteristic sound insulation (GA, k) against noise from outside the building, the characteristic air sound level difference (DnT, A, k) between usable floor areas themselves, the weighted sound level (LNT, A) between usable floor areas themselves and characteristic installations noise (LI, A, k) from control installations inside and outside the building will comply with the standards as set out in Table 1. The calculations should at least be performed for both the representative and critical areas.

1.3 In the Post construction stage of the building a noise measurement is performed in accordance with NEN-EN 140 or in accordance with NEN 5077, showing that the standards mentioned in section 1.2 are actually achieved.

1.4 The calculations and measurements are performed by a trained and qualified acoustic consultant.

1.5 If spaces are used for teaching, training or other educational goals they must meet the requirements for reverberation as they are listed in the SenterNovem Official Guide for fresh new schools 2008:

- Comfort Class B: College spaces designed for speech.
- Basic Package: reverberation time in large areas (eg play areas or halls) is 0.8 sec.

Table 1: Limit values for characteristic soundproofing, characteristic airborne sound insulation, impact sound insulation and noise level of installations per distinguished building and / or room feature.

Use Function	**Characteristic noise protection ($G_{A,k}$)**	**Characteristic airborne sound level difference ($D_{nT,A,k}$)**	**Weighted sound level ($L_{nT,A}$)**	**Typical installation sound level ($L_{I,A,k}$)**
Office Function	In accordance with Decree Requirements for homes, art. 3.2 t / m 3.4.	> 38 dB between all present within the building usable floor areas; except between usable floor areas available within the building with a wall with door for which > 33 dB applies.	<59 dB between all present within the building usable floor areas.	<35 dB (A)
Education Function	Conforms to standards required under art.3.2 t / 3.4 m of the Building.	> 38 dB between all present within the building usable floor areas; except between classrooms themselves, for which > 42 dB applies.	<59 dB between all present within the building usable floor areas.	<35 dB (A)
Living Function	5 dB better than standards required under art. 3. 2 t / m 3.4 of the Building.	> 32 dB between all groups within a housing accommodation areas.	<59 dB between all groups within a housing accommodation areas.	<30 dB (A)
Lodging	5 dB better than Building Act regulations for homes, art.3.2 t / m 3.4.	> 42 dB between all accommodation functions and adjacent living quarters.	<54 dB between all present within the building usable floor areas.	<35 dB (A)
Meeting - Babysitting	5 dB better than required standards of art,	> 38 dB between all present within the building usable floor	<59 dB between all living areas available within the building	<35 dB (A)

	3.2 t / 3.4 m of the Building for education.	areas, play areas > 42 dB.		
Meeting - Meeting rooms	5 dB better than standards of art.3.2 t / 3.4 m of the Building.	> 42 dB between all meeting rooms and adjacent usable floor areas.	<59 dB between all present within the building usable floor areas.	<35 dB (A)

Compliance notes

New building

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Renovation

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Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

If the future use of the building has not yet been decided, for offices an open usable floor area with an occupancy of one person per 10 $m^{2.}$ is assumed.

Open plan office

In the Building Act the requirements for open plan offices are slighty more liberal. In these cases it is percieved as annoying for the user when it is too quiet. Therefore, one can more broadly interpret the requirement in BREEAM-NL for office functions. For the calculations the limits with regard to installation noise can be stretched by adding 5dB compared to the office function as detailed in Table 1.

Offices

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School

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Residential

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Lodge

-

Meeting Function

Sound Sensitive meeting functions are meeting functions where intelligibility is important. (Conference, congress).

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1, 1.2, 1.4, 1.5	A copy of the relevant sections of the specification of the work in which the requirements of sound or isolation indices following EN 12354 or DIN 5077 are included and where this explicitly states compliance with the requirements under paragraphs 1.1 and 1.2 of the 'criteria based' and from which can derived that calculations are performed during the design by an trained and qualified acoustic consultant in accordance with Credit criteria 1.4.

Proof below is intended to support the explanation of accountability of the project.

B	1.3, 1.4 and 1.5	A copy of a noise measurement according to EN 140 or in accordance with NEN 5077 (incl. NPR NPR 5092 and 5097) and stating explicitly that compliance with the requirements under section 1.3 of the 'Compliance requirements, "and that these measurements were made during the Post construction stage by a trained and qualified acoustic consultant accordance crediteis 1.4.

Definitions

Operating Systems
Operating systems include the following sound-producing installations: installations for space heating, hot water production, refrigeration, mechanical ventilation, sanitary facilities such as toilets and faucets, drainage, facilities for increasing water pressure, lifts.

Weighted contact sound level (LNT, A)
Quantity of the noise level, normalized to the reference reverberation time and relevant spectrum, displayed in a number.

Characteristic installations noise (LAI)
Quantity of the noise level in the receiving room, caused by an installation and converted to standardized dimensions of the receiving room, displayed in a number.

Characteristic airborne sound level difference (DnT, Ak)
Quantity that shows the difference between two sound levels, normalized for the reference reverberation time, the spectrum and converted to standardized dimensions of the receiving room, displayed in a number.

Typical sound insulation of an external partition (GA, k)
Quantity that shows the difference between the noise level of the incoming sound on the outside of an external partition and the sound level in a space behind this partition, converted to standardized dimensions of the receiving space, displayed in a number.

Reverberation time
The average reverberation time over the mid-band frequencies from 125 to 2000 Hz, the various spaces must meet the values as indicated in the Compliance requirements. The deviation of the reverberation times in octave bands at 125 and 2000 Hz shall not exceed +20% and to -20% respectively compared to the 500 Hz octave band.

Occupied space

The portion of a utility function with at least one usable floor area, consisting of one or more on the same floor located adjacent spaces other than a toilet, a bath room, a utility room or a circulation space.

Usable floor areas
Space for the stay of people for at least a period of 30 minutes per day or where for that use function characteristic activities. A usable floor area meets the minimum criteria regarding size and height of the Building Act.

Additional Information
None.

References
- Building Regulations, current version.
- BS ISO 140-2: Acoustics - Measurement of sound insulation in buildings and of building elements - Part 2: Specification of measurement accuracy requirements.
- BS EN ISO 140-4: Acoustics - Measurement of sound insulation in buildings and of building elements - Part 4: Practical Measurement of airborne sound insulation between rooms.
- BS EN ISO 140-5: Acoustics - Measurement of sound insulation in buildings and of building elements - Part 5: Practical measurement of airborne sound insulation of facade elements and facades.
- BS EN ISO 140-7: Acoustics - Measurement of sound insulation in buildings and of building elements - Part 7: Practical measurement of sound insulation of floors.
- ISO / TR 140-13: Acoustics - Measurement of sound insulation in buildings and of building elements - Part 13: Guidelines.
- BS EN ISO 140-14: Acoustics - Measurement of sound insulation in buildings and of building elements - Part 14: Guidelines for special situations in practice.
- BS EN ISO 717: Acoustics - Eengetalaanduiding for sound insulation in buildings and of building elements.
- BS 1070: Sound insulation in buildings; Specification and assessment of quality.
- NEN-EN-ISO 3382: Acoustics - Measurement of room acoustic parameters - Part 2: Reverberation time in ordinary rooms.
- BS 5077: Sound insulation in buildings - Calculation methods for the parameters for sound insulation of facades, airborne sound insulation, sound insulation, noise caused by installations and reverberation time.
- NEN 5078 Soundproofing in buildings; Calculation for the determination of sound absorption in space, and supplement A1.
- NEN-EN 12354-1 Soundproofing in buildings - Calculation of the acoustic properties of buildings with the properties of the building elements - Part 1: Airborne sound insulation between rooms.
- NEN-EN 12354-2 Soundproofing in buildings - Calculation of the acoustic properties of buildings with the properties of the building elements - Part 2: Impact sound insulation between rooms.
- NEN-EN 12354-3 Soundproofing in buildings - Calculation of the acoustic properties of buildings with the properties of building components - Part 3: Airborne sound insulation against outside noise.
- NEN-EN 12354-4 Soundproofing in buildings - Calculation of the acoustic properties of buildings with the properties of the building elements - Part 4: Sound transmission from inside to outside.

- NEN-EN 12354-5 Soundproofing in buildings - Calculation of the acoustic properties of buildings with the properties of building components - Part 5: Sound level due to operating equipment.
- NEN-EN 12354-6 Soundproofing in buildings - Calculation of the acoustic properties of buildings with the properties of building elements - Part 6: Sound absorption in enclosed spaces.
- BS EN 12758 Glass in building - Glazing and airborne sound insulation - Product descriptions and determination of properties.
- NEN-ISO 15186 Acoustics - Measurement of sound insulation in buildings and of building elements using sound intensity.
- NEN-EN-ISO 15712 Sound insulation in buildings - Calculation of the acoustic properties of buildings with the properties of building components.
- NEN-EN-ISO 16032 Acoustics - Measurement of sound pressure level of installations in buildings - Engineering method.
- NEN-EN-ISO 18233 Acoustics - Application of new measurement methods in building and room acoustics.
- ISO 6242-3 Building construction - Expression of users' requirements - Part 3: Acoustical requirements.
- NPR 5070 Sound insulation in residential buildings, examples of walls and floor structures in stony supporting structures.
- NPR 5071 Sound insulation in residential buildings, examples of measures against reverberation, noise by banging doors and the like in public areas tailored to NEN 1070, including additions A1 and C1.
- NPR 5072 Sound insulation in homes and residential buildings; air system, including complement C1.
- NPR 5073 Sound insulation in residential buildings, lifts, including complement C1.
- NPR 5074 Sound insulation in homes and residential buildings with central heating and radiators or convectors, including complement C1.
- NPR 5075 Sound insulation in homes and residential buildings, sanitary apparatus and installations for the supply and disposal of water, including complement C1.
- NPR 5079 Sound insulation in buildings; determining and handling eengetalsaanduidingen for sound insulation in residential buildings and building elements.
- NPR 5086 Sound insulation in residential buildings - Soundproofing light, party walls.
- NPR 5092 Sound insulation in buildings - Assessment of the results of noise measurements in accordance with NEN 5077.
- NPR 5097 Sound insulation in buildings - Notes to the methods for determining the parameters for the sound insulation of external scheidingscontructies, airborne sound insulation, sound insulation, noise caused by installations and reverberation time.
- NPR 5272 Sound insulation in buildings - Instructions for applying the calculation regulations for sound insulation of facades based on NEN-EN 12354-3.
- OFF 38-Building Practice Building Sound Sound, 2004.
- GIW / ISSO Publication 24 Installation Sound.
- GIW / ISSO Publication 30 Drinking water installations in homes.
- GIW / ISSO Publication 55 Tap water systems in residential and commercial buildings.
- Ministry of Housing, Spatial Planning and the Environment, Calculation and Measurement Regulations 2006 noise.
- SenterNovem Guidance fresh new schools, 2008

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
-	-	-	-	√	-	-

HEA 14 Private outdoor space

Aim
Improve the living standards of residents by providing some privacy in an outdoor area.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	an outdoor area is available for residents. This space should at least partially be private.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A residential function has a non-common outdoor space with a surface area of:

- a width of at least 1.5 m;
- least 10% of the usable area if it concerns stacked construction;

or

- at least 20% of the useful area if it concerns the ground-based construction.

1.2 The non-common outdoor space is directly accessible from a non-common residential area of the residential function.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

If the facilities are located in the existing building, such devices must be assessed on the above requirements.

Hull

Residential

-

Non-compliant outdoor area

A French balcony generally does not meet the criteria, because it is too small.
Also enclosed spaces such as greenResidential, do not meet the criteria.

Common outdoor
If the residential area makes use of a (semi) common outdoor space (eg continuous balconies), the outside are should only be accessible to the residents of the respective Residential in addition to the general requirements.
In this case the Compliance requirements apply for the joint use area of the respective Residential.

Accessible only to residents of that housing
The space should be designed so it is clear that it should only be used by residents of the designated house(s). For example, by fencing, plants or to apply other obstructions by partitioning the space.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	Drawings or a copy of the specification confirming: • The usable area of the homes that are dependent on the outside. • The outdoor area meets the minimum size The non-common outdoor space is directly accessible from a non-common residential area of the residential function.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 and 1.2	As-built drawings and specifications or confirmation that the Residential are built in accordance with the drawings and specifications in the design.

Definitions
None.

Additional Information

Outdoor spaces
The following examples are representative of outdoor spaces:

- A private garden.
- A common garden or courtyard, that offers a pleasant and secluded setting large enough for all residents of the respective Residential to share (see Requirements) and designed in a way that makes it clear that the space should be used only by residents of the designated homes.
- Balconies.
- (Roof) terraces
- Patios.

The area should be located in the immediate vicinity of the property.

References

None.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
-	-	-	-	√	-	-

HEA 15 Accessibility

Aim
Encouraging that housing and residential buildings are useful for as many possible audiences. This also contributes to making residences lifecycle proof and anticipates the trends of aging.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that::

1	1 point	the visitable rooms (living room, toilet) in the home are easily accessible for wheelchair users.
2	2 points	the whole house is accessible for wheelchair users.

Compliance requirements
For wheelchair users the weakest link determines the accessibility. Failure to comply with a requirement therefore can not be compensated by other requirements.

The following demonstrates that the criteria are met:

1.1 The width of all accesspoints to the dwelling or residential building, such as pathways and corridors, is at least 1, 20 meters. Per centimeter height difference at least 12 centimeters in length (slope 1:12) is required. This inclination applies up to a level of 0.25 m1. When dealing with a larger height difference stricter requirements apply.
1.2 The free passage of the main entrance is at least 0.85 m [1] (Building Act). The space in front and behind the door is at least 0.90 to 1.50 m[1], outside the turning radius of the door.The space is measured perpendicular to the door (L x W).
1.3 The house is on the ground floor or accessible via a lift. If the house has more than one floor, there is the possibility to install a chair stairlift.
1.4 The property and visitable rooms in the house are accessible without an incline of more than 0.02m[1].
1.5 The lift has internal dimensions of at least 1.1 x 2.1 m[1]. The set-up space for the elevator is at least 2.1 at 2.1 m [1].
1.6 All common hallways are wider than 1.50 m [1].
1.7 The free passage of the own front door is at least 0.85 m[1] (Building Act).The space in front and behind the door is at least 1.5 x 1.5 m or 1.35 x 1.85 m [1] 1.

The visiting rooms (living room, toilet) are accessible to wheelchair users.

1.8 All spaces reserved for residents are accessible without an incline of more than 0.02 m[1].
1.9 All hallways are wider than 0.9 m[1] , or 1.1 m[1] in corridors with door (s) in the side wall.
1:10 All controls are between 0.90 and 1.20 m above the floor and 0.50m horizontally from an inner corner.This includes elements such as doorbells, buttons and mailboxes.
1:11 The toilet is at least 1.2 x 0.9 m [1] (l x w), with a door in the long wall (additional requirement compared to the Accessibility Handbook).

The other rooms are also wheelchair accessible.

2.1 All Compliance requirements of the first paragraph are met.
2.2 The other areas are accessible without an incline of more than 0.02m [1.]
2.3 All doors have a free passage of 0.85m[1] or more (Building Act). This applies to all doors except the utility room.
2.4 The bathroom has a minimum size of 2.15 to 2.15 m[1], or 1.90 to 2.50m[1]. The bathroom has no bathtub, but at least a sink, toilet and shower area.
2.5 The turning circle in the kitchen is 1.5m[1.] The distance between the wall behind the sink and the opposite wall is at least 1.8m[1.]

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
-

Housing hallmark
If the project has a (provisional) Verklaring Woonkeur (housing hallmark, SKW-certification), both points can be awarded without demonstrating that it meets all individual requirements.

Chair stair lift
Minimal requirements for the placement of a chair stairlift are:
- A staircase width of > 80 cm.
- Free space under the stairs of > 80 x 80 cm.
- Space for placing a rail, no potential barriers (traffic areas, doors, etc.).

Residential
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / m 1:11	Drawings of the situation surrounding the building and the distance to the adjacent structures including indications or descriptions of any obstacles.
B	1.1 t / m 1.11 and 2.1 t / 2.5 m	A copy of design drawings or specifications and relevant sections of the specification of the work, in which the dimensions of access roads and common areas are indicated accurately.

Or		
C	1.1 t / m 1.11 and 2.1 t / 2.5 m	As an alternative to the above proof A and B (Provisional) Statement Woonkeur (SKW-certification).

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t / m 1.11 and 2.1 t / 2.5 m	A written statement of the design team that the completed building does not differ from the draft specifications or drawings.If changes are made, the design team clearly indicates this, using additional drawings and relevant sections of the specification of the work. The assessor shall assess to which the requirements are still met.
Or		
E	1.1 t / m 1.11 and 2.1 t / 2.5 m	As an alternative to the above proof A and B Statement Woonkeur (SKW-certification).

Definitions

Accessibility

Accessibility of the built environment is the quality of outdoor spaces, buildings and homes that makes people can do what they should be able to do according to the designation.
This means that in outdoor areas, buildings and Residential it should be possible to make use off all facillities, in a sensible and responsible manner. There should be no additional risks, they need to stay healthy, and if environmental conditions change it should be possible to still make use of the environment.

Additional Information

None.

Accessibility of wheelchair users in mind

The diversity of people, and thus their restrictions, is large. People have a vision impairment, walk bad, use crutches or a walker, or (sometimes) have need of a wheelchair or scooter. The requirements for accessibility takes wheelchair users as a starting point.

References

1 Access Handbook, 6 th edition Reed Business.
2 NEN 1814 - full NEN 1814 en 2001: Accessibility of outdoor spaces, buildings and homes.
3 Directive integral accessibility public space (CROW, publication 177, Ede, 2002).
4 Practice Book accessibility public space (CROW, publication 201, Ede, 2004).
5 Manual Woonkeur, SKW.

03 Energy

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 1 Reduction of CO2 emissions

Aim

Encouraging that buildings are designed and realized with the lowest possible $_{CO2}$ emissions of the building-related primary energy consumption in the use phase.

Credit criteria

A maximum of 15 points can be awarded based on the, during the license application, prevailing environmental standard:

Where an EPC calculation is performed for the building, from which EP improvement results are greater than .. %

#	Point	New building	Renovation
1	1 point	6%	-30%
2	2 points	14%	-15%
3	3 points	20%	-5%
4	4 points	23%	4%
5	5 points	25%	0%
6	6 points	29%	14%
7	7 points	34%	20%
8	8 points	38%	32.5%
9	9 points	44%	35%
10	10 points	51%	38%
11	11 points	58%	51%
12	12 points	64%	64%
13	13 points	77%	77%
14	14 points	89%	89%
15	15 points	100%	100%

Structure of the table:

- One can receive 12 points when an EPC calculation is performed for the construction project for which EP improvement results in more than 64% but less than or equal to 77%.
- An EP improvement of -30% can be read as a building with an energy performance which is 30% below the statutory requirement is (eg an EPC of 1.3 instead of 1.0).

Exemplary performance

The following criteria show an exemplary performance and make it possible to earn this credit. 1 or 2 points innovation can be earned.

An innovation point

1. Fifteen been scored.
2. An innovation point can be awarded if the evidence shows that the building is designed as a building where the building-related energy consumption is 100% CO2 neutral and user-related energy consumption is 50% CO2 neutral.

Two innovation points

1. Two innovation points can be awarded if the evidence shows that the building is designed as a $CO_{2\text{-neutral}}$ building, where both the building and the related user-related energy consumption is 100% $CO_{2\text{-neutral.}}$
2. The building is modeled using DSM software.

Compliance requirements

The following demonstrates that the criteria are met:

1.1 - 15.1

An EPC calculation is performed in accordance with NEN 7120 for residential and commercial construction, demonstrating compliance with the Credit criteria regarding the improvement of the energy performance of the building as a percentage improvement over the current EPC requirements of the Building Act as applicable for the license area of the building.

1.2 - 15.2

In the market computer programs are available that offer a computerized version of the aforementioned NEN 7120 (NPR 8088-1). The software used must be attested conform BRL9501.

1.3 - 15.3

The commissioningsmanager (see credit MAN 1) has tested whether the EPC calculations regarding technical requirements have been met, after completion of the commissioning activities (excluding seasonal commissioning).

Compliance notes

EP improvement

The reduction of CO_2 emissions is established in relation to the, under the Building Act applicable, Energy Performance Standard for a functional use in the building. In the Building Act an energy performance requirement is prescribed, divided by user function in the building. For renovation, the criteria for new buildings should be used (see note Renovation).

For buildings with more than one user function, for which a requirement applies to the EPC, the Building Act demands a ratio between the characteristic energy use (Qpres, to) and the permissible characteristic energy use (Qpres; perm) in addition. Under BREEAM we name this variable "EP improvement".

The ratio 'EP improvement', by which the granting of credits under BREEAM-NL is based, is representative of the entire building for the relationship between the calculated primary energy and the permissible primary energy use, based on the then current energy performance requirements.

New building

Utility Buildings

In commercial buildings an energy calculation, in accordance with NEN 7120, the coefficient for the entire building with all usage is calculated directly in the ratio Qpres; to / Qpres; perm.

EP improvement = {1 - (Qpres; to / Qpres; perm)} * 100 [%] also {1 - (EPC / EPN)} * 100 [%],
in which:
EP improvement = energy improvement compared statutory requirement [%].
Qpres, tot = total primary energy consumption [MJ].
Qpres; perm = permissible total primary energy consumption [MJ].
EPC = Energy Performance Coefficient.
EPN = Energy Performance.

Homes and residential buildings
For homes and residential buildings an energy calculation, in accordance with NEN 7120, the coefficient is calculated as follows:
EP improvement = {1 – EPC residence / EPC requirements; residence} * 100 [%]
in which:
EP improvement= energy improvement compared statutory requirement [%]
EPC residence = calculated energy performance coefficient of the residence [-]
EPC requirement; residence = the currently valid energy performance requirements of the Building Regulations for dwellings and residential buildings [-]
The percentage of improvement of the energy performance (EP improvement) is directly related to the number of credits granted in BREEAM according to the table with the Compliance requirements.

Renovation
Under renovation is defined a major renovation as stated in the European Directive EPBD (usable area larger than 1,000 m² or renovation sum greater than 25% of the property value (excluding land value). This relates to the large-scale addressing of the building installations and to thereby achieve a significant improvement in the building-related energy consumption. Accompanying such major renovation an environmental permit application is required, including an associated EPC calculation. For the clarity of the BREEAM method, according to BREEAM Europe and the obligation of performing an EPC calculation, the assessment of the renovation will also be based on the EPC calculation of the building.This EPC calculation is an equivalent solution for the energy label of the building for 10 years. Also when renovation is for BREEAM the indicator EP improvement is used. To determine EP improvement, see the section new buildings. Renovation projects may not have the same requirements as imposed in relation to the EPC calculation in new construction. Therefore, a customized distribution of points for renovation projects is used: the first four points are provided to meet the performance requirement to get to the level of the new requirements of the EPC the existing building. The points are subsequently used to reduce EPC value below the legal EPC requirement for new construction.

Expansion of existing buildings
When an existing building is expanded (and only the extension is assessed under BREEAM-NL) and the extension uses the existing facilities, the EPC calculation and EPverbetering are based on the envelope of the expansion, plus building installations which the extension uses. This applies (if applicable) to both the existing general building services as well as the new building installations. The EPC calculation does not take the existing building fabric into account, because it is not part of the assessment under BREEAM. Building systems that play a role in the facilities of the extension should also be included.

Hull

In Hull construction where the design of the heating and air conditioning systems is left to the future owner / operator, EPC or dynamic simulation calculations should be performed, wherein standard arrangement and usage patterns are adopted in line with the existing building codes.

Partial renovation and partial new construction
In projects where partial renovation and partial new construction takes place, the final score is calculated on the basis of the BREEAM EU E1 calculator, using the respective building area in m² of both parts of the building.

Several basic functions
For buildings with multiple basic functions the combined EPC scores should be given. The combined EPC score is then listed under each basic function.

Measures or techniques at area level
Energy generation at local level should be calculated with the NVN 7125 Energy Performance measures at local area level (EMG). With this standard, the generation efficiency for heating, cold, hot water and electricity generating installations outside the private plot are calculated. These are installations that provide multiple buildings with often multiple owners of heat, cold and / or electricity, such as district heating and CHP collective, heat pumps, PV or wind turbines.

Offices
-

Retail
-

Industrial buildings
Currently there is no method for the determination of the EPC for industrial buildings. The standard sheet NEN 7120 gives basically no ability to calculate. EPC value of the industrial function of industrial buildings. There are two alternatives to this credit to meet:

1. Industrial buildings can get 10 of the 15 points up on the basis of the assessment of checklist A7 (see Further information).
2. Industrial buildings, up to 15 of the 15 points given by an EPC calculation in accordance with NEN 7120 with reference to building a building with sports function with low temperature (13 ^{o} C).

School
-

Residential
-

Meeting Function
-

Lodge
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / m 15.2	A printout of a EPC calculation for the energy performance of the building as part of the area license, approved by the municipality The calculation must be carried out with a model that is based on the standard sheets NEN 7120. The name of the software used must be displayed on the printout of the calculation.
Or		
B	1.1 t / m 15.2	If it cannot be proven that the calculation has been approved as part of the license area, an additional written statement must be provided by the municipality. This statement is a confirmation is included confirming the expertise and experience of the person making the EPC calculation (s) performed in accordance with the applicable DIN standards.
C	1.1 t / m 15.2	A note in which the input parameters used on performance factors, insulation and ventilation rates are explained.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t / m 15.2	A printout of a EPC calculation for the energy performance of the building as part of the area license, approved by the municipality The calculation must be carried out with a model that is based on the standard sheets NEN 7120. The name of the software used must be displayed on the printout of the calculation.
E	1.3 t / m 15.3	A report by the commissioningsmanager showing that the EPC calculation requirements are met and are established in accordance with the actual situation. If any changes have occurred that affect the EPC calculation, a new calculation is to be submitted and assessed by the commissioningsmanager.

Definitions

CO_2 neutral building
When net CO_2 emissions from energy use in the operation of the heating / cooling, hot water, ventilation, lighting and possibly (depending on exemplary performance) the user-related or process-related energy use are CO_2 neutral or better. Material related energy use, such as in the definition of PEGO, is hereby excluded.
The calculation of CO_2 emissions can take into account contributions from the site itself, the surrounding area and recognized external renewable energy resources.

Energy Performance Coefficient (EPC)
Measure of the energetic properties of a functional unit in a building or part of a building including building services at a standardized user behavior.

Dynamic Simulation Modelling (DSM)
A calculation model that simulates the heat balance of a building dynamically in relation to the future heat demand, given the input parameters regarding heat generation, building fabric, HVAC systems

used and other relevant input. Examples of dynamic simulation calculation models are VABI-VA114, TRNSYS, IDA ICE (Indoor Climate and Energy), TASE, Energy + WEI model (ECN) and DYWAG (Dynamic Heat Use in Buildings).
Note: NL-EPBD certified software for the determination of the energy certificate or the creation of a customized advice does not meet the requirements of a dynamic thermal simulation.

Improving energy (EP improvement)
Measure of the relative deviation of the Energy Performance Coefficient (EPC) of the building in relation to the current EPC requirement as set out in the Building Act.

User-related energy consumption
This is defined as energy consumption as a result of the use, for instance, computers, printers, coffee makers, etc.
Energy consumption as part of transport to and from the building by means of transport or waste management is no part of this.

Additional Information

The BREEAM model appreciates buildings with low EPC value. The method that is used (NEN 7120) also has a validity at low EPC values. Possible problem is that the numerical values given in the standard sheet do not yet have a sufficient scope (eg airtightness of the building fabric), or technologies required to achieve low EPC values have not yet been incorporated in the standard sheet.
The Building Act itself presents a solution. Firstly, we can fall back on the principle of equivalence of the Building Act. This principle gives (under certain conditions) the ability to use other formulas or a change in numerical values for technologies. Base principle is that this can only be permitted if it can be shown that the individual does not fall within the scope of the standard sheet.
When recording an alternative calculation / derivation of numerical values, the same principles as those in line with the development of numerical values and formulas in the standard sheet should be used.
Concrete examples of this are outside environment and user behavior. In addition, the technology must meet the principles from the building regulations of 'testable' and 'enforceable'.
At this time, BREEAM makes use of the EPC. Once a (European) legislation prescribes a new methodology, it will be viewed by DGBC and be included in a version update.

References

- NEN 7120: Energy performance of buildings - Determination method.
- NPR 8088-1: Calculation program energy performance utility construction.
- NVN 7125: Energy Performance measures at local level.

Checklist A7

http://www.dgbc.nl/images/uploads/Technische_checklist_A7_def.pdf .

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	-	√	√

ENE 2a Sub-metering of energy uses (non residential)

Aim
Applying submeasurement of both areas within the building as well as significant consumption groups, so that during the use phase, energy use can be recorded, monitored and can be adjusted if necessary by use of a energy monitoring - or building management system.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that:

1	1 point	the substantial consumption groups within the total energy consumption of the building are measured and monitored separately.
2	1 point	Of relevant areas energy is measured separately and where the submeasurements are connected to an energy monitoring or building management system and are presented / recorded in relevant subcategories.

Compliance requirements
The following demonstrates that the criteria are met.

1.1 Under the following conditions sub-measurements are used for recording the energy consumption of the significant groups within the total building-related energy use:

- Heating of space: Always submeasurement.
- Hot water: with an installed capacity of more than 50 kW th.
- Humidification at an installed capacity of more than 10 kW e.
- Cooling: with an installed capacity of more than 20 kW th.
- Fans (the main system), with an installed capacity of more than 10 kW e.
- Lighting, including equipment use, if final distribution passes a power of more than 50 kW e.
- Other significant energy users if applicable to the specific building function, noting that by expected values, based on the EPC calculation, the energy consumption of the relevant group amounts to more than 5% of the total building energy consumption.

1.2 The energy submeasurements must be continuously readable and connected to a building management system or energy monitoring system wherein each meter is labeled for the specific group.

1.3 In a building with an area greater than 2500 m^2 GFA a measurement and verification plan is drawn up. It should give the projected measurements, the relationship, location, specification, calibration, design and method of dashboarding / presentation of obtained measurement data.

2.1 The first point is met.

2.2 Submeasurements are applied for registration of energy (gas, heat, cold, electricity) for each relevant area zone.

2.3 The placed sub-meters are connected to an energy monitoring and building management system.
2.4 The measurement data obtained *(at least quarterly values)* are recorded in an energy monitoring and building management system.
2.5 It should be possible to preserve measurement data for historical analysis at least one year. It should be possible to export the measurement data obtained previously into a universal format (preferably CSV format).
2.6 The measurement data obtained in relevant subcategories is presented, where relevant consists of (if applicable) at least the following categories:

- Lighting (all lighting sources).
- HVAC (boilers, chiller, AHU's, fans etc.).
- Restorative (kitchen, restaurant, pantries).
- Transportation (elevators, escalators, cargolifts, tourniquettes etc.).
- IT separated if a server room, data center or MER is present.
- Other (including all wall mounted sockets).

Compliance notes

New building
For new construction projects, there are no additional or different requirements to the above requirements.

Renovation
For renovation projects, there are no additional or different requirements to the above requirements.

Expansion of existing buildings
Where a building is extended and the building services become part of the common system in the building, the requirements for the entire building energy submeasurement apply.

Hull construction
When it appears during the building development that the implementation of specific building services is up to the new owner / tenant, this credit should be developed according to an assumed fit-out specification. It can be assumed that the building (unless proven otherwise) makes minimal use of heating, hot water, lighting and user equipment / small appliances. If the building is not specifically designed for natural ventilation, assumption can be based on mechanical ventilation, whether or not in combination with cooling. If it is not possible to apply submeasurements this credit should be withheld until additional information provides the necessary evidence.

Catering
If the building is equipped with a catering, a submeasurement is applied for, at least, the entire catering department (central kitchen, utility room, freezing and cold storage, all kitchen, restaurant).

Central facilities
Central lighting and small appliances / equipment in areas where the energy can not reasonably be assigned to a tenant or user and under the normal situation are usually managed by the building owner or central administrator, should be fitted out with a private submeasurement. Examples are: the building main entrance and reception, an atrium, outdoor lighting, parking garages and stairwells.

Small rental units

In case of developments with several small rental units (<200 m ^{2} NRC), at least the following sub-meters are to be installed (if applicable) per rental unit:

- Electricity.
- Gas.
- Heat meter.
- Cold Meter.

Large rental units

In case of developments with one or more large rental units (≥ 200 m ^{2} NRC) each large rental unit must meet the Compliance requirements.

Offices

-

Retail

-

Industrial buildings

-

School

-

Meeting Function

-

Lodge

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.6 m	A copy of the relevant sections of the specification of work and technical drawings that clearly shows: - All floors showing the spatial distribution of zones. - The locations of the building's installations. - The drawing with an indication where submeters are applied per area per building or floor installation, and where the meter clearly indicates which zone, floor, building, installation or building component that meter is for. - Type designation of the sub-meters used including technical specifications. Technical specification of the energy monitoring and building management.
B	1.2	If applicable, measurement and verification plan.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 2.6 m	An inspection of the assessor and photographic evidence on the following points, which confirms compliance with the requirements mentioned earlier. - The location of the sub-meters, where a representative sample of selected locations within the building is sufficient but in which at least the sub-meters per consumption function (building installation) have all been included. - The location of the energy monitoring or building management system.
D	1.2	If applicable, revised measurement and verification plan.

Definitions

Relevant area zone
A zone is an area floor or specific functional component. A rental unit may be a zone, provided that it does not consists of more than one floor.

Functional building part
A portion of the building that is specifically designed to accommodate a specific and distinct building function inside the building, Examples include: catering, laboratories, swimming pools, auditoriums of considerable size etc.

Building Management system
A building management system (central computer) manages, records, monitors and controls various systems and installations in the building such as air treatment, heating, cooling, lighting, security etc.

Additional Information
None.

References

- ISSO publication Sustainable Management, Part 4 The need for monitoring.
- ISSO Publication 31: Measurement points and measurement methods.
- AND 15232/European Performance Building Directive (EPBD).

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
-	-	-	-	√	-	-

ENE 2b Subbmetering of energy uses (residential)

Aim
Applying a monitoring system for energy so that during the use phase, energy consumption can be registered, monitored and adjusted if neccesary.

Credit criteria

Up to 2 points can be awarded.

There should be substantial evidence that:

1	1 point	A display is provided from which can be read: • electricity consumption OR • use of primary energy sources
2	1 point	A display is provided from which can be read: • electricity consumption AND • use of primary energy sources

Compliance requirements

The next shows that the criteria are met.

1.1 The electricity meter (s) or meters of primary energy (eg (bio) gas, (bio) oil, etc.) are connected to an energy monitoring system with display that can display current and historical information on the energy consumption of the house.

1.2 The display must show the following information:

- Current energy consumption in kW or watts.
- Current energy consumption in kWh (and last hour of the day).
- Current estimated emissions (g or kg CO_2).
- Current energy prices.
- Current energy costs(of the day and the last hour).
- Visual presentation of data (numeric or not) so that users can easily identify low and high energy consumption
- Historical usage data so that energy can be compared with prior periods. The historical data should show daily, weekly, monthly and billing period. The data must be stored for at least two years on the device or the device makes use of an internet connection so that data can be consulted online.

2.1 The criteria of the first paragraph are met.

2.2 Both the electricity meter (s) as the meters of primary energy (eg (bio) gas, (bio) oil, etc.) are connected to the energy monitoring system.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

-

Hull construction

-

Use of only electricity as energy supply
If, in addition to electricity, no other sources are used. For example because the house has electric heating, and meets the Compliance requirements for energy monitoring system with display two credit points are awarded.

District heating, central heating or cooling system or solid fuels
If it is not possible to measure, a primary energy source, for example, because the property is part of a central heating system with more than one housing, a heat meter should be installed in order to measure the cold or heat energy. The measurement must be converted to energy in kWh and displayed by the energy monitoring.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.2 m	A copy of the relevant sections of the specification of the work stating: - Technical specifications of the energy monitoring system.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 2.6 m	An inspection of the assessor and photographic evidence of the installed energy monitoring system and energy meters.

Definitions

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 4 Energy-efficient external lighting

Aim
Stimulating energy saving and CO_2 reduction through the application of energy-efficient outdoor lighting.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	energy efficient outdoor lighting is used with a specific maximum lighting power per lux of 0.1 W / (lux / m $^{2)}$ and that it is not lit unnecessarily, and all this without compromising public safety.

Compliance requirements
The following demonstrates that the criteria are met:

1. The exterior lighting is energy efficient by use of fixtures where luminous efficacy of the lamp shall not exceed 65 lumens / Watt and with a lower maximum specific lighting power per lux of 0.1 W / (lux / m $^{2).}$
2. Ambient lighting for decorative purposes is not used or is being implemented with lighting fixtures that make use of solar energy and are automatically charged during the day, which no power is obtained from the grid.
3. All the outdoor lighting is provided with automatic activation and deactivation, wherein the switching takes place by means of twilight circuit (and thereby automatically adjusting to the length of the day) and the switching off by means of a timer switch. Under switching off shall also be understood to turn off the lights to a minimum required level of illumination and is standardized to promote safety around the building.

Compliance notes

Social security
The lighting should not be performed with a light level that affects the social security of the land around the building. If the requirements of HEA 5 for outdoor lighting are met, this is automatically the case.

Illumination of facades
The illumination of the exterior walls can be performed by various methods, such as a flat illumination with spotlights or floodlights accented with smaller light sources. While the intend of this credit is not to exclude the illumination of architecture, it is however a goal to reduce the amount of specifc lighting power used in relation to the size of the object being lit. Regardless of the method and the light image, the maximum specific lighting power is 2 W / m ^{2,} wherein the number of m ^{2} is the total vertical surface of the side view of the lighted facade. For the outline of a wall part, one takes the best, simplified projection. Complex 3D wall forms are simplified to a rectangular 2D plane where the

illumination is applied. If the illumination is applied to an open wall construction with pillars or columns, for example, it is sufficient a simplified outline of the facade, including the open parts.

Advertising Lighting
Advertising Lighting can consist of illuminating an advertisement or self-lighting (backlight).In both cases, the maximum specific lighting power is 50 watts / m², wherein the number of m^2 being lit or illuminated is concerned. The surface may be determined by means of simplified outline of the object being lit.

Automatic on and off through MBS
If a MBS is present, the lighting may be also switched by a sunrise and sunset calculations.

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
-

Offices
-

Retail
For retail buildings, in addition to the above requirements, is that the application of the maximum specific canopy lighting lighting power does not exceed 2 watt / m². Where the amount of m^2 being the lit surface.

Industrial buildings
-

School
-

Residential
For individual homes the requirements for the illumination of parking spaces, paths and courtyards that are available on site apply.

Meeting Function
-

Lodge

For accommodation buildings, in addition to the above requirement, is that the application of the maximum specific canopy lighting lighting power does not exceed 2 watts / m². Where the amount of m ^{2} being the lit surface.

No outdoor
If it can be proven that the building is designed to be completely functional without outside illumination (without illumination of the facade, entrance or advertising), the credit can be automatically granted.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	A copy of the relevant sections of the specification of the work, the drawings and additional specifications of the manufacturer / installation company which indicates: - The type of lighting fixture used per functional unit (parking, access parking, access roads, trails, shelters, facade lighting, advertising lighting) accompanied by an indication of the luminous efficacy of the lamp in lumens / watt. - The type of mood lighting with a specification of the system power and the applied electric power source. - The type of automatic switch that is applied to all used outdoor lighting.
B	1.1	A calculation based on the above specifications which provides the specific lighting power per lux W / (lux / m $^{2)}$ for a representative portion of the site.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 1.3 m	If changes have been made since the assessment in the design, a calculation of the specific lighting power per lux for a representative portion of the site.
D	1.1	A report from an on-site inspection by the assessor and photographic evidence confirming that the installations for renewable energy are actually present in the building.

Definitions

Outdoor lighting
The lighting of paths, roads, entrance/exit, parking lots, garages and other outdoor areas that fall within the plot of the building, including the exterior lighting of back paths and courtyards of homes. Also advertising and building lighting (illuminance of outside walls) are the subject of review.

Luminous efficacy (efficiency)
Measure of energy efficiency of lighting, the light output being delivered in lumens / watt energy used. Here, a difference between the efficiency of the source and the efficiency of a fixture as a whole, the specific luminous efficacy used in this document refers to the efficiency at the armature level.

System Power
Measure of the power needed for lighting per illuminated m ^{2} of useful floor area, expressed in watts / m $^{2.}$

System Power = P [W] / A [m $^{2]}$
- P: total output of the luminaires used in A including drivers and ballasts.
- A: representative surface to be lit.

Specific lighting power per lux
Measure of the power needed for lighting per illuminated m ^{2} of useful floor area depending on the lighting level, expressed in W / (lux / m $^{2).}$
The formula is:
Specific lighting power per lux = P [W] / (E $_{h, target}$ [lux] / A [m $^{2])}$
- P: total output of the luminaires used in A including system drivers and transformers.
- E $_{h, target}$: the average horizontal illuminance standard for the area (eg 30 lux E $_{gem}$ in applied standard);
- A: representative surface to be lit.

Additional Information
Effects on mesopic vision in relation to photopic vision are not included unless otherwise stated in the lighting standard applied.
The requirements in respect of the specific luminous efficacy ensure that energy-saving light bulbs are applied, while the requirements for the particular lighting power make it possible to vary the number of lighting points in relation to the height of the masts in order to obtain the desired (normalized) levels of lighting such as a parking lot.
Studies show that the combination of twilight switch (switching on the outside if the light below a certain light level drops) and timer (switching off if the building is empty and the exterior lighting is not further necessary) is optimal in terms of limiting the number of hours.

Exceptions to automatic on and off
Application of a manual switch so that the lighting can be forced on and off, for example, in emergency situations, etc., is permitted and does not lead to rejection of the credit. This includes presence detection in connection with burglary prevention and social security, provided it is limited to the lights around and close to the building and / or the places where this is required or desirable for reasons of burglary prevention and social security.

References

- BS EN 12464: Part 2: Light and lighting - Outdoor.
- National Sustainable Building Package, S048/U048/B048.
- SenterNovem p UBLICATION That light so!!Part 4: Energy efficiency lighting around buildings (1998).
- ECN publication ECN-C-04-017: Lighting Energy Amsterdam.Energy savings brought to light (2004).
- ROVL Directive for Public Enlightenment.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 5 Use of renewable energy

Aim
Promote the use of renewable energy in the immediate vicinity.

Credit criteria
Up to 3 points can be awarded.

There should be substantial evidence that::

1	1 point	A feasibility study was carried out into the use of renewable energy for the benefit of the building (where the system is placed on or within the building itself or in the vicinity) and where the application of the, in the feasibility study recommended renewable energy technologies, CO_2 emissions of the building are reduced by at least 5% compared with the reference situation without renewable energy generation.
2	2 points	The first point is achieved and the application of the, in the feasibility study recommended renewable energy technologies, CO_2 emmision fo the building are reduced by at least 10% compared to the reference situation without renewable energy.
3	3 points	The first point is achieved and the application of the, in the feasibility study recommended renewable energy technologies, CO_2 emmision fo the building are reduced by at least 20% compared to the reference situation without renewable energy.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A feasibility study was carried out into the possibility of using local renewable energy sources for the energy supply of the building. The local renewable energy sources concerned are those that are already present on or near the building site itself and to which the building can be connected, or respectively systems of renewable energy which can be realized within the building itself. The feasibility study must meet the requirements as set out under "Compliance notes' and studied sustainable energy should be included in the design.
1.2 The feasibility study is carried out in an early building design stage, so that any available and feasible technologies for renewable energy generation could be used during further building development.
If the feasibility study is performed too late in the sense that sense that certain techniques could not be used for renewable energy production, this credit is not awarded.
1.3 If the feasibility study was performed on time but shows that no technology for renewable energy is feasible for the building or no source of renewable energy is available or realizable in the vicinity of the building or if the building can not be connected, this credit can be granted but the second and third points do not apply, and may therefore only be awarded one point in total.
1.4 One or more in the feasibility study recommended renewable energy are implemented in practice, for which a calculated, a for all renewable sources totaled CO_2 emission reduction of at least 5% of the total building-related CO_2 emissions is achieved, calculated in relation to the reference situation.
2
2.1 The first point is achieved.
2.2 One or more in the feasibility study recommended renewable energy are implemented in practice, for which a calculated, a for all renewable sources totaled CO_2 emission reduction of at least 10% of the total building-related CO_2 emissions is achieved, calculated in relation to the reference situation.

3.1 The first point is achieved.

3.2 One or more in the feasibility study recommended renewable energy are implemented in practice, for which a calculated, a for all renewable sources totaled CO_2 emission reduction of at least 20% of the total building-related CO_2 emissions is achieved, calculated in relation to the reference situation.

Exemplary performance

The following criteria show an exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

1. The first point for the feasibility study must be achieved.

2. By applying in the feasibility study recommended renewable energy technologies, the CO_2 emissions of the building are reduced by at least 40% compared to the reference situation without renewable energy.

3. Approved energy modeling software is used to demonstrate that the design meets the reduction of CO_2 emissions compared to the reference situation.

Compliance notes

New building

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Renovation

-

Expansion of existing buildings

When installations for the generation of renewable energy are already present in the existing building (part), they must be assessed on the above requirements. The implementation of a feasibility study remains a requirement, focusing on the feasibility of sources of renewable energy other than those used in the existing system(s).

Hull

-

Feasibility Study

The feasibility study must meet the following requirements:

- The study examines the feasibility of using renewable energy sources as specified under 'Definitions', including the possibility of issuing renewable energy to the public grid.
- Within the study is an analysis of the system costs (such as investment costs, maintenance costs and energy costs) and the energy savings or CO_2 emission reduction during the technical lifetime.
- The return on investment (ROI) periods or other usual economical measures are calculated, where the possibility of obtaining grants is included.

- The study takes the environmental and spatial effects into the overall (cost) assessment in terms of land use, fitting in with the current local zoning laws and noise pollution regulations.
- The study explains the decision for one or more specific renewable energy technologies and / or why are other applicable techniques for renewable energy are not chosen.
- To determine the baseline for CO_2 emissions of the building, the corresponding results of the calculations used credit ENE 1.
- For the determination of the reference situation see Definitions.

If the feasibility study is completed in a later project phase than the preliminary design phase, an additional paragraph in the study should be included which details whether (and which) renewable energy can no longer be applied due to performing the feasibility study at a later design stage. The same arguments should be considered (LCC, ROI, spatial effects, etc.).

If the feasibility study has been completed at a later stage than the preliminary design and all renewable energy applications are classified as infeasible, points can not be granted.

If the feasibility study is performed in the preliminary design stage or earlier and all renewable energy applications are classified as unfeasible, 1 point can be awarded.
So the remaining points (points 2 and 3) for installing sustainable applications for the benefit of a minimum percentage of the energy consumption of the building, can not be granted.

By delivery to the public network
All, according to the feasibility study, renewable energy that is generated in excess of the building's energy need and therefore fed into the public grid, may be included in determining the total share of renewable energy in / from the building itself.

Energy consumption of the energy production installation itself
The energy the generation installation uses itself, should not be counted in determining the share of renewable energy / inside the building.

Building-related CO_2 emissions
Total building-related CO_2 emissions in accordance with energy method (NEN 7120).

Offices
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Retail

Industrial buildings
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School
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Residential

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Meeting Function

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Lodge

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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.4 m	A copy of the feasibility study which also shows at what stage of the building design planning the research was conducted, and the capacity of the energy consultant to carry out the feasibility study.
B	1.1 t / 1.4 m	A copy of the relevant sections of the specification of the work showing that in the feasibility study recommended feasible and profitable techniques of renewable energy are actually used within or in the immediate vicinity of the building.
C	1.1 t / 1.4 m	A copy of the printout of the software program that shows that the CO_2 reduction of the building was calculated and to shows what software was used, the skill of the person making the calculations performed and the total amount of CO_2 from the building in both the baseline situation and the situation of use of investigated sources of renewable energy.
D	1.1 t / 1.4 m	Technical data of the manufacturer of the selected and applied installation for renewable energy in which the, calculated in the feasibility study, CO_2 reduction is demonstrated based on the installed technology,
E	1.1 t / 1.4 m	If biofuels (see definitions) are used to achieve the desired CO_2 reduction it must be demonstrated that it meets the requirements. OR A NTA 8080 certificate for both "producer" and "processor" of the proposed biofuel.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1 t / 1.3 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the installations for renewable energy are actually present in the building.

Definitions

Renewable energy

Technologies eligible to contribute to achieving the requirements of this issue must produce energy from renewable sources as defined by Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (www.eur-lex.europa.eu). All other ancillary requirements set out in the EU Directive also apply.

Air source heat pumps can only be considered as a renewable technology when used in heating mode. Refer to Annex VI of Directive 2009/28/EC for more detail on accounting of energy from heat pumps.

Immediate vicinity
The renewable energy system that generates energy for the benefit of the building, does not have to be realised in the building, but may also be realised in the vicinity.
For the definition of direct area a reference to the NVN 7125 paragraph 3.15 *Area* (land that is functionaly, legaly and organizationaly connected with a collective energy infrastructure, for which the effects of the housing, residential buildings, etc. and non-residential buildings can be connected to this area)is made.
The definition of the immediate area should be according to the NVN 7125 Section 6.3 *Determination area boundary energy infrastructure*, the first domain (the plot) and the second domain (the area where its own energy infrastructure is provided and for which the effects can be granted to the homes and buildings) fall within the definition of immediate surroundings in that region.

Approved energy modeling software
A calculation that dynamically simulates the energy consumption of a building taking into account heat and cold generation, building fabric, HVAC systems applied, renewable energy and other relevant input. Examples of dynamic simulation calculation models are VABI-VA114, TRNSYS, IDA ICE (Indoor Climate and Energy), TASE, Energy + WEI model (ECN) and DYWAG (Dynamic Heat Use in Buildings).

Reference situation
Only the CO_2 emission reduction below building regulations minimum requirments contribute to the percentage CO_2 reduced. An EPG calculation with the same principles as used in ENE 1, without renewables to improve on building regulation, and where the heating and cooling unit are as follows:

- Heater: Nopw; ref = 0,925.
- Cooling: Nopw; cool = 1,560.
- Tap Water : Nopw; tap = 0,292.

Additional Information
In this credit only (local) techniques of sustainable energy genereation are rated and no energy efficiency techniques. Energy-efficient techniques are already appreciated by credit ENE 1. This also includes some techniques of renewable energy within the building that have an effect on the energy efficiency and thus have a CO_2 emissions-reducing effect, such as the application of solar cells and combined heat and power biomass / gas etc.
The underlying thought by connected credit ENE 5 is to rate techniques of sustainable energy as such are present in the building or vicinity on a seperate level. This is done because in the Netherlands relatively little use of sustainable technologies is made. The credit aims to appreciate the fact that the building contributes to the use of sustainable energy within the scope of the surrounding area.

References

- NVN 7125: Energy Performance measures at the regional level (EMG).
- ISO 14044:2006: Environmental Management Life Cycle Analysis, Requirements and Guidelines, International Standards Organisation, Geneva.
- NEN 7120: Energy performance of buildings - Determination method corrected for the supply air ventilation and infiltration air volume flow calculations for energy - Part 1: Calculation, 2011.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 6 Building fabric performance & avoidance of air infiltration

Aim
Stimulating energy saving and CO_2 reduction through the application and design of loading platforms and / or expedition areas with a minimum loss of heat or cold.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	loading platforms and / or forwarding areas are designed and constructed to let minimal heat or cold leave the building while in use.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Separate entrances for staff are provided in or adjacent to the cargo doors, so that the larger loading bay door do not have to be opened for admitting staff. In this case the smaller staff entrance should suffice, while simultaniously providing an enclosed porch between the extrenal building acces and (if present) offices.
1.2 Loading platforms and / or expedition spaces for goods reception and the other operational areas are separated.
1.3 If present, all loading platforms and / or expedition rooms, are fitted out with air ducts, inlets and outlets and draft interruptions are executed in an airtight version.
1.4 Load doors of the loading platforms and / or expedition spaces are insulated with a value of 0.6 W / m² K.
1.5 Strip curtains are made inbetween the internal goods receipt and storage and other operational areas with sufficient overlap between the strips or flap curtain.
1.6 Access to the loading platforms and / or expedition rooms is equipped with one of the following facilities:

- Vertical Blinds with sufficient overlap between the strips or a flap curtain.
- Air Curtain.
- Docking seals on each loading door.

1.7 Self-closing doors on the loading and unloading platform with a closing time of up to five seconds from the moment of fully open to closed.
1.8 In the Post construction stage, the effectiveness of the above provisions and measures is tested through a thermographic investigation of possible heat or cold leaks in the construction of the loading platform and / or shipping areas and all relevant partitions between zones with air treatment and areas without air treatment connected to the loading platform and / or forwarding areas, which satisfies the following:

- The thermographic examination complies with the requirements of EN 13187 Thermal performance of buildings, Qualitative detection of thermal irregularities in building fabric - Infrared Method.
- The thermographic survey shows that no significant thermal leaks are present.

- The thermographic survey shows that there no excessive cold bridges are present.
- The thermographic survey shows that no significant air infiltration occurs, except where it is deliberately designed and arranged (eg vents).
- Any defects identified by means of the thermal inspection are to be corrected, and the building is being re-examined in order to confirm that it meets the requirements of the first point.

Compliance notes

New building

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Renovation

-

Expansion of existing buildings

If the facilities are located in the existing building, such devices must be assessed on the above requirements.

Hull

-

Loading platform and / or shipping room

This credit applies only to buildings where a loading platform and / or expedition spaces are used. Where this is not the case, this credit is not applied (filtered from the BREEAM-NL credit list).

Other specifications in the building design - offices

When it can be reasonably attested that certain constructions can not be applied because they are subordinate to the main function of the building, the credit can be granted, subject to compliance with the other requirements that lead to the achievement of the credit aim. The assessor will therefore be obliged to ensure that the reason for this is sufficient by testing the credit aim. The designer is to make a motivated argument on alternative methods used to comply with the credit aim.

Different specifications in the design

If some of the proposed measures are not relevant, for example, if the division between supply and storage of smaller buildings / units is not practical, the assessor may remove them from the assessment. In such cases, the design team will provide a well-founded explanation why this is the case. The evaluator should use its discretion in determining the validity of the case and justifies the statement of the design in the validation in the BREEAM-NL-assessment report.

No heated rooms or rooms with airconditioning:

When the building is arranged in such a way that there is no heating or cooling, and the building is deliberately designed in this way, then the requirement to comply with the "performance at delivery' measures may be omitted. The design measures are still applicable to possible changes in the future, for instance in the case that a heating/cooling system will be installed in the building.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.7 m	A copy of the relevant sections of the specification of work, drawings and additional specifications of the manufacturer / installation company which indicates: • where loading / unloading platforms and / or despatch areas are located, • which type of loading doors are used, which insulation these doors have and which locking mechanism is applied; • evidence that strip curtains, flap doors, air curtains and / or pneumatic door locks are applied to the places specified in 'Compliance requirements'; • specifications of the method of sealing drafts in the places specified in 'Compliance requirements'; • the separation of the loading / unloading platforms and / or despatch areas as compared to other operational areas.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 1.7 m	An inspection of the assessor and photographic evidence showing that the requirements are met.
C	1.8	A copy of the thermographic survey.

Definitions

Dock seals
A cuff in the form of flexible pads or inflatable seals that seals a dock or loading dock along the edges of the vehicle that it is parked for loading or unloading. In the Netherlands, also known by the English term 'dock seal' .

Air Curtain
A fan that blows warm air down in a doorway prevent the escape of warm indoor air, especially applies if the indoor air is warmer than the outside air.

Expedition area
Space for the purpose of storage and / or transhipment of goods with an external building access that is larger than an one person access (eg large access doors such as overhead doors).

Additional Information
The requirements of this credit will also be honored in the EPC calculation for credit ENE 1 CO_2 emission reductions for standard building types such as offices, schools, etc. The present credit ENE 6 serves to include the aspect of energy efficient in loading and unloading platforms' for building types where no standard for EPC calculation exists or is implemented, or if the air infiltration of loading and unloading platforms will not be taken into account in such calculations. This may particularly be the case in retail and industrial buildings (wareResidential, etc.).

References
- EN 13187: Thermal performance of buildings: Qualitative detection of thermal irregularities in building fabric - Infrared Method.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	-	√	√	-	√	-

ENE 7a Energy efficient refrigerated and frozen storage - other building types

Aim
Stimulating energy saving and CO_2 reduction through the use of energy-efficient storage facilities where products are kept refrigerated or frozen.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	energy-efficient equipment for refrigerated storage is used.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The requirements for different types of refrigerators / freezers as outlined in table – XX have been met.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

If the future use of the building is not yet completed, credit is achieved if the proposed building user provides a written statement in which he states that he will meet the requirements.

Household refrigerators and small plug-in coolers

The application of domestic refrigerators and small plug-in coolers can be disregarded.

Requirements

< 1500 litres net content	Professional refrigerator or refrigerated workbench: 1. with a maximum net capacity of 1500 liters, working on a halogen-free refrigerant, with forced ventilation inside and, placed separately not built into the walls, evaporator; 2. for cooling of products in the temperature class M1 (+5 ° C/-1 ° C), with an energy use of up to 10 kWh per m ^{3} net contents in 48 hours measured in accordance with ISO 23953 in climate class 4 (30 ° C, 55 % RH).
	Professional freezer: 1. with a maximum net capacity of 1500 liters, working on a halogen-free refrigerant, with a separately placed not built into the walls, evaporator; 2. for freezing products in the class L1 temperature (-15 ° C/-18 ° C), with a maximum energy of 20 kWh per m 3 net contents in 48 hours measured in accordance with ISO 23953 in climate class 4 (30 ° C, 55 % RH).
> 1500 liters net content Plug-in cooling and / or freezing equipment	1. it is provided with at least one frequency-regulated compressor; 2. This includes a (wet) condenser designed up to 10 K temperature difference between condensing and ambient temperature condenser power with a specific fan power of the condenser up to 14 W per kW, determined in accordance with NEN-327 (air cooled condenser) or BS EN 15218 (evaporative condenser); 3. it is equipped with a weather-dependent control of the condensing pressure to +13 ° C outside; 4. it is equipped with an electronic expansion control with a direct expansion system, evaporator excluding cooling cabinet or

	cooling tunnel; 5. the condenser, if it is a system where the refrigerant does not condense under design conditions, must be designed for a temperature difference between the gas cooler and ambient temperature of up to 3 K.
> 1500 liters net content non-plug-in cooling and / or freezing equipment	1. it is provided with a minimum of 1.4 COP in the case of a freezing installation it is provided with a minimum COP of 2.6, in the case of a refrigerating system; 2. the doors close automatically by the application of induction loops or presence detection, or automatic doors, or feature strip curtains or draftslabs that prevent the heat from outside to enter when the doors are open as much as possible, or, in case of refrigeration cabinets, a self-closing door is present or a cover for when the refrigerating unit is not in use (eg overnight); 3. it is equipped with an electronic expansion valve instead of a thermostat-controlled copy; 4. compressors, fans and pumps are equipped with variable speed control; 5. the cooling or freezing storage is carried out with a computer-based monitoring system that ensures that the operation of the compressor, the speed of the fan and the cooling capacity is adjusted, automatically or by means of programming, for the outside temperature and / or the amount of stored goods, and in addition, provides for automatic defrost ; 6. the refrigerated storage systems have been tested and commissioned in accordance with the energy storage requirements of BREEAM-NL-MAN 1 credit (this does not necessarily mean that points are awarded for MAN 1); 7. it is provided with insulation material in which the sum of the heat resistance of the layers R = Σ (Rm) = (d / λ): ○ for cooling or light freezing at a temperature between +12 ° C and -10 ° C, must amount to at least 6.20 m 2 K / W; ○ for freezing at a room temperature lower than -10 ° C, must amount to at least 10.50 m 2 K / W 8. at least three of the following features are provided: ○ If several refrigerators and freezers are used side by side, these are grouped by temperature. ○ The refrigerator or freezer storage is located on a non-heated or naturally cool location. ○ The size of the door openings is minimized in relation to the functionality (for example, whether or not access by forklift trucks). ○ Smaller, built in doors for people and / or the use of roller conveyors with airlock for the passage of goods if the refrigerating store has a large entrance. ○ Where possible and appropriate application of air curtains or air locks. ○ Freezers are equipped with a refrigerated entrance area. ○ Refrigeration or freezer storage is equipped with automatic defrost.

	○ Refrigeration or freezer storage is carried out with a gas discharge instead of an electric defrost system. ○ Refrigeration or freezer storage is equipped with energy-efficient lighting that emits little or no heat, or there is (where possible) no artificial lighting installed. ○ The evaporator is not directly mounted above the access door.

Table XX

Offices
Refrigeration or freezer storage is within office environments rarely used and then only if catering and / or restaurant facilities are available within the building.

Industrial buildings
-
School
-

Meeting Function
-

Lodging
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the relevant sections of the specification of the work or the technical specifications of the refrigerator and freezer cabinets and the refrigerator or freezer storage which suggests whether and how to meet the critera requirements. If the technical specification does not provide sufficient clarity on this, further details or statement should be requested from the manufacturer, supplier or installer of the refrigerator and freezer cabinets and the refrigerator or freezer storage.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1	A report of an on site inspection by the assessor and photographic evidence showing that the refrigerator and freezer cabinets and the refrigerator or freezer storage are installed according to the specifications that are specified during the design phase, and that the necessary provisions in accordance with the Compliance requirements are present.

Definitions

Refrigerated and frozen storage
The scope of this credit is mainly building-related refrigerated storage, such as refrigeration and freezers integrated the in building, and refrigerators and freezers that are connected to a central

refrigeration-/freeze system, for example for catering or canteen. However, large plug-in refrigerating installations and professional refrigerators and freezers also belong to the scope of this credit.

Additional Information

-

References

- [1] SenterNovem publication - The choice of refrigerating systems in supermarkets, 2006.
- [2] Refrigerated_Display_Cabinet_Classification, Saint Trophy 2008.

http://www.dgbc.nl/images/uploads/Refrigerated_Display_Cabinet_Classification.pdf .

- [3] Refrigerated Display Cabinets, the meaning of TEC and TDA, Saint Trophy 2008.

http://www.dgbc.nl/images/uploads/TEC_and_TDA.pdf .

- [4] TDA, Total Display area calculation.

http://www.dgbc.nl/images/uploads/TDA_calculation.pdf .

- [5] Regulation (EC) Nr. 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases.
- [6] TNO publication Building Supplement Guide: Cooling and freezing Residential, 2004.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
-	√	-	-	-	-	√

ENE 7b Energy-efficient refrigerated and frozen storage - retail and lodging

Aim
Stimulating energy saving and CO_2 reduction through the use of energy-efficient storage facilities in which products are stored cooled and/or frozen.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that::

1	1 point	energy-efficient refrigerators and freezers and energy efficient refrigerated storage system is applied.
2	1 point	Heat recycling and cold buffering is applied within the refrigerated storage system

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The requirements for different types of refrigerators / freezers as outlined in table – XX (ENE 7 – other functions) have been met.

2.1 Application of cold storage and heat recovery:

- The refrigerator or freezer storage is provided with a cooling heat recovery system (ie for heating and / or air heating).
- The refrigerating or freezing storage system is provided with a system for cold buffering in periods with a low freezing or cooling demand for the purposes of use in periods of high freezing or cooling demand.
- If the application of heat or cold cool buffering is not appropriate eg in the absence of a demand for residual heat or lack of peak periods when cooling or freezing, this requirement can be met if demonstrated by an investigation by the design team.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

If the future use of the building is not yet completed, credit can be achieved if the proposed building user provides a written statement in which he states that he will meet the requirements.

Household refrigerators and small plug-in coolers
The application of domestic refrigerators and small plug-in coolers can be disregarded.

Retail
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / m 2.1	A copy of the relevant sections of the specification of the work of the technical specifications of the refrigerator and freezer cabinets and the refrigerator or freezer storage which suggests whether the critera requirements are met and how to meet them. If the technical specification does not provide sufficient clarity on this, further details or statements should be requested from the manufacturer, supplier or installer of the refrigerator and freezer cabinets and the refrigerator or freezer storage.
B	2.1	If utilization of residual heat or cold buffering system has not proven feasible, a copy of the study in the design which demonstrates this.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 2.1	A report of an inspection on site by the assessor and photographic evidence showing that the refrigerator and freezer cabinets and the refrigerator or freezer storage are installed according to the specifications that are specified during the design phase, and that the necessary provisions in accordance with the Compliance requirements are present.

Definitions

Refrigerated and frozen storage
The scope of this credit is mainly building-related refrigerated storage, such as refrigeration and freezers integrated the in building, and refrigerators and freezers that are connected to a central refrigeration-/freeze system, for example for catering or canteen. However, large plug-in refrigerating installations and professional refrigerators and freezers also belong to the scope of this credit.

Additional Information

Residual heat utilisation not feasible
If thermal storage or heat recovery is not feasible because there is no low load and / or there is no demand for recovered heat, then the third point can be granted, provided that all requirements of the second section are fulfilled. The design should substantiate why there are no viable opportunities for heat recovery, free cooling or thermal storage.

References

- [1] SenterNovem publication The choice of refrigerating systems in supermarkets, 2006.
- [2] Finding the Energy Label for your refrigerated display cabinet, Saint Trophy 2008.

http://www.dgbc.nl/images/uploads/Find_your_energy_label.pdf .

- [3] Refrigerated_Display_Cabinet_Classification, Saint Trophy 2008.

http://www.dgbc.nl/images/uploads/Refrigerated_Display_Cabinet_Classification.pdf .

- [4] Refrigerated Display Cabinets, the meaning of TEC and TDA, Saint Trophy 2008.

http://www.dgbc.nl/images/uploads/TEC_and_TDA.pdf .

- [5] TDA, Total Display area calculation.

http://www.dgbc.nl/images/uploads/TDA_calculation.pdf .

- [6] Regulation (EC) Nr. 842/2006 of the European Parliament and of the Council of 17 May 2006 on certain fluorinated greenhouse gases.
- [7] TNO publication Building Supplement Guide: Cooling and freezing Residential, 2004.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 8 Energy-efficient lifts

Aim
Stimulating energy saving and CO_2 reduction by applying energy-efficient elevators that are attuned to the usage.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that::

1	1 point	energy efficient goods and passenger lifts are applied;
2	1 point	highly energy-efficient goods and passenger lifts are applied.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 an analysis is conducted by the designteam, on the question of transport and the acces of the building. In this way, the optimal number of elevators, the size of the elevators and the speed of the lift determined on the basis of the anticipated demand for passenger transport. Tool regarding this capacity provision, the NTA 4614 part 4, which is developed under the Highrise Covenant, for which parameters in this context are still considered applicable for each building.
1.2 If the acces of the building or partial function in the building can be solved in several similar logistics ways, then the energy consumption for the alternative lift configurations are to be estimated and the system with the lowest energy consumption should be selected and further developed.
1.3 The elevators are equipped with an energy-efficient drivesystem. This is the case if the specific energy consumption while operating, as determined according to VDI 4707-1, is less than 1.26 MWh / (kg * m) (C energy label for operation).
1.4 The elevators consume a limited amount of energy during downtimes.This is the case if the power consumption in the standby state, as determined according to VDI 4707-1, is less than 400 W (D energy label for standby).
1.5 The manufacturer declares that the yield decrease over the life expectancy of the drivesystem amount up to maximum 5%.
1.6 The lift is equipped with a system in which the power consumption of the motor is automatically made dependent on the payload (the number of people or the amount of goods carried at any one time), for instance, peak loads are removed by applying frequency control on the drive system.

2.1 The first point is achieved.

2.2 The specific energy consumption while driving, as determined according to VDI 4707-1, is less than 0.84 MWh / (kg * m) (B energy label for drive).

2.3 The power consumption in standby status, as determined according to VDI 4707-1, is less than 200 W (C energy label for standby).

2.4 In case of multiple elevators in a group, they are automatically synchronized, so that the lifts do not handle the same request unnecessarily, the nearest lift handles a request, or another

optimisation system is provided that optimally pursues and tunes the number of elevator movements to the actual need and optimal car load.

2.5 The entrance to the stairs is clearly indicated next to the lifts.

2.6 The lift is equipped with a power saving function, which is activated by the (group) control depending on the volume of traffic. The power saving function can be realised by, for instance, the temporary removal of a lift from the group, reducing speed depending on load capacity, or by focussing on a optimal load factor.

2.7 The lift is equipped with a system that allows the released energy to be recovered and returned to the power grid or otherwise usefully utilised. Lifts for which energy recovery is already naturally part of the elevator technique used, this requirement is automatically fulfilled. Elevators also comply automatically if, due to a limited number of floors, applying brake energy recovery is not useful. In that case, however, the other Compliance requirements have to be met.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

-

Arguably indispensable

For elevators that are demonstrably indispensible functionality wise (for example parking lifts, lifts designed for people with reduced mobility, cargo lifts, or a single lift in a residential building) no simulations have to be performed, but the functional necessity needs to be attested, and proof should be provided that the lift(s) are no larger and or faster that neccesary.

No energy recovery possible due to building dimensions

If the recovery of braking energy is not useful due to the low height of the building, the credit can still be earned if the other requirements are met.

Wheelchair lifts and cargo lifts

The requirements do not apply to wheelchair lifts and stair lifts specifically designed for people with reduced mobility. Also cargo lifts designed to bridge less than a floor to do not have to meet the Compliance requirements.See also definition of lifts.

Lifting speed at some lift

In situations where only one elevator is used and where there is no performance requirement for, for example, the waiting time, the following can be accepted as the minimum lift speed:

- property / utility lifts for persons at least 1.0 m / s;
- goods / passenger lifts at least 0.5 m / s.

Lower speeds usually satisfy according to calculations, but are often not practically usefull.

Offices

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Retail

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Industrial buildings

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School

-

Residential

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Meeting

-

Lodging

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of the report with the analyses carried out, the findings and recommendations.
B	1.3 t / 1.6 m	A copy of the relevant sections of the specification of the work and / or drawings which indicates: • locations of lifts; • type of lift and propulsion; • a copy of the elevator simulation calculations showing the best matched concept is chosen for the situation (Fit for Purpose). • the expected specific energy consumption during operation and power consumption in stand-by status, determined on the basis of a similar reference project which is measured according to VDI 4701-1; • which control system switches the power consumption of the elevator automatically to the current payload.
D	2.1 and 2.7	A copy of the relevant sections of the specification of the work plans which indicates: • that a sign is prominently displayed at every elevator

		pointing to the stairs on each floor; • what type of system is used for the processing of requests and the method of mutual alignment between the elevators, • which power saver functions and which speed control as a function of the car load is to be applied; • which system of recovery of braking energy is applied. If the building designer considers that the application of regenerative braking is not useful, it should be demonstrated with a specification of the elevator manufacturer, by any calculation or further evidence on the part of the building designer. If the recovery of braking energy is already naturally present in the lift technique used, it must be demonstrated on the basis of further specification of the side of the elevator manufacturer.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.3 t / m 1.6 and 2.2 and 2.3	A copy of the lift specification and manufacturer's declaration regarding the performance decrease over the life expectancy of the drive system;
F	1.1 t / 2.7 m	A statement by the assessor that during the site inspection the existing lifts are checked for compliance with the Compliance requirements, supplemented by photographs;
G	1.3 t / m 1.6 and 2.2 and 2.3	An independent test report drawn up which shows the specific energy consumption during operation and the power consumption in standby status, according to VDI 4707-1.

Definitions

By 'lift' shall be meant an appliance operated serving specific levels of buildings, using a car moving along afixed, relative to the horizontal plane of more than 15 degrees, guiding rail and intended for the transport of

- people;
- people and goods;
- goods alone if the car is accessible, that is to say that a person can enter without difficulty and fitted with controls in the cage or within the reach of a person contained therein.

Lifts that follow a fixed course in the area and with a lifting speed greater than 0.15 m / s, even though they do not move along fixed leaders, fall within the scope of the Directive (for example, scissor lifts).

This credit does not apply to:

- Cableways, including funicular railways, for the public or private transportation of persons.
- lifts specially designed and constructed for military or police purposes to maintain the order.
- Mine Elevators.
- Theater elevators.
- Lifts fitted in means of transport.

- With lifts connected to machinery and intended exclusively to. Access to the workplace,
- Rails.
- Platforms.
- Wheelchair Lifts.
- Stairlifts.
- Goods lifts with a bridging less than one floor.

Additional Information

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References

- SBR National Sustainable Building Package (Dubocatalogus), measure U484.
- VDI 4707-1 Lifts - Energy efficiency (German standard, original title: Aufzüge - Energieeffizienz).
- (Still under development) prEN ISO 257451-1 & 2 Measurement energy efficiency elevators.
- NTA 4614-4: Highrise Part 4: Lift Installations.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 9 Energy-efficient escalators and travelators

Aim
Stimulating energy saving and CO_2 reduction through the use of energy-efficient escalators and moving walkways.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	energy efficient escalators and moving walkways are used.

** In this credit, the term 'travelator' is used, ramps are also included in this.*

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The escalators are equipped with an energy-efficient drive, ie the phase that the escalator or moving walk consumes does not exceed 15 mA per kg payload at a speed of 0.5 meters per second, at higher speeds, energy consumption should increase directly proportional (see Further information).
1.2 The escalators and moving walkways have a motor with an efficiency (electrical and mechanical) of over 90%.
1.3 The escalators and moving walkways have a system where the power of the engine is reduced depending on payload (the number of people at any one time), for instance, peak loads are removed by applying frequency control on the drive system.
1.4 The escalators and moving walkways have a stand-by system in which the escalator or moving walk automatically shuts down and stops when not in use over a longer period of time.
Note: In some cases it is more energy efficient to have escalators or moving walkways running at low speed, see Compliance notes.
1.5 For each up-or downward escalator or moving walkway an information sign is affixed indicating where the regular stairs (if any) are located.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

-

Office
-

Retail
-

Meeting Function
-

Lodge
-

Auto power off
Auto power off is highly dependent on the situation, and is only useful if the escalator or moving walk is not in use for a longer time period. With frequent use, if the escalator or moving walk has to come to a full stop it can have an adverse effect on energy consumption and can be better to run at low speed. In this case it is necessary to provide a report by the consultant or supplier.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.5 m	A copy of the relevant sections of the specification of the work and a statement from the manufacturer / installation or a copy of the relevant sections of the specification and drawings of the work, which indicates: • where exactly escalators and / or moving walkways are located in the building; • which type of escalator respectively moving walkway and drive system is applied; • the presence of a standby system; • which control system adjusts the power consumption of the escalator respectively moving walkway automatically to the current payload, or for each escalator / moving walkway a sign is affixed on each floor indicating where the stairs are located.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 1.5 m	a statement by the assessor that during the site inspection the existing escalators and moving walks are checked for compliance with the Compliance requirements.

Definitions
None.

Additional Information

In determining how much the maximum current is of the elevator motor at different running speeds, the following table is used:

Lift Speed	Maximum AC per kg tillast
≤ 0.50 meters per second	15 mA
> 0.50 meters per second	25 mA

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

ENE 26 Assurance of thermal quality of building shell

Aim
Encouraging that buildings are constructed as designed and realized with the lowest possible $_{CO2}$ emissions.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that:

1	1 point	post construction, heat loss measurements were made in the form of a thermographic survey showing that the thermal insulation is properly installed and that no thermal irregularities are found.
2	1 point	post construction, heat loss measurements were made in the form of an air permeability test showing that the building meets the design specifications regarding airtightness on which the energy performance of the building was calculated and determined.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A thermographic survey is conducted during the completion phase of the building, which meets the requirements they have set in BS EN 13187 Thermal performance of buildings - Qualitative detection of thermal irregularities in building fabric - Infrared method, showing that:

- there are no significant thermal leaks present;
- no excessive thermal bridges are present;
- no significant air infiltration occurs, except where it is deliberately designed and arranged (eg vents).

1.2 Any defects identified via the thermal inspection are to be corrected after which the building will be examined again in order to confirm that it meets the requirements of the first point.

1.3 If the weather conditions during the completion of the building are not favorable for reliable thermographic measurement (for example during the summer for heating functions and during the winter for refrigeration functions), it is allowed to perform the thermographic measurement later. It should be proven that in the period of the application for the certificate no timeframe was available for a meaningful thermographic measurement.

1.4 This item is only granted if the contractor has been informed in advance of the fact that the relevant investigations take place, because only then the desired improvement in the quality of construction will take place.

2.1 An air permeability test according to EN 13829 (Method A) is performed during the completion phase of the building.The measurement also meets the following requirements:

- The air permeability test is carried out both in an under-pressure and over-pressure situation.
- The measurement is carried out with a confidence level of ≥ 90%, the under- and over pressure values both have to be reported.
- There are at least six measuring points (five intervals).

- The interval between the measurement points is ≥ 5 and ≤ 10 pascal.
- The measuring point of lowest pressure is at least 25 pascal.
- The measuring points and other principles are embodied and described in a report, which is prepared in accordance with BS EN 13829.
- The results of the air permeability test should be converted and be compared to the $q_{v;10}$ value from the EPC calculation. If due to the function of the building no EPC calculation is made, the outcome of the measurement with the Q_{50} value (air permeability per m^2 front surface) is to be compared to Table X;

2.2 The basic principle is that preferably the entire volume of a building is tested for air-tightness, but it is possible that in special situations, sample testing is desired. If, because of the specific situation that has been clearly argumentated in the measurement report, a representative sample may be desired, the principles in ATTMA TSL2 section 5 apply..

2.3 This item is only granted if the contractor has been informed in advance of the fact that the relevant investigations take place, because only then the desired improvement in build quality will also be applied.

Table ENE26.1: Minimum requirements air permeability (based on best practice values, ATTMA TSL2)

	Air permeability per m^2 of wall surface (m^3 / hm^2) at 50 Pa (q_{50})
Industrial buildings	2.0
Koel-/vrieshuizen	0.2

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

-

Building with multiple functions and different infiltration requirements

If several Qv10 are required (by function), the EPC should be measured and tested by function. This means that during the performance measurement all penetrations between the different functions should be taped.

Hull

-

Offices

-

Retail
-

Industrial buildings
-

School
-

Residential
-

Meeting Function
-

Lodge
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.3 m	A copy of the relevant paragraphs in the specification of the work from which is derived that the air density measurement and / or thermographic measurement is carried out.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 2.3 m	A copy of the report of the thermographic survey showing that the thermal insulation of the building is properly installed and contains no thermal irregularities, as well as evidence showing that the study was conducted by a trained and qualified person.
D	1.3	If applicable: Argumentation by the thermographic expert that in the period of certification no timeframe was available for a meaningful thermographic measurement.
C	2.1 t / 2.3 m	A copy of the report of the air permeability measurement taken, showing that the building level of airtightness as required by the design is achieved within the building fabric, as well as evidence showing that the measurement model and the techniques used to meet the credit requirements and are performed by a trained and qualified person.

Definitions
None.

Additional Information
None.

References

- BS EN 13829: Thermal performance of buildings - Determination of air permeability of buildings - Pressure Method.
- BS EN 13187: Thermal performance of buildings - Qualitative detection of thermal irregularities in building fabric - Infrared Method.
- ATTMA TSL2: Measuring Air Permeability of Buidling Envelopes (Non-Dwellings).

04 Transport

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	-	√	√	√	-	-

TRA 1a Provision of public transport – offices, schools and industrial buildings

Aim

Recognizing and encouraging developments of a good public transport network in the vicinity, by which transport-related emissions and traffic jams are reduced.

Credit criteria

Up to 2 points are awarded.

There should be substantial evidence that::

1	1 point	good access to public transport is guaranteed.
2	2 points	very good access to public transport is guaranteed.

Compliance requirements

The following demonstrates that the criteria are met:

1.1 The distance from the building to the public transport stop is ≤ 500 meters, and
1.2 Public transport frequency of ≤ 15 minutes during peak hours (7:30 to 9:30 am and 17.00-19.00) to a city center or a public transport hub, where the journey takes ≤ 15 minutes.
Or
1.3 The distance from the building to a public transport hub is ≤ 1000 meters.

2.1 The first point is met.
2.2 At least two of the three following characteristics are satisfied:

a) The distance from the building to the public transport stop is ≤ 250 meters.
b) Public transport is at a frequency of ≤ 10 minutes.
c) Throughout the day, during business hours / opening times public transport goes to a city center or a public transport hub with a frequency ≤ 15 minutes.

Additional Compliance requirements

Meeting Function

If in a building only a canteen has a meeting function, the points of the meeting function is determined by the above Credit criteria.

Main Entrance

The distances above are applicable to an available safe pedestrian routes between the main building entrance and source / destination and a public transport stop. The shortest walkable distance via safe pedestrian routes is measured. The main building entrance is the entrance to the assessed building accessed by the majority of the building's staff and visitors, not the site entrance (unless the site entrance is also the building entrance e.g. building with a boundary on a public highway).

Large area phased developments

In the event of a large phased area development, with new scheduled public transport services that are not available at the time of the assessment can be used to assess only those facilities which included the following requirements:

Additional requirement 1: the client made a commitment to provide public transport facilities, which is fixed in the contract documents or relevant sections of the specification of the work.
Additional requirement 2: these public transport facilities are available within the shorter of the two periods listed below with a maximum of five years:

- The public transport facilities are supposed to be available for use once 25% of the total area development (all phases) is ready and available for use.
- The public transport facilities are supposed to be available for use once 25% of the total construction time of the area development which the to certify building is part, has expired.

Measured from the completion date of the respective phases.

Explanation: the public transport facilities should be available within the shortest of the periods, so is guaranteed that the time building users have to wait until the public transport facilities are available, is as short as possible.

Company bus
If a separate company bus service is provided for staff during, before or after the opening hours of the building, the building entrance may be replaced by the departure point of the company bus and accessibility to the public transport point from this departure point are measured.

Multiple stops are within range
Public transport services that run from multiple stops within the range of the object, for example, two separate stops which are served by a single service may be considered only once. Different public transport services from one or more stops within the range of the object, should be taken into account separately however.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t/m 2.2	Scale map highlighting the location of the building and all public transport nodes in proximity of the building.
B	1.1 t/m 2.2	Timetables for each service at each public transport node considered.
C	1.1 t/m 2.2	Where appropriate information about the dedicated bus service.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t/m 2.2	Checking distances to public transport as provided in the design phase. Where changes have occurred since the design stage, full details of the changes required, demonstrating that requirements are still met

Definitions

Public Transport
Public transport passenger that is publicly accessible, that is to say that anyone who wants to can make. Use of the transport

Visiting hours
The times when a (public) object is opened.

Public transport hub
This is defined as a node of one or more modalities ((fast) bus, tram, metro, train) that provides connection to the local and regional public transport network.

Additional Information

References

- ASVV (2004) Recommendations on traffic in urban areas. CROW, Ede.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
-	√	-	-	-	√	√

TRA 1b Provision of public transport - retail, lodging and meeting

Aim
Recognizing and encouraging developments of a good public transport network in the vicinity, by which transport-related emissions and traffic jams are reduced.

Credit criteria
Up to four points are awarded.

There should be substantial evidence that::

1	1 point	access to public transport is guaranteed.
2	2 points	good access to public transport is guaranteed.
3	3 points	very good access to public transport is guaranteed.
4	4 points	excellent access to public transport is guaranteed.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 t / 4.1 m
The journey of the public transport connection to a public transport hub is ≤ 15 minutes and/or the public transport hub is within 500 meters of the building.

1.2 Within 500 meters from the building is a public transport connection to and from the building with a frequency of ≤ 15 minutes during business hours.

Or

1.3 Within 300 meters from the building is a public transport connection to and from the building with a frequency of ≤ 20 minutes during business hours.

2.2 Within 500 meters from the building is a public transport connection to and from the building with a frequency of ≤ 10 minutes during business hours.

Or

2.3 Within 300 meters from the building is a public transport connection to and from the building with a frequency of ≤ 15 minutes during business hours.

Or

2.4 Within 100 meters from the building is a public transport connection to and from the building with a frequency of ≤ 20 minutes during business hours.

3.2 Within 300 meters from the building is a public transport connection to and from the building with a frequency of ≤ 10 minutes during business hours.

Or

3.3 Within 100 meters from the building is a public transport connection to and from the building with a frequency of ≤ 15 minutes during business hours.

4.2 Within 100 meters from the building is a public transport connection to and from the building with a frequency of ≤ 10 minutes during business hours.

Or

4.3 The public transport node is within 500 meters of the building.

Additional Compliance requirements

Meeting Function

If in a building only a canteen has a meeting function, the points of the meeting function are calculated by the credit TRA 1 Supply of public transport (ov) - offices, schools and industrial buildings.

Main Entrance

The distances above are applicable to an available safe pedestrian routes between the main building entrance and source / destination and a public transport stop. The shortest walkable distance via safe pedestrian routes is measured. The main building entrance is the entrance to the assessed building accessed by the majority of the building's staff and visitors, not the site entrance (unless the site entrance is also the building entrance e.g. building with a boundary on a public highway).

Evening and night hours

The frequency of a public transport connection between 22:00 and 6:00 hours may be disregarded.

Large area phased developments

In the event of a large phased area development, with new scheduled public transport services that are not available at the time of the assessment can be used to assess only those facilities which included the following requirements:

Additional requirement 1: the client made a commitment to provide public transport facilities, which is fixed in the contract documents or relevant sections of the specification of the work.
Additional requirement 2: these public transport facilities are available within the shorter of the two periods listed below with a maximum of five years:

- The public transport facilities are supposed to be available for use once 25% of the total area development (all phases) is ready and available for use.
- The public transport facilities are supposed to be available for use once 25% of the total construction time of the area development which the to certify building is part, has expired.

Measured from the completion date of the respective phases.

Explanation: the public transport facilities should be available within the shortest of the periods, so is guaranteed that the time building users have to wait until the public transport facilities are available, is as short as possible.

Company bus

If a separate company bus service is provided for staff during, before or after the opening hours of the building, the building entrance may be replaced by the departure point of the company bus and accessibility to the public transport point from this departure point are measured.

Multiple levels are within range

Public transport services that run from multiple stops within the range of the object, for example, two separate stops which are served by a single service may be considered only once. Different public

transport services from one or more stops within the range of the object, should be taken into account separately however.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t/m 4.3	Scale map highlighting the location of the building and all public transport nodes in proximity of the building.
B	1.1 t/m 4.3	Timetables for each service at each public transport node considered.
C	1.1 t/m 4.3	Where appropriate information about the dedicated bus service.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t/m 4.3	Checking distances to public transport as provided in the design phase. Where changes have occurred since the design stage, full details of the changes required, demonstrating that requirements are still met

Definitions

Public Transport
Public transport passenger that is publicly accessible, ie anyone who wishes of the transport service can use.

Visiting hours
The times when a (public) object is opened.

Public transport hub
This is defined as a node of one or more modalities ((fast) bus, tram, metro, train) that provides connection to the local and regional public transport network.

Additional Information
The distances above are applicable to available safe pedestrian routes between the main gate and source / destination and a public transport stop.Measured the shortest walkable distance via safe pedestrian routes.

References

- ASVV (2004) Recommendations on traffic in urban areas. CROW, Ede.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
-	-	-	-	√	-	-

TRA 1c Provision of public transport - Residential

Aim

Recognizing and encouraging developments of a good public transport network in the vicinity, which transport-related emissions and traffic jams are reduced.

Credit criteria
Up to 2 points are awarded.

There should be substantial evidence that::

1	1 point	access to public transport is guaranteed.
2	2 points	good access to public transport is guaranteed.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Distance from building to public transport links to and from the city center and public transport hub is ≤ 1000 meters.
1.2 Public transport stop is reached by using a secure walkable route
1.3 On weekdays a public transport frequency of ≤ 30 minutes during peak hours (7:30 to 9:30 am and 17.00-19.00).
1.4 At the weekend a public transport frequency of ≤ 60 minutes outside peak hours (7:30 to 9:30 pm and 17:00 to 19:00 hours).

2.1 Distance from building to public transport stops to and from the city center and public transport hub is ≤ 500 meters.
2.2 Public transport stop is reached using a secure walkable route
2.3 On weekdays a public transport frequency of ≤ 15 minutes during peak hours (7:30 to 9:30 pm and 17:00 to 19:00 hours).
2.4 public transport has a weekend rate of ≤ 30 minutes outside peak hours (7:30 to 9:30 pm and 17:00 to 19:00 hours).

Additional Compliance requirements

Large area phased developments
In the event of a large phased area development, with new scheduled public transport services that are not available at the time of the assessment can be used to assess only those facilities which included the following requirements:

Additional requirement 1: the client made a commitment to provide public transport facilities, which is fixed in the contract documents or relevant sections of the specification of the work.
Additional requirement 2: these public transport facilities are available within the shorter of the two periods listed below with a maximum of five years:

- The public transport facilities are supposed to be available for use once 25% of the total area development (all phases) is ready and available for use.
- The public transport facilities are supposed to be available for use once 25% of the total construction time of the area development which the to certify building is part, has expired.

Measured from the completion date of the respective phases.

Explanation: the public transport facilities should be available within the shortest of the periods, so is guaranteed that the time building users have to wait until the public transport facilities are available, is as short as possible.

Large residential developments

In a large residential development, the following can be considered;

1. Where 80% or more of the dwellings are within 1000m of the development's main entrance, then the main entrance can be used as the reference point for measuring the distance to the nearest transport node. The development's main entrance is that which is accessed by the majority of the assessed devel-opment's residents/visitors.
2.

- Where there are less than 80% within 1000m, or there are multiple main entrances, the reference point should be the mid-point of all entrances.
- Where the distance is not measured from a main entrance, the public transport node must be within the required distance for 80% of the assessed dwellings if it is to be used within the calculation.

Multiple levels are within range

Public transport services that run from multiple stops within the range of the object, for example, two separate stops which are served by a single service may be considered only once. Different public transport services from one or more stops within the range of the object, should be taken into account separately however.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t/m 4.3	Scale map highlighting the location of the building and all public transport nodes in proximity of the building.
B	1.1 t/m 4.3	Timetables for each service at each public transport node considered.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t/m 4.3	Checking distances to public transport as provided in the design phase. Where changes have occurred since the design stage, full details of the changes required, demonstrating that requirements are still met

Definitions

Public Transport

Public transport passenger that is publicly accessible, ie anyone who wishes of the transport service can use.

Visiting hours

The times when a (public) object is opened.

Public transport hub

This is defined as a node of one or more modalities ((fast) bus, tram, metro, train) that provides connection to the local and regional public transport network.

Additional Information

The distances above are applicable to available safe pedestrian routes between the main gate and source / destination and a public transport stop.Measured the shortest walkable distance via safe pedestrian routes.

References

- ASVV (2004) Recommendations on traffic in urban areas. CROW, Ede.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	√	√	√

TRA 2 Proximity to amenities

Aim
Recognizing and encouraging developments in close proximity to local amenities which transport-related emissions and traffic jams are reduced.

Credit criteria
A maximum of 1 point will be awarded.

There should be substantial evidence that::

1	1 point	some (local) facilities (supermarkets etc) are present within a walking distance of 500 m.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 At least three of the following features must be present within a walking distance of 500 meters from the main entrance of the building:

- Canteen or lunchroom.
- Supermarket.
- ATM (pin).
- Sports facility (s).
- Childcare or nursery.

1.2 Other facilities, at least one of the following facilities should be present within a walking distance of 500 meters from the main entrance of the building: bookstore, newsagent, pharmacy, drugstore, hairdresser, bicycle repair, dry cleaning, weekly market, flower shop, gas station.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

-

Large phased developments

With regard to the same requirements as phased developments under TRA 1.

Combined facilities
The devices may also be combined in a store (such as a grocery store in a gas station, an ATM in a supermarket etc.) necessary to avoid the point.

Facilities in the building
Services that are present in the building or on the grounds also meet the requirement to get a credit.

Other provisions
If several of the other provisions mentioned are present, this counts as only *one* other facility.

Offices
-

Retail
-

Industrial buildings
-

School
-

Meeting
-

Lodging
-

Residential
In case of a residential development at least five of the facilities must be within a walking distance of 500 meters from the present main entrance of the building. In addition to the listed criteria in the standards, the following amenities are also permitted:

- Primary school, pre school
- Doctor's office / hospital
- Prayer facilities
- Community center
- Playground
- Post office
- Public space (park, square, courtyard)

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A scale map of the area around the building, indicating: • Location and building entrance. • Location and types of facilities.

		• Walking and cycling routes and distance to the amenities.
B	1.1 and 1.2	When facilities are still under development, it should be confirmed with a letter from the developer: • Location and type of facility being developed; • The schedule stating when the facilities will be realised.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 and 1.2	Report of building inspection by the assessor with evidence / photos of the facilities.
D	1.1 and 1.2	When facilities are still under development, it should be confirmed with a letter from the developer: • Location and type of facility being developed; • The schedule stating when the facilities will be realised.

Definitions

Walking distance
The distance is measured via safe walking / sidewalks and safe crossings (not in a straight line).

Supermarket
A supermarket is a relatively large self-service store where food and household items are sold. One speaks of a supermarket if there except food fresh produce department is also present with fresh vegetables, bread and meat.

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	-	√	√

TRA 3a Alternative modes of transport – non residential

Aim
Encouraging building users to make use alternative transportation, other than the private car, to and from the building

Credit criteria
Up to 2 points are awarded.

There should be substantial evidence that::

1	1 point	adequate bicycle storage facilities are provided.
2	1 point	there are additional facilities are provided for building users who come to the building by bike.
3	1 point	in consultation with local authorities, an optimal situation with regards to public transport accessibility achieved.
4	1 point	There are parking facilities present for charging for electric vehicles and the electricity for charging electric cars originates from 100% proven sustainable sources.
5	1 point	the use of carpooling or car sharing is encouraged and on site facilities are available to facilitate carpooling and car-sharing

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The number of bicycle parkings (at least two) depends on the number of occupants and is determined in accordance with the instructions as mentioned in the Compliance notes.
1.2 There is a possibility to attach a lock to, both the wheel and the frame of the bike, a secured object (eg, a paving stone with slot for bicycle wheel does not meet the requirement).
1.3 In relation to social security the entrance to the bicycle lot is clearly visible from the building if it is not in the building.

2.1 The requirements of the first point have been met.
2.2 At least two of the following additional facilities should be available for the building useShowers (10% of the number of storage locations with a minimum of two).

- Changing rooms with lockers, where:
  - changing rooms 10% of the number of storage sites with a minimum of two;
  - lockers 20% of the number of storage sites with a minimum of two,.
- A place for drying wet clothes.

3.1 During the design phase a look has been taken at the optimal situation regarding the public transport accessability, in cooperation with the local government

3.2 The optimal plan for public transport accessibility is made and has a significant impact on the supply of public transport.

4.1 There are charging stations for electric vehicles, suitable for all common connections for at least 3% of the total parking capacity, the ratio charging posts for visitors and charging posts for staff is 1 in 4. The minimum number of charging stations is a charging station for visitors and a charging station for staff.
4.2 The electricity for the charging points for electric vehicles comes from 100% renewable energy: electricity from proven renewable sources (see Definitions).

5.1 During development carpooling is encouraged and facilitated by a carpool information point (this may be a website) with information about carpooling and the ability to carpool with opportunities to bring employees together.
5.2 Carpoolers are designated priority parking at locations near the (main) entrance of the building.
5.3 The number of carpool parking spaces is at least 5% of the total amount of parking.
5.4 Employees are informed of the possibility of commercial car sharing and facilitated regarding reservation and usage.
5.5 During development, in cooperation with an organization for car sharing (with for instance Autodate / Greenwheels), facilities are made available for employees. These could include:

- Reserved parking for the benefit of one or more cars.
- Automatic key dispenser system.

Exemplary performance
The following criteria show an exemplary performance and makes it possible to earn one innovation point for this BREEAM-NL credit:

- Four credit points are earned.
- It is a mixed-use development where homes are also part of the assessment. In this case exemplary performance is required for both TRA 3 Alternative transport - other as TRA 3 Alternative transport – housing (In total 1 Innovation point can be earned)

Compliance notes

Requirement 1.1 t / 1.5 m

If for multiple buildings within 100 meters one or more joint bicycle parking are present or being realised, then the occupancy rates of all related buildings should be taken into account.

Requirement 5.1 t / 5.5 m
If no parking on site, then this option can be still carried out, the requirement for priority parking expires in that case.

Green energy
From one of the renewable sources as defined by ENE 5 credit.

Green energy for charging points for electric vehicles may also be purchased, provided it's from a demonstrably sustainable source that complies with the following rules:

- Electricity from renewable energy sources wind, solar, hydro or biomass produced in the Netherlands.
- The composition of renewably generated electricity is demonstrated on the basis of the certification system with 'guarantees of origin' (current labeling).
- The building user-owner or manager has a supply contract for a minimum period of three years for which is have shown that the size of the contract is reasonably sufficient to supply the charging posts with green energy for a period of three years.

Bicycle parking

- Offices and industry:
  - Covered and lit bicycle parking for at least:
    - 10% of the total number of building users up to 500 users;
    - 7% of the total number of building occupants from 501 up to 1000 users;
    - 5% of the total number of building occupants out of 1000 or more.
  - Lighting meets BS EN 12464-1, where the bicycle parking must comply with the limits of a parking garage (Table 5.34.4, E_m and U_o).

- Schools and nursery:
  - Covered and lit bicycle parking for at least 20% of the equivalent to full-time employees.
  -
  - A minimum number of bicycle parkings per pupil/student must be present, according to the type of school
    - Primary school: at least 40 storage places per 100 students.
    - Secondary education: at least 70 storage places per 100 students.
    - Higher education: at least 70 storage places per 100 students.
    - Nursery: at least 10 storage places per 100 children.
  - Lighting meets BS EN 12464-1, where the bicycle parking must comply with the limits of a parking garage (Table 5.34.4, E_m and U_o).

- Retail, accommodation and meeting function:
  - Covered and lit bicycle parking for at least 10% of the equivalent to full-time employees.
  - 5% of the total number of parking spaces for visitors (excluding disabled parking).With a minimum of 10 parking sites.
  - Any development that meets at least 50 storage places for visitors, regardless of the number of parking spaces, meets the requirements.
  - The storage places of the employees and visitors may be realized jointly but should not be added together to meet at the requirement.
  - Lighting meets BS EN 12464-1, where the bicycle parking must comply with the limits of a parking garage (Table 5.34.4, E_m and U_o).

Meeting Function

If in a building only a canteen has a meeting purpose (in other words it is a secondary function of the main function), the amount of points that can be awarded according to the main function can be awarded for the meeting function.

Hull
If it is not possible to determine the number of users during development, the standard of one user per 10 m ^{2} GFA should be assumed.

If the prospective user will provide storage places for bicycles , a written statement of the future user, which indicates all the requirements for this credit from BREEAM will be met, can be submitted as evidence, in addition to the rental contract.

City Center - Office and industrial
If a building is located within an urban area and at least two points are awarded according to TRA 1, the amount of bicycle parking places may be halved.

City Center - Retail, accommodation and meeting
If a building is located within an urban area and at least 3 credit critera are met according to TRA 1, the amount of bicycle parking places may be halved.

New building
-

Renovation
-

Expansion of existing buildings
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	Situation drawing, design drawings and / or a copy of the specification, which indicates: • The location of the bicycle parking. • The number of storage spaces. • Type, size and layout of the bike racks. • The lighting of the facility. • Data numbers occupants and / or surface use.
B	2.2	Calculation of the number of facilities.
C	2.2	Situation drawing, design drawings and / or a copy of the specification, which is indicated: • Number of showers. • Number of changing rooms. • Lockers, location, size and number. • Location for drying clothes.
D	3.1 and 3.2	Reports of the consultations held with the local government and a written statement from the local government regarding the decision taken as a result of this consultation.
E	4.1	Calculation of the number of charging points.
F	4.1	Situation drawings indicating the locations of charging points.

G	4.1	Specifications of charging points to place.
H	4.2	Contract documents indicating that the charging points are supplied with 100% renewable energy, including a statement of the energy supplier and the energy source used. Or Written declaration of the owner which indicates that a contract regarding the supply of 100% renewable energy, as required, will be in place.
I	5.1 t / 5.3 m	Drawing situation with designated parking for car sharing.
J	5.1 t / 5.3 m	Information on how carpooling will be promoted with employees.
K	5.4 and 5.5	Contract with an organization for car-sharing with regard to the planned construction of the necessary facilities. OR A written statement by the owner / operator that during the use of the property, the requirements regarding car sharing for BREEAM will still be realised.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

L	1.1 t / 2.2 m	Report by the assessor with photographic evidence of the facilities.
M	3.1 and 3.2	Reports of the consultations conducted with the local government and a written statement from the local government regarding the decision taken as a result of this consultation.
N	4.1	Written report of the assessor, supported by photographs which indicates compliance with the evidence as supplied for the design phase.
O	4.2	Contract documents indicating that the charging points are supplied with 100% renewable energy, including a statement of the energy supplier and the energy source used.
P	5.1 t / 5.5 m	Written report of the assessor, supported by photographs which indicates compliance with the requirements regarding car sharing and car pooling

Definitions

Gross floor area (GFA)
This is the floor area of the room or several rooms of a property measured (NEN 2580) at floor level along the outer periphery of the (outer) ascending partition, that the relevant area (s) envelops.

Use Surface
Use space referred to in NEN 2580.

Commercial car sharing

A car rental organization in the short term (every half hour) are provided. The cars are often nearby locations or on-premises available on this reserved parking and can be discussed through internet. Depending on the device is the key of the car available in a safe in the car or in a central vault in a nearby facility. This safe is opened with a personal code.

Additional Information

Mixed-use buildings

If a development consists of several building types should be. Facilities in accordance with the different building types by size of building type, or amount of users, designed If desired, the facilities can be subsequently attached to each other.

References

- Decree Div. 4:11 bicycle storage, new construction.
- National Sustainable Building Package B450/U450.
- FietsParKeur mark.
- CROW publication 158: Guidance bicycle parking.
- CROW publication 683: Bike Parking Guide.
- SBR publication: Building Blocks - Guide to making a list of requirements.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
-	-	-	-	√	-	-

TRA 3b Alternative modes of transport - residential

Aim
Encouraging building users to travel to and from the building using alternative transportation, other than the private car.

Credit criteria
Up to 2 points are awarded.

There should be substantial evidence that::

1	1 point	adequate bicycle storage facilities are provided.
2	1 points	an optimal situation regarding public transport accessibility is agreed upon in consultation with local authorities
3	1 point	electric charging posts are present for the residents.
4	1 points	a common 'car association "was established where residents can share a local car fleet.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A covered, lockable and illuminated individual or combined storage space for each resident.
1.2 In case of a joint storage location (for multiple properties):

- there is a possibility to lock both the wheel and the frame of the bike attached to a secured object (eg. a paving stone with slot for bicycle wheel does not).
- lighting complies with BS EN 12464-1, where the bicycle parking must comply with the limits of a parking garage (Table 5.34.4, E_m and U_o).

2.1 In cooperation with the local government the optimal situation regarding public accessibility is looked at in the design.
2.2 The optimal plan for public access is implemented and has a significant impact on the supply of public transport.

3.1 The presence of charging stations for electric vehicles, suitable for all common connectors, with a minimum of one outlet per two dwellings.

4.1 The presence of a common 'car association' where residents can use the cars based on the 'pay-as-you-drive principle.
4.2 The car association is introduced to potential home buyers through sales brochures of homes.
4.3 Details of the car association with the costs and opportunities to participate will be provided at each property.

Exemplary performance
The following criteria shows an exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

- Three credit points are earned.

• It is a mixed-use development where other functions are also part of the assessment. In this case exemplary performance is required for both TRA 3 Alternative transport - other as wel as TRA 3 Alternative transport – housing (In total 1 Innovation point can be earned)

Compliance notes

Number of Residents
Within the credit TRA 3 the following principles should be used to determine the number of occupants:

- Studio / one bedroom, two residents.
- For each additional bedroom (regardless of size): an additional occupant.

New building

-

Renovation

-

Expansion of existing buildings

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	Situation Drawing, design drawings and / or a copy of the specification, which indicates: • The location of the bicycle parking. • The number of storage sites. • Type, size and layout of the bike racks. • The materials and construction of the facility. • The lighting of the bicycle parking. • Data from some residents.
B	2.1 and 2.2	Reports of the consultations held with the local government and a written statement from the local government regarding the decision taken as a result of this consultation.
C	3.1	Calculation of the number of charging points.
D	3.1	Situation Drawings indicating the locations of the charging stations are indicated.
E	3.1	Specifications of charging points to place.
F	4.2	Sales Brochures of the house where the car association was introduced in.
G	4.3	Brochure of the car association with costs and opportunities to apply.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

H	1.1 and 1.2	Report by the assessor with photographic evidence of the facilities.
I	2.1 and 2.2	Reports of the consultations conducted with the local government and a written statement from the local government regarding the decision taken as a result of this consultation.
J	3.1	Report by the assessor with photographic evidence of the charging points available.
O	4.2 and 4.3	Report by the assessor with photographic evidence of the information about the car association.

Definitions
None.

Additional Information
None.

References

- Decree Div. 4:11 bicycle storage, new construction.
- National Sustainable Building Package B450/U450.
- FietsParKeur mark.
- CROW publication 158 Guidance bicycle parking.
- CROW publication 683 Bike Parking Guide.
- SBR publication: Building Blocks - Guide to making a list of requirements.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	-	√	√

TRA 4 Pedestrian and cyclist safety

Aim
Stimulating the presence of available safe pedestrian and bicycle access routes to the site.

Credit criteria
Up to 2 points are awarded.

There should be substantial evidence that::

1	1 point	A good and safe access for cyclists is guaranteed on the location.
2	1 point	A good and safe access for pedestrians is guaranteed on the location.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A bicyle lane runs from the entrance of the site to the bicycle parking.
1.2 A bicyle lane must be connected directly from the public road to a clearly marked bicycle parking.
1.3 A bicyle lane is illuminated in accordance with NEN-EN 12464-2 Light and lighting - Workplace lighting - Part 2: Outdoor work places.
with the ROVL 2011 - Guidelines for Public Enlightenment.
1.4 A bicyle lane is connected to public bicyle lanes outside the premises.
1.5 A bicyle lane preferably crosses no roads. If a bicycle lane crosses a road, this should be marked clearly in color and markings on the road.
1.6 A bicycle lane in each direction is at least 1.50 meters wide and should be at a minimum distance from the road and/or pedestrian lanes.
2.1 A pedestrian lane leads from the entrance of the premises to the main entrance of the building.
2.2 If a bicycle parking is present: the pedestrian lane runs from the entrance to the grounds to the building entrance.
2.3 A pedestrian lane should be connected to the main entrance of the building directly from the public road.
2.4 A pedestrian lane is illuminated in accordance with NEN-EN 12464-2 Light and lighting - Workplace lighting - Part 2: Outdoor work places.
2.5 A pedestrian lane is separated from motorized traffic and bicycle traffic.
2.6 A pedestrian lane should preferably intersect no road. If a pedestrian lane crosses a road, the road should rise to the level of the pedestrian lane, instead of lowering the pedestrian lane.
2.7 A pedestrian lane is at least 1.50 meters wide and is heightened relative to the road and / or the bicycle lane.

Compliance notes
The location is arranged so that there is minimal risk to pedestrians and cyclists through safe cycling and walking paths.

If the bicycle parking is connected (without bike path on site) directly to the open road, the first point can be assigned by default. The locations of the bicycle parking and the road should be marked.

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
-

Offices
-

Retail
-

Industrial buildings
-

School
In addition to the above, when schools are concerned, it is required that the connection of the bicycle and/or pedestrian lane to the public road much be save. This is achieved by means of separate bicycle and pedestrian paths and crossings with traffic calming measures for motorized traffic (thresholds, pedestrian crossings, traffic lights, etc.).

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.7 m	A site plan to scale, a specification and / or design details that display all necessary amenities with dimensions.
B	1.4 and 2.4	Report by the lighting expert showing that the lighting will be installed according to is illuminated in accordance with NEN-EN 12464-2 Light and lighting - Workplace lighting - Part 2: Outdoor work places.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 2.7 m	'As built' site plan and design details.
D	1.1 t / 2.7 m	Report by the assessor with photographic evidence of the cycle and pedestrian lanes present and lighting provided.

Definitions
None.

Additional Information

If paths and / or walkways through or walk to any garage, then serve them there also to be in compliance.

References

- National Sustainable Building Package U436 (social security).
- Decree Div. 4:11 bicycle storage, new construction.
- National Sustainable Building Package B450/U450.
- FietsParKeur mark.
- CROW publication 158 Guidance bicycle parking.
- CROW publication 683 Bike Parking Guide.
- SBR publication: Building Blocks - Guide to making a list of requirements.
- NEN-EN 12464-2 Light and lighting - Workplace lighting - Part 2: Outdoor work places.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	-	√	√

TRA 5 Travel plan and parking policy

Aim
Incentives from building operations and local government to minimize strong environmental impact through which transport-related emissions and traffic jams are reduced and nuisance to the environment is limited.

Credit criteria
Up to three points are awarded.

There should be substantial evidence that:

1	1 point	the parking at the location is aimed at reducing car use and / or paid parking is introduced.
2	2 points	a transport plan is available (ready for use) or operational.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The number of parking spaces on site does not exceed the municipal parking ratio for the location.

Or

1.2 The municipal parking on site for this location is arguably aimed at reducing car use.

Or

1.3 Paid parking is effect on site.

2.1 A transportation plan for the location is developed in the design phase that includes all forms of transport relevant to the building type and its users / visitors.

2.2 The transportation plan includes an analysis of the specific location comprising of at least:

- An analysis of current transport patterns (for renovation) or future users.
- An analysis of existing public transport facilities.
- An analysis of infrastructure and facilities for pedestrians and cyclists in the area.

2.3 The transportation plan includes a package of measures aimed at managing and controlling the commuting and business traffic to and from the location with the aim to reduce vehicle kilometers and maintain or improve the accessibility of the area. The measures focus on the following aspects:

- Preventing transport movements (eg by inclusion of flexible workplaces for telecommuters in the design).
- Preventing car use (eg good facilities for cyclists and pedestrians, negotiation of improved supply of public transport, delivery services or carpool information services in public spaces).
- Improving the transport methods (eg charging points for electric cars, gas station with alternative fuels).

- Improving the use of transport methods (eg preferential parking for carpoolers).

2.4 The transportation plan includes a plan containing:

- A breakdown by mode of transport measures and alternatives.
- An implementation with phasing and planning measures.
- Costs and benefits.
- Preconditions and agreements.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull

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Offices

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Retail

-

Industrial buildings

-

School

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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	Copy of design drawings showing the number of parking spaces and the municipal parking ratio applicable to the location.
B	1.2 and 1.3	Official documents indicate that the current municipal parking policy for the location aims to reduce car use and / or that paid parking is provided on site.

C.	2.1 t / 2.4 m	A copy of the transport plan.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	Copy of "as built drawings situation with the number of parking spaces.
B	1.2 and 1.3	Official documents indicate that the current municipal parking policy for the location aims to reduce car use and / or that paid parking is provided on site.
C	2.1 t / 2.4 m	Proof shows that the package of measures in the transport plan is implemented.

Definitions

Transport Plan
A plan for the management and control of commuting and business traffic to maintain the accessibility of an area or improve (promoting selective car use).
The transportation plan should focus on the following aspects:

- Avoid transport (encourage teleworking).
- Prevent car use (encourage use of bicycles, public transport (see TRA 7) and other alternatives).
- Improve the transport (such as fuel-efficient cars, cruise).
- Improve the use of the means of transport (eg driving style training, carpooling and better load factor).

Additional Information

The Environmental Management Act includes a passage which states that devices must limit. Emissions from transportation to and from the device as much as possible This is an important point for the purposes of mobility management and clean vehicles. The Environmental Management Act Order in Council which includes a proposal represents a ministerial regulation for mobility. This contains a point that companies with more than 50 employees are required to take environmental measures - to meet requirements.These include measures such as teleworking, cycling, public transport and clean cars.Only 'tempted' to another mobility choice in practice is not sufficient to draw. Employers over the lineThe emphasis is on the implementation of measures and not as usual on making transport plan s.See also T RA 7.

References

- VROM (2006) Prevention Workbook for Business.
- CROW (2007) What can you do with parking rates and parking standards?

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	√	-	√	√

TRA 7 Transport information point

Aim
Ensure that the building has the capacity to provide users of up to date information regarding current local public transport routes and times.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	a transport information point (DRIS) is present that provides current travel information.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A Dynamic Passenger Information System (DRIS) is present that shows the actual departure times and any irregularities of public transport in the area. For example, the up to date departure times from the nearest public transport stops and up to date departure times of the train station.
1.2 The information of the DRIS is shown by a display in the vicinity of the main entrance / reception.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
-

Offices
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Retail
-

Industrial buildings

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School

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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the relevant sections of the specification and drawings of the work sheet, including the location and facilities for transport information point.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1	Report of a building inspection by assessor and photographic material showing that a transport information point is present that meets the requirements.

Definitions

DRIS
Dynamic Passenger Information System.

Additional Information

A carrier must provide to the person who keeps a travel information system. Accordance with the Decision riding a static schedule and the deviation on this timetable
See also TRA 5.

References

None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Lodge
√	√	√	-	-	√	√

TRA 8 Deliveries and manoeuvering

Aim
Ensure that safety is maintained and disruption of access by delivery traffic is minimized by good design and safe access to the area.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that::

1	1 point	there is sufficient space for maneuvering for delivery traffic and there is enough space, away from the maneuvering space, for storage of goods.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Parking and turning areas are designed for easy maneuvering different types of delivery vehicles to drive on and off the terrain, avoiding the necessity for repeated turning.
1.2 There is a separate parking for loading and unloading, separate from the maneuvering space and staff and visitor parking.
1.3 Delivery areas are not accessible through parking areas and do not cross or overlap pedestrian and cycle routes and other public access areas of building users.
1.4 There is a separate area for storage, containers, pallets and waste, seperate from the maneuvering space and staff and visitor parking.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
If the building user is still unknown, then the design of the maneuvering space shows that this is suitable for different types and amounts of transport. For future developments it must be demonstrated that the maneuvering area is suitable for different types of delivery vehicles.

Offices
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Retail
-

Industrial buildings
-

Lodge
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.4 m	A detailed situation-/site drawing.

Evidence required Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 1.4 m	Report of a building and / or site inspection by the assessor with photographic evidence of the facilities.
C	1.1 t / 1.4 m	If changes have been made since the assessment in the design, an updated situation / terrain drawing should be attached.

Definitions
None.

Additional Information
None.

References
Ernst & Peter Neufert, Architects dates, Blackwell Publishing, July 2002.

05 Water

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

WAT 1a Waterconsuption – non residential

Credit aim
The minimizing of water use for sanitary applications by the use of water-saving and water-free facilities.

Credit criteria
A maximum of 3 points for use functions **other than housing** to be awarded.

There should be substantial evidence that:

1	1 point	all toilets use less water (up to 6 liters) than standard equipment for similar functions.
2	1 point	all toilets use less water (up to 4 liters) than standard equipment for similar functions.
3	1 point	the specified taps, urinals and showers use less water than standard equipment for similar functions.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 All toilets are equipped with a flush or flush selector circuit breaker and the maximum flush volume is 6 liters. If toilets are provided without flush or flush selector breaker is the maximum flush volume 4 liters.

2.1 All toilets are equipped with a flush or flush selector breaker. The maximum flush volume is 4 liters.

Calculations show that, from the measures mentioned below, the two greatest annual water saving measures have been applied. (3.1 t / 3.4 m) For the baseline the maximum values apply as defined in Hull in Compliance notes:

3.1 All water taps, with the exception of those in kitchens, cleaning sinks or outside faucets, have a flow limiter, set to a maximum of 6 liters / minute at a pressure of 3 bar, and are of one of the following types or combinations thereof:

- Taps with automatic self-closing.
- Taps with electronic sensor.
- Taps with foam jet nozzle.

3.2 All showerheads have, according to the specifications, the measured maximum flow rate of 9 liters per minute or less at a pressure of 3 bar and an assumed temperature of 37 ° C.

3.3 All urinals are:

- Fitted out with a flush volume up to 1.5 liter per flush and equipped with individual presence or use detection that activates the rinse after each use;

or

- additional water saving (up to 1 liter per flush) or waterless.

3.4 At least 50% of all mens room capacity consists of urinals that meet the requirements under 3.3.

Compliance notes

New building

-

Renovation

-

Requirements sewage at 4 liters of flushing in connection with the Building Act.

The building sewer, according to the Building Act comply with BS 3215, which allows no toilet flushes of 4 liters. If 4 liter toilet flushing is used, then the design should show to the competent authority, in accordance with the principle of equivalence Article 1.3 of the Building Act, that the use of 4-liter toilet flushing provides the same level of protection of health and environment as envisaged by NEN 3215.

Expansion of existing buildings

When assesing a project consists solely of a new extension without sanitation, then the provisions in the existing building are to be tested (for this the nearest and accessible facilities for each sex and by function should be looked at, or to those facilities that are likely to be used by users and visitors of the expansion).

Hull

If the sanitary equipment not specified in the design phase of the project, it is assumed that only standard equipment is installed. If this is not known, then the following values are used:

- Ordinary water taps for washbasins: 12 liters / minute.
- Showers with large flow rate: 14 liters / minute.
- Toilet with large water tank: 6 liters.
- Water tank for flushing 1 urinal = 10 liters per flush.
- Water tank for flushing two or more urinals = 7.5 liters per flush.
- Urinals with manual flush button or automatic valve = 1.5 liters per flush.

In this situation, as a result, no points can be acquired (in this phase).

No specifications sanitation

If no sanitary facilities are installed, the nearest and accessible facilities for each sex and by function should be looked at, or to those facilities that are likely to be used by users and visitors of the expansion.

Showers with different flow rates

When a shower head can provide different flow rates the average or typical flow volume should be assumed.

MIVA-toilet

The MIVA-toilet must meet the Building Act specifications. For 2 credit points the criteria requirement for MIVA-toilet is adapted as follows:

• The MIVA-toilet is designed in accordance with the Building Act and the Access Handbook, is equipped with a flush or flush selector breaker and the maximum flush volume is 6 liters.

• At the MIVA-toilet with a flush or flush selector breaker are indications or symbols that indicate how it should be used. This instruction can be on or near the control or the water tank.
• An alternative water-saving measure is implemented as compensation, namely:
    ○ All taps in the toilet blocks of MIVA-toilets have an excess flow valve, set at a maximum of 6 liters / minute at a pressure of 3 bar, and taps with an automatic self-closing or electric sensor.

Other water-saving measures
If alternative or innovative water-saving measures are used in the project that are not listed in the Compliance requirements, and the client wants these measures considered as one of the two measures with the greatest annual water savings, the assessor must ask for approval from the DGBC.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.2 m	A copy of the relevant sections of the specification of the work complete with product information that specifies: technical specifications of the toilets to install (among other flush volume) and controls.
B	1.1 t / 2.2 m	Design drawings showing the location of the toilets in the building.
C	3.1 t / 3.3 m	Calculations that show the two measures with the greatest annual water are applied.
D	3.1 t / 3.3 m	A copy of the relevant sections of the specification of the work completed with product information that specifies: technical specifications of sanitation to install (taps, shower heads, urinals) and controls.
E	3.1 t / 3.3 m	Design drawings showing the location of the sanitary facilities in the building.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

F	1.1 t / 2.2 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the specified types and quantity of the toilets are installed.
G	1.1 t / 2.2 m	Detailed product of installed toilets showing that they meet the technical specifications.
H	3.1 t / 3.3 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the specified types and quantity of sanitary facilities are installed.
I	3.1 t / 3.3 m	Detailed product information of the installed sanitation showing that they meet the technical specifications. If necessary, updated calculations show that the two measures with the greatest annual water are applied.

Definitions

Flush selector
Flush operation where the user can choose between a large or a water-saving flush.

Flush breaker
Flush operation where the user can interrupt the standard big flush to save water.

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
-	-	-	-	√	-	-

WAT 1b Waterconsumption - residential

Credit aim
The minimizing of water for sanitary applications by the use of water-saving and water-free facilities.

Credit criteria
Up to 2 points are awarded.

There should be substantial evidence that:

1	1 point	the specified taps, urinals, toilets and showers use less water than standard to similar functions.
2	1 point	water-saving measures are applied or stimulated.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The offering or applying water-saving packages that consists of at least the following measures:

- All toilets are equipped with a flush selector or flush circuit breaker and the maximum flush volume is 6 liters. If toilets are provided without flush selector or flush breaker the maximum flush volume is 4 liters.
- All showerheads have, according to the specifications, the measured maximum flow rate of 9 liters per minute or less, at a pressure of 3 bar and an assumed temperature of 37 °C.
- All taps, except in kitchens, in cleaning sinks or outside taps, have an excess flow valve, set at a maximum of 6 liters / minute at a pressure of 3 bar.

2.1 Measures referred to in the first subparagraph shall be applied in at least 50% of homes.

Or

2.2 If in an hull development tenants or buyers are responsible for choosing the plumbing in the Residential, the requirements can be met if the users are verifiably informed about the packages and in this regard a reduction in the purchase price of the water saving measure can be achieved for these homes.

Compliance notes

New building
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Renovation
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Expansion of existing buildings

When assessing a project consists solely of a new extension without sanitation, then the provisions in the existing building are to be tested. for this the nearest and accessible facilities for each sex and by function should be looked at, or to those facilities that are likely to be used by users and visitors of the expansion.

Hull

If the sanitary equipment not specified in the design phase of the project, it is assumed that only standard equipment is installed. If this is not known, then the following values are used:

- Ordinary water taps for washbasins: 12 liters / minute.
- Showers with large flow rate: 14 liters / minute.
- Toilet with large water tank: 6 liters.
- Water tank for flushing urinal 1 = 10 liters per flush.
- Water tank for flushing two or more urinals = 7.5 liters per flush.
- Urinals with manual flush button or automatic valve = 1.5 liters per flush.

In this situation, as a result, no points can be acquired (in this phase).

No specifications sanitation

If no sanitary facilities are installed, the nearest and accessible services likely to be used by users and visitors of the building are tested.

Showers with different flow rates

When a shower head can provide different flow rates the average or typical flow volume should be assumed.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	The document containing the water-saving packages offered.
B	1.1	Specifications of water-saving measures offered.
C	2.1	For at least 50% of all homes: • A copy of the relevant sections of the specification of the work, plus productinformation in which is specified: technical specifications of sanitation to install (taps, shower heads, urinals) and controls.
D	2.1	For at least 50% of all homes: • Design drawings showing the location of the sanitary facilities in the building.
E	2.2	The information in which the discount for water-saving measures is stated.
F	2.2	A signed letter from the client confirming that the said information packets are provided to the users at completion.
G	2.2	Design drawings showing the location of the sanitary facilities in the building.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

H	1.1	A report from an on-site inspection by the assessor and photographic evidence confirming: • the specified types and quantity of sanitary facilities are installed.
I	2.1	Detailed productinformation of the installed sanitation showing that they meet the technical specifications.
J	2.2	The information in which the discount for water-saving measures is stated.
K	2.2	A letter from the client stating described how the discounts are / were provided and are handled administratively.

Definitions

Other water-saving measures
As an alternative or innovative water-saving measures that are not listed in the Compliance requirements and the client wants these measures consider the project as one of the two measures with the greatest annual water, the assessor may ask for approval with the DGBC .

Rinse selector
Rinse Operation where the user can choose between a large or a water-saving flush.

Rinse Breaker
Rinse Operation where the user can interrupt to save water. Standard big flush

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

WAT 2 Watermeter

Credit aim
Ensure that water consumption can be monitored and managed. This will stimulate the reduction of the drinking water and ground water consumption.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	a water meter with a signal output which can be connected to a building management system (BMS), is installed at all the water supply lines to each building (block).

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The specification of a water meter on the mains water supply to each building, this includes instances where water is supplied via a borehole or other private source.
1.2 Water-consuming plant or building areas, consuming 10% or more of the building's total water demand, are either fitted with sub meters or have water monitoring equipment integral to the plant or area (see Compliance notes).
1.3 Each meter (main and sub) has the ability of giving an instantaneous reading (e.g. has a pulsed output) and enables connection to a Building Management System (BMS) for the monitoring of water consumption.
1.4 If the site on which the building is located has an existing BMS, managed by the same occu-pier/owner (as the building), the pulsed water meter(s) for the building must be connected to the existing BMS.

Compliance notes

New building
-

Renovation
-

Water con-suming plant or building areas
As a minimum this includes the following (where present):
Buildings with a swimming/therapy pool and its associated changing facilities (toilets, showers etc.).
On sites with multiple units or buildings, e.g. shopping centres, industrial units, retail parks etc. separate sub meters are fitted on the water supply to the following areas (where present):

1. Each individual unit supplied with water
2. Common areas (covering the supply to toilet blocks)
3. Service areas (covering the supply to outlets within storage, deliv-ery, waste disposal areas etc.)
4. Ancillary/separate buildings to the main development with water supply.
5. Supplementary supply of water from a cold water tank

Other examples of where sub-meters will also be required include:

1. Tenanted areas of large developments
2. Laundries
3. Main kitchens
4. Any other facility with a major water use

Extensions to existing build-ings (and no water supply to the building/unit)

If no new water supply is being installed because occupants of the (extended) building will use the facilities in, and therefore water supply to an existing building, then the following must be provided in the existing building:

1. A water meter for the mains water supply
2. Sub-meters for large water consuming plant or facilities e.g. evap-orative cooling, swimming pool etc. (where present).

The meters provided must have a pulsed output or connection to existing BMS in accordance with the assessment criteria.

Hull

For hull construction, the granting of the credit is based on the water meter with an output signal. For hull, the connection of the water meter to the building management system is not a criteria requirement.

No connection line to the building (block)

If no connection line to the building (block) is realised because no sanitation or taps are placed in the building (block), the credit will be assessed on the basis of the connection line to the nearest accessible building which has sanitation and where it can be expected that it wil be utilised in the future by the users of the assessed building.

10% of water demand

The sub-meter requirement does not necessarily apply in the cases where the assessor confirms there will be no additional monitoring benefit resulting from their installation:

1. Where a building has only one or two small sources of water demand (e.g. an office with sanitary fittings and a small kitchen)
2. Where the building has two sources of water demand, one significantly larger than the other, and the water consumption for the larger demand is likely to mask the smaller demand.

Offices

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Retail

For the adaptation of this credit to retail additional requirements are set out below.

- Subservient buildings that are separate from the main building, such as a gas station with a convenience store, must be metered separately with an output signal.
- For buildings with multiple retail units, such as shopping malls, separate meters with an output signal required for the following areas:
    - Rented area: the water supply to each unit.
    - Common areas: the water supply to the toilet rooms.
    - Service areas: water supply to the premises for storage, delivery, waste areas, etc..
- For shopping centers or large retail developments with multiple retail units, separate meters with an output signal are required for each retail unit.

Industrial buildings

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School

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Lodging

-

Meeting

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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.4	A copy of the relevant sections of the specification of the work in which the various sources or systems for water are specified.
B	1.3	A copy of the relevant sections of the specification of the work in which the specifications and type (s) of meter (s) is specified.
C	1.1 t/m 1.3	A map on which the location of the water meter (s) for each building (block) to assess is marked and every type of water meter is displayed.
D	1.2	Calculations show that all water-using facilities and rooms, each using at least 10% of the total water demand of the building, have sub-meters.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1 t/m 1.4	An inspection report and photographs by the assessor and specifications of water meters which demonstrate that the requirements are met.
F	1.2	Calculations show that all water-using facilities and rooms, each using at least 10% of the total water demand of the building, have sub-meters.

Definitions
None.

Additional Information
The requirement of an output signal is included to promote water meters via a signal, wired or wireless, the water can pass on to a building management system (BMS). Use This can decrease water consumption patterns monitored and evaluated. A big change in demand example, the presence of a leak or inappropriate or demonstrate. Unexpected consumption

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

WAT 3 Major leak detection

Credit aim
Limiting the consequences of major water leaks that would otherwise remain undetected.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	leak detection systems are specified and installed on all water supply lines to each building (block).

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A leak detection system that is able to detect major leaks in the water supply is installed.The system is connected to all water supply lines to each building (block), immediately after the main water meter (s).
1.2 The leak detection system is:

- audible when activated.(This can be a message or call, the goal is not to sound an alarm throughout the building, but audible to those responsible for troubleshooting in case of leakage);
- activated when the flow volume is higher by the water meter or data logger than the maximum flow volume set for a period of time;
- able to identify different flow rates and leakages, for example, continuous, high and / or low flow volume, for set time period (s);
- programmable to be adjusted to the water demand of the building user / owner;
- where appropriate, designed to prevent false alarms that are caused by normal use of large water users such as cooling installations.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
If no new connection line is realised in the expansion, the connecting pipe to the existing building is assessed on the basis of the requirements for the credit.

Hull

-

Subservient buildings or multiple buildings
The requirements apply to all buildings within the assessment.

No connection line to the building (block)
If no connection line to the building (block) is realised because no sanitation or taps are placed in the building (block), the credit will be assessed on the basis of the connection line to the nearest accessible building which has sanitation and where it can be expected that it wil be utilised in the future by the users of the assessed building.

Leaks
This credit does not specify what the minimum and maximum allowed leakage flows may be. However the system must be able to distinguish between different flow rates in order to be able to adjust to the (set) usage patterns of different building occupants / owners.

System demands
It is assumed that this credit is usually achieved by installing a system that can detect higher flow rates at meters and / or sub-detects than normal. It is not required that the system detects leakage in (a part of) the water pipes in the building.

Water meter of water supply
If a water meter of the water company is present, it may be necessary to install a separate water meter to detect leaks, however, when the water company allows a leak detection system connected to his meter, then this is allowed.

Offices
-

Retail
If retail units in shopping centers have their own water from the water company, the credit applies to each of these connections.

Industrial buildings
-

School
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of the relevant sections of the specification of the work in which the scope and performance requirements of the leak detection is specified.
B	1.1 and 1.2	Detailed information from the supplier in which the technical specifications of the specified system are confirmed.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	An inspection report and photographs by the assessor confirming that a leak detection system is installed and operational.
D	1.2	Manual containing: what the preset variables to activate the system are and how the variables (if any) can be set by the building user. This can also be confirmed by the installer in a letter to the user.

Definitions

Large leaks
These are leaks involving free flow (more than dripping or sweating of joints), the specific volume flow must be recorded in the leak detection system (see below Leaks Compliance notes).

Additional Information

Set current volumes
Set flow volumes, and time periods will vary depending on the type of building and use.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

WAT 4 Sanitary supply shutt off

Credit aim
The reduction of water loss due to small water leakages in toilet facilities.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	Shutdown of the water supply by presence detection is provided for all toilet facilities.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 One of the following types of flow control device is fitted to each WC area/facility to ensure water is supplied only when needed (and therefore prevent minor water leaks): A time controller i.e. an automatic time switch device to switch off the water supply after a predetermined interval.

a) A programmed time controller i.e. an automatic time switch device to switch water on and/or off at predetermined times.
b) A volume controller i.e. an automatic control device to turn off the water supply once the maximum preset volume is reached.
c) A presence detector and controller i.e. an automatic device detecting occupancy or movement in an area to switch water on and turn it off when the presence is removed.
d) A central control unit i.e. a dedicated computer-based control unit for an overall man-aged water control system, utilising some or all of the types of control elements listed above.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the toilets are located in the existing building, the existing facilities are assessed on the basis of the requirements for the credit.

Hull
If no toilet facilities will be provided in the hull, assumed must be at this stage that no self-closing water supply for the toilets will be realised. The credit is not granted.

Periodic flushing in regard to legionella
If it is likely that the toilet facilities are not used for a long time, for example due to a holiday, facilities have to be made to make the operation of automatic flushing valves for legionella control possible.

No toilets in the building

If no toilet facilities are realised in the building, the credit will be assessed on the basis the nearest accessible building which has sanitation and where it can be expected that it wil be utilised in the future by the users of the assessed building.

Self closing locking devices
The electrically operated shut down valves are allowed to secure a combined toilet facilities, as for men and women, inside a toilet group.

Requirements for presence detection
To achieve this credit closing the water supply by presence detection for each individual sanitary facility is not required. The requirement applies to the water supply per toilet block on one floor when not in use.

Individual toilets
The requirements for this credit also relate to facilities with one toilet (possibly in small buildings or buildings with low occupancy). In this case, control of the electric valve also be made through the light-switching of the toilet space (either via presence detection, either via a manual switch).

Offices
-

Retail
-

Industrial buildings
-

School
-

Lodging
The credit is not applicable to toilet and shower facilities in hotel rooms, but it does apply to the communal toilet blocks.

Meeting
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the relevant sections of the specification of the work in which the specifications are given of the water supply shut off system:
B	1.1	a map showing the locations of the toilet facilities.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	An inspection report and photographs by the assessor in which are confirmed: • The location and operation of the presence detection

		installed. • Plans, as realised, showing: • The locations of the valves.
D	1.1	Manufacturers product details

Additional Information

Presence detection for lighting
Lighting fixtures in toilets are often connected to presence detection, IR motion detection or switch contacts on the door (the latter option may be less accurate because several people can enter and leave the room). The detectors used for the switching of the lighting can also be used for the operation of the electric valve in the water supply. In that case they act as presence detection.

Small leaks can in the long run lead to large losses
Small water leaks can cause extensive losses, damages and thereby costs. The risk leakages stay unnoticed is great because washrooms are often not used a long while. A presence detection at the water supply prevents that water can flow away when the toilet is not in use.
Valves in cisterns for toilets are more susceptible to leaks where the water can flow via an overflow facility. Although the volume of any leaking valve is different, the result is an average waterflow of 4 liters per day.

Legionella
If the water flow is interrupted, there is an increased risk of legionella.Try to avoid prolonged standing water and consider a good flow of water pipes fow example.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

WAT 5 Water recycling

Credit aim
For flushing toilets stimulate the use of capture and reuse of gray water or rainwater and reduce the use of drinking water.

Credit criteria
There can be up to 2 points awarded.

There should be substantial evidence that:

1	1 point	rainwater or greywater systems that capture, store and treat if necessary to flush toilets and urinals, are specified.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 If a rainwater collection tank is installed and the tank is at least 50% of:

- the total projected amount of runoff rainwater from the roof during the defined period of collection;

or

- the amount of rainwater run-off that is needed for the total flush demand during the defined period of collection.

1.2 Waste water from sinks and showers of at least 80% of the taps is collected and reused for at least 10% of the total flush demand in the building.

1.3 A combination of gray wastewater and rainwater collection that provides at least 50% of:

- the total predicted demand for flushing toilets and urinals during the defined period of collection;

or

- the total predicted demand for flushing toilets and urinals during the defined period of collection and (if any) water demand for irrigation of plants and the natural environment.

Compliance notes

New building

–

Renovation

–

Expansion of existing buildings

If exclusively the expansion is evaluated, the surface of the roof of the expansion is used as the roof surface run-off. If useful the total roof area of the existing buildings and the expansion are used. If the entire building, expansion and existing buildings are assessed, the roof runoff equals the total roof area of the building.

Hull
If no sanitary connections are specified in the design phase of the assessment, the assessor assume that only industry standard connections are installed.
If these are not known, default values as defined under additional information can be used. In such cases, no credits are awarded during this phase of the evaluation.

Size rainwater collection tank
Of the two options available to demonstrate compliance, the option where the smaller of the two sizes (liters) is specified and used. For example, a system that is not expected hold significantly more rainwater over the defined period of time than is necessary in order to provide flush water for the same period, unless the collecting system is used for irrigation or forms part of a protection system against excess rainwater.

Grey Water
There are no BREEAM requirements laid down with which the tank must be able to meet with respect to the period of retention of gray water. When a gray water collection system is specified, the size of the tank fits the occupation and the frequency of use of the facilities, while it must be kept in mind that greywater collection systems typically have a maximum retention period of 24 hours.

Defined period of care
For the assessment of this credit the period of collection is defined as 18 days. This is equal to about 5% of the total annual rainfall.

Requirements for calculations
The following formula can be used to calculate the volume of collectible rainwater for the surface runoff of the assessed building for the period of collection defined:
Σ (ARF x C x x FCO RCO-EF-EF x DCOL)
Where:
ARF = Annual rainfall for the location (mm).
C = run off surface (m^2)
RCO-EF = run off coefficient.
FCO-EF = filter coefficient.
DCOL = defined period of collection: 18 days/365 days = 0.05.

Runoff from paved surfaces
Runoff from paved surfaces can also be collected and included in the calculation. If the run-off part of roofs and partly of paved surfaces is collected, the total run-off surface at least equal to the horizontal projection of the roof.

Use of rainwater for irrigation and other process requirements
The use of rainwater collection for flushing toilets and urinals is the first priority. If this requirement is met, additional rainwater can be used to meet the need of water for irrigation or for building-/operational processes.

Building Types horticulture
If there is a constant need for drinking water for horticulture related processes for the operational use of the building, the credit can be rated by the use of rainwater to meet this need, assuming that this compensates for the equivalent requirement for flushing of toilets and urinals. Examples where this rule applies include garden centers, botanical gardens and golf courses. This rule does not apply to irrigation of the overall natural environment and ornamental plants in such buildings.

Calculation of the total predicted demand for flushing (flushing water demand)
The total predicted need for flushing can be estimated on the basis of the following variables by the design:

- The number of users of the building (staff and visitors);
- The effective flush volume of toilets and urinals;
- The estimate of the number of times * use of a toilet or urinal per person per day (multiplied by the period of collection defined).

* Assume, unless other data is available, 1.3 toilet uses per person per day and 2 urinal uses per person per day (assuming that only 50% of the users of the building used a urinal).

Defaults sanitary applications
If a type of plumbing application is not specified and standard sanitary applications that comply with the current regulations are not known or have a higher water consumption than the applications listed below, the following values are used:

- Standard Connections for sinks (12 liters / minute).
- Shower (14 liters / minute).
- Wc (6 liter cistern).
- Cistern for a single urinal = 10 liters per use (flush).
- Cistern for two or more urinals = 7.5 liters per use (flush).
- Urinals with manual flush or automatic pressure flushing valves = 1.5 liters per use.

Offices
–

Retail
–

Industrial buildings
–

School
–

Residential
–

Lodging
–

Meeting

–

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	A copy of the relevant sections of the specification of the work that specifies: • the type of collection system that is specified; • specifications of toilet, urinal, taps and shower (if applicable).
B	1.1 t / 1.3 m	Calculations of the design for the 'defined period of collection' which (if applicable) the following evidence: • Rainwater revenue for the surface runoff (mm). • Predicted need for flushing of toilets and urinals. • Estimating potential for sewage collection of taps and showers. • Size (liters) of the specified rainwater-/grey watertank.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 1.3 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the collecting system is installed.
D	1.1 t / 1.3 m	If changes have been made since the assessment in the design, an updated copy of the technical specifications and the calculations of the sizes of the installed system are presented.

Definitions

Design Considerations

The use of gray water within a building can cause hygiene problems if the system is not properly designed, installed and maintained. Clear design information, maintenance procedures and an understanding of these issues at the users can avoid these problems.Gray water systems that are carefully designed and installed can be used without any significant objection to health and safety. If available, local guidelines for the design and maintenance of rainwater and greywater recycling systems are followed.

The notes to the Drinking Water Decree states that requirements for the production, distribution and use of greywater., In the interest of public health in the Drinking Water Regulations There are no quality requirements for greywater formulated, because the costs that would be involved in reviewing them all the advantages of the use of household water would do. OffsetInstead included in the Drinking Water Regulations requirements of a technical nature. "Together with the applicable NEN 1006 (2002/A3: 2011), Water Worksheets and ISSO 70.1 (2011) arises as a set of rules that allow the use of household water within the accepted risk to public health", is in the explanation of the Drinking Water Decree.

Surface runoff

A surface rainwater and supplies to a collection tank for reuse.

Run off coefficient
A coefficient which is used to adapt to the fact that it will be. Not every raindrop falling collected on the run-off surface in the tank, the calculation of the size of the tank The afstroomcoëfficiënt is dependent on the specified type of roof of the building, in which flat roofs have a lower coefficient.

Below are some typical coefficients:

Roof covering	Run off coefficient
Sloping roof tiles	0.75 to 0.9
Flat roof tiles with smooth tiles	0.5
Flat roof with gravel layer	0.4 - 0.5

Drinking water
Defined as drinking water and / or water from the water supply. This definition includes water from wells, rivers, streams, lakes e nz.

Filter Coefficient
Not all the water from the roof walk into the gutter, will reach the tank here compensates for the filter coefficient.Most manufacturers / installers of systems recommend a filter coefficient of 90% to. Runoff and filter coefficients can be found in the CIRIA guidelines [2], although this should be in the calculations of the design. Included

Example Calculation

Average annual rainfall for the location (mm)	757 mm
Runoff roof surface (m²)	3,500 m²
Run off coefficient (pitched roof with tiles)	0.8
Filter Coefficient	0.9
Defined period of care	0.05
Rainwater Volume for the period of care defined	95,382 liters

An installed rainwater collection tank with a capacity of 50,000 liters would therefore be 52.4% of the total predicted rainwater runoff from the roof for the period of care defined to process.

Greywater
Collective term for lightly contaminated wastewater that comes from domestic operations (such as shower, kitchen, washing machine).

Additional Information
–

References

- Data for the annual rainfall at any place in Europe are available through the World Meteorological Office, http://www.worldweather.org .
- EN 12056-3:2000: Gravity drainage systems inside buildings. Roof drainage, layout and calculation, 2000.
- See the country-specific references for more information.

Country information for Netherlands

- BS EN 1717: Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow.
- ISSO 70.1: Dealing with rainwater within the boundary.
- BS 1006: General requirements for tap water installations (AVWI-2002).
- SBR Factsheet 88: Greywater use for toilets.
- Sustainable building SBR Catalogue.
- SBR Rainwater within the boundary.
- SBR Design and implementation of facilities for collection, use and infiltration of rainwater inside the boundary.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

WAT 6 Irrigation systems

Credit aim
Reduce the use of drinking water for landscaping.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	An water conserving irrigation system or strategy is applied or where rainwater or greywater is used in landscaping.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The specified irrigation method for the internal and external landscaping is equal to one of the following methods:

a) Moisture Sensor-controlled drip irrigation under the surface.The control of the irrigation must be divided in zones to be able to irrigate different groups of planting variably.
b) Reuse of rainwater or gray water.
c) External landscaping (planting) which is fully dependent on local rainfall, during all seasons of the year.
d) Specified plants consisting solely of species that do well in hot and dry conditions.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
-

No furnished outdoor
This credit does not apply if there is no landscaping within the limits of the construction site of the building to be assessed.

External landscaping
This credit is only applicable to a landscaping outside the building with a contiguous area of 20 m^2 or greater. Examples of landscaping are: planting, gardens and parks.

Internal landscaping
This credit is only applicable to a green space within the building with a contiguous area of 10 m ^{2} or greater. Examples of landscaping are: planting and gardens.

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Lodging
-

Meeting
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A written confirmation of the design of the irrigation strategy for the area. This may be minutes of an assessment meeting, a letter or e-mail message.
B	1.1	For Alternative C and D, an approval of a recognised ecologist or gardener to be submitted in regards to the planting
C	1.1	A plan drawing of the field layout in which the size and scope of the irrigation system are indicated.
D	1.1	A copy of the relevant sections of the specification of the work in which the following is confirmed: the type of irrigation system and the control system. *OR* Product detailing the technical data of the specified system.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1	A report of an on-site inspection by the assessor and photographic evidence confirming: • the proposed (irrigation) strategy is applied; • if applicable, the installation of the specified system.

Definitions

Site
For the purpose of this credit is the site defined as the land on which the building is projected to test and areas within the project (re) appointed.

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
-	√	√	-	-	-	√

WAT 7 Vehicle wash

Credit aim
Reduction of water consumption by minimizing vehicles washes.

Credit criteria
There can be up to 2 points awarded.

There should be substantial evidence that:

1	2 points	a vehicle wash has awater recycling system.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The washing system captures runoff from the washing and uses it again.The re-use must be fully automatic.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
-

Microbiological contamination
If there is a car wash present, then the assessor requires an explanation from the design team about how the risk of legionella infection is kept to a minimum.

Retail
-

Industrial buildings
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the specification confirming: • the type of vehicle washing
B	1.1	Product information confirming: • the technical details of the water reuse system.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	An inspection report and photographs by the assessor confirming: • that the type of water reuse system specified is installed.

Definitions

Car wash for vehicles
A commercial automatic, semi-automatic or manual system for washing vehicles. This includes facilities for washing wheels and chassis, the conveyor and glass cleaner with brushes, spray bars or manual pressure washers.

Additional Information
None.

References
None.

6 Materials

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

MAT 1 Materials specification

Credit aim
Identifying and encouraging the use of materials with a low environmental impact throughout the lifecycle of the building.

Credit criteria
A maximum of 8 points can be awarded.

There should be substantial evidence that:

1	1 point	at least three materials options are considered which have a significant impact on the shadowprice.
2	2 points	the environmental impact of the materials used is below the reference value.
3	3 points	the environmental impact of the materials used is at least 10% lower than the reference value.
4	4 points	the environmental impact of the materials used is at least 20% lower than the reference value.
5	5 points	the environmental impact of the materials used is at least 30% lower than the reference value.
6	6 points	the environmental impact of the materials used is at least 40% lower than the reference value.
7	7 points	the environmental impact of the materials used is at least 50% lower than the reference value.
8	8 points	the environmental impact of the materials used is at least 60% lower than the reference value.

For a list of current reference see: https://www.milieudatabase.nl/referentiewaarden/ For more information about determining the shadowprice see: *http://www.breeam.nl/hulp/credit/mat_1*

Exemplary performance
The following shows the criteria for exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

- An inventory of new materials that are not in the database where the environmental impact is arguably lower than an alternative in the environmental database. An example of a demonstrably lower environmental impact: tested bio-based materials, Dubokeur products and cradle2cradle certified materials.
- The environmental impact of these products should result in a reduction of the shadow price of 0.05 euros / m $^{2.}$
- A statement by an independent party that confirms the above criteria.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 For a main component (see MAT 5 for a list of building elements) at least three materials options are considered, with an environmental calculation. The design team can demonstrate that the results of this consideration affected the final choice of the components. The total number of options considered have an impact of at least 5% of the total shadowprice.

2.1 t / m 8.1 The first point is achieved. The quantification of the environmental performance is carried out with a calculation of the total shadow price per m ^{2} GFA of the building. The number of points that can be achieved is dependent on the degree of reduction of the shadow price per m ^{2} GLA which is achieved with respect to the reference shadow price from the Credit criteria.

2.2 t / m 8.2 The calculation must meet the following requirements:

- The assessment of the environmental performance [environmental impact of the materials used] uses the latest version of the Environmental Assessment Method Buildings and civil engineering works including the associated National Environmental Database.
- The result is expressed in the shadow price in euro / m ^{2} GFA.
- The input parameters are listed.

2.3 t / m 8.3 The calculation is performed by a person with proven experience in making material calculations and this person can nominate specific points in the calculation and justify the solutions.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

For expansion of existing projects, all materials that are necessary for the expansion should be taken into consideration. The calculation of the shadow price, the gross floor area of the expansion is used.

Hull

-

Offices

-

Retail

-

Industrial buildings

-

School

-

Residential

-

Lodging

-

Meeting

-

Site layout
The materials for the site lay out are not part of the scope of this credit.

Reuse of materials
The reuse of materials must be included in the LCA calculation in the same way as for renovation. Also a statement and justification is required (criteria requirement 2).

Several functions
If in buildings with several functions a review is made for only one function, the materials of the relevant part of the building is to be included in full. For example, if the roof of one functional unit is the floor of the other functional unit, the floor, or the roof is to be included (in both reviews) completely. The underlying idea is that the floor or the roof would have been neccesary without the combination of functions.

Lifetime expectancy
For the lifecycle the following default lifetimes for different types of buildings held:

- Housing: 75 years.
- Utility: 50 years (including schools, shops, sports centers, etc.).

In mixed-use (such as housing above shops) will be based by default on 75 years for the structure and other as stated before.

Inspection by the assessor
The assessor randomly checks whether the input parameters of the environmental impact/ shadow price calculations are applied consistently within the building design and verifies the declarations and justifications.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the report indicating that at least three material options have been considered with the tool.
B	1.1 t / 8.2 m	Substantiation of the total GFA for the building.
C	1.1 t / 8.2 m	(Concept) calculation showing what the shadow price per m ^{2} GFA is.
D	1.3 t / 8.3 m	Explanation and justification of the person who has carried out the calculation.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

E	1.1	A copy of the report indicating that at least three material options have been considered with the tool.
F	1.1 t / 8.2 m	Substantiation of the total GFA for the building.
G	1.1 t / 8.2 m	A copy of the relevant sections of the specification of the work including

		any changes on which the shadow price calculation can be checked.
H	1.1 t / 8.2 m	Final calculation showing what the shadow price per m ^{2} GFA is.
I	1.3 t / 8.3 m	Explanation and justification of the person who has carried out the calculation.

Definitions

Gross floor area (GFA)

This is the floor area of the room, or measured from multiple areas of a property (NEN 2580) at floor level along the outer periphery of the (outer) ascending partition, that the relevant area (s) envelops.

With the definition of GFA in accordance with NEN 2580 which means: 4.2.2 GFA of a building. (The GFA of a building is the sum of 4.2.1 under certain GFA of all belonging to the building spaces.)

Section 4.2.3 and 4.2.4, and thus for example an open car park, this does not belong to the definition of GFA that the divisor part of the shadow in BREEAM MAT 1.

Materials

It covers all materials for the building and the facilities in the building. The building is considered foundation, basement, walls, roofs, floors and interior walls including finishing of the components listed. Materials for the interior of the building fall outside the scope of the assessment. See Table 1 for a summary of the scope in accordance with the Environmental Assessment Method Buildings and civil engineering version (MPG).

Table 1: Scope materials according Determination Method Environmental Buildings and civil engineering version 01.11.2011

Foundation	Soil Services	11:01 Increment Sand
		13:01 Bottom Valves
	Foundation Construction	16:01 Foundation on steel (bars and strips)
		16:01 Beam Grid Foundation
		Foundation piles 17:01
	Substructure general	16:03 Basement Wall
		16:05 Basement Wall Insulation
Structural work	Interior walls	22:02 bearing interior walls
		22:02 Massive non-bearing walls
		22:02 House separating wall
	External walls	00:01 Curtain Wall Style
		21:01 inner leaf
		41.01 Outer leaf
		41.02 Curtain Wall Panel
		41.02 Facade Finishing
		41.04 Cavity Insulation
	Outer openings	31.02 Window frame (outer)
		31.02 Doorway (exterior)
		31.04 Door (exterior)
		31.05 Garage Doors
		31.07 Glazing (exterior)

		31.08 infilling
		31.11 Bibs
	Roofs	47.02 Roof underlay pitched roof
		47.04 membranes
		47.06 Ballast Low (up to roof pitch of 30 º)
		47.07 flat roof insulation
		47.08 Insulation pitched roof
		27.01 Support construction flat roof
		27.02 Undermounting pitched roof
	Roof finishing	47.04 Roofing flat roof
		47.05 Roof finishing sloping roof
	Roof openings	37.04 Light Street (glazing)
		37.04 Light Street (frames)
		37.04 Skylights
	Main Frameworks	28.01 Beams
		28.02 Columns
		28.04 Lintels
	Floor	02.13 ground floor
		13:02 Floor on solid foundation
		23:01 Floor Floor
		43.03 Floor insulation
Finishing	General	40.02 Fireproof upholstery
		40.03 Sound proof coating
	Balustrades and handrails	34.02 Balustrades
	Interior walls	00:01 Profiles element wall
		22:01 Systeemwanden
		22:01 Panels wall element
		41.04 Insulation wall element
		42.02 Wall finishing (inside)
		42.02 Painting (inside)
		42.02 Wall Tiling
	Inner Openings	32.01 Window frame (inside)
		32.01 Doorway (within)
		32.02 Interior Door
		32.03 Glazing (within)
	External walls	41.03 Painting (outside)
	Outer openings	31.09 Sills
	Roof finishing	47.01 Eaves Buoy Board
	Remaining	00:01 Lath (laths and battens)
		13:01 Films
	Ceiling Finishes	45.01 Profiles ceilings
		45.02 Ceiling Finish
	Decking	42.01 Skirting
		43.01 Screed

		43.02 Floor Tiling
		43.02 Data-/computervloeren
E Installations	Electrical facilities	60.02 Power generation solar
		60.01 Elektra Leadership
Installations W	Disposal	52.01 Outside Sewer
		52.03 Within Sewerage
		52.05 Rainwater
		52.04 Gutters
	Air	57.01 Ventilation
		57.02 Air Distribution
	Heat generation	51.01 Revival Gear hot water
		51.01 Revival Heating Appliances
	Cold Revival	55.01 Revival Gear cooling
	Delivery System	55.03 Cold Climate system
		56.02 Heat System
	Disposal	52.02 Connecting line sewer
	Pipes	53.01 Water
		54.01 Gas pipeline
Fixed Facilities	Transportation Services	24.01 Stairs housing
		24.02 Stairs utility
		66.01 Elevator Cab
		66.02 Lift Installation (ex cab)
	Fixed kitchen facilities	73.01 kitchen units
		73.02 Worktops
	Fixed sanitation	74.01 Toilet Combinations
		74.01 Urinals
		74.02 Sink Combinations
Terrain	Terrain Features	90.03 pavements
		90.01 fences
		90.02 Privacy Scots

Only the first two digits of the elements in a building are coded according to EN-SfB (eg element group code 31: B express wall openings).For the further division of the elements is the NL-SfB code supplemented by a code (eg ele ment code 31.02: Outside Frames) in accordance with the Environmental Assessment Method Buildings and civil engineering works.

Shadow price

The result of the materials obtained with the method of determination is an environmental profile that is made up of nine of the following effects:

Milieueffectcategorie	Equivalent eenheid	Schaduwprijs [€ / kg equivalent]
Uitputting abiotische grondstoffen – ADP	Sb eq	€ 0,16
Uitputting biotische grondstoffen – BDP	Sb eq	€ 0,16
Klimaatsverandering – GWP 100 j.	CO_2 eq	€ 0,05
Aantasting ozonlaag – ODP	CFK-11 eq	€ 30
Humane toxiciteit – http	1,4-DCB eq	€ 0,09
Zoetwater aquatische ecotoxiciteit – FAETP	1,4-DCB eq	€ 0,03
Terrestrische ecotoxiciteit – TETP	1,4-DCB eq	€ 0,06
Fotochemische oxydantvorming – POCP	C_2H_2 eq	€ 2
Verzuring – AP	SO_2 eq	€ 4
Vermesting – EP	PO_4 eq	€ 9

For the sake of comparability, the environmental impact scores divided by b rutovloeroppervlakte (GFA) of the building.Thereafter, the effects by means of a weighted summation aggregated into a single indicator. The result is a shadow price in euro / m ^{2} GFA. The weighting factors and weighting method (shadow prices) are defined in the method of determination.

Additional Information

LCA assessment of buildings in the Netherlands

In the Netherlands, there is broad consensus on the use of LCA (life cycle assessment) to determine the material-related environmental impact of buildings. Sub other instrument owners, government and building materials industry have been working on a uniform calculation method and materials database.The method is defined in the Environmental Assessment Method Buildings and civil engineering works.

Determination of the shadow price

The shadow can be determined with mathematical tools, however, not all tools meet the Compliance requirements that BREEAM-NL suggests it.In addition, still subject to change. Both the tools and the National Environmental Database For an overview of the available tools and instructions: http://www.breeam.nl/hulp/credit/mat_1

References

Determination Method SBK:

- Calculation Method for determining the environmental performance of buildings and civil engineering works during their lifetime, based on life cycle analysis (LCA CML2).

National Environmental Database:

- More information about the National Environmental Database: http://www.bouwkwaliteit.nl/.

Ecoinvent database:

- http://www.ecoinvent.org/database/.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

MAT 5 Responcible sourcing of materials

Credit aim
Encouraging the use of materials with a proven/sound source in the main components.

Credit criteria
Up to 4 points can be awarded.
point 1 can be achieved independently of section 2, 3, 4 or 5.

There should be substantial evidence that:

1	1 point	At least 80% of the materials used for envelope insulation and isolation of system components has a proven / sound source. The number of points is calculated by the MAT 5-calculator, insulation tab and 100% of the wood used is legally produced.
2	1 point	least 80% of the volume of materials used in each of the main components has a proven / sound source is, the number of points calculated by the MAT 5-calculator * ≥ 5 and <10, and 100% of the wood used is legally harvested.
3	2 points	least 80% of the volume of materials used in each of the main components has a proven / sound source is, the number of points calculated by the MAT 5-calculator * ≥ 10 and <15, and 100% of the wood used is legally harvested.
4	3 points	least 80% of the volume of materials used in each of the main components has a proven / sound source is, the number of points calculated by the MAT 5-calculator * ≥ 15 and <20, and 100% of the wood used is legally harvested.
5	4 points	least 80% of the volume of materials used in each of the main components has a proven / sound source is, the number of points calculated by the MAT 5-calculator * ≥ 20, and 100% of the wood used is legally harvested.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 At least 80% of the insulation has a volume level of tier 1, 2 or 3. The score is calculated with the insulation tab in the MAT 5-calculator and a maximum of one credit point can be awarded.
1.2 For the insulation tier level 4 is insufficient. See Table 3: Requirements for environmental management insulation.

1.3 and 2.1 t / 5.1 m:

- All the wood that is processed in the building is certified by a certification system approved by the Timber Procurement Assessment Committee.
- The contractor (s) are in possession of a chain of custody certificate from a certification system approved by the Timber Procurement Assessment Committee.

2.2 t / 5.2 m:

A minimum of 80% of the volume of materials used (see Table 2 for the appropriate materials) in each of the main components (see Table 1) has a tier level 1, 2, 3 or 4. The score is calculated with the materials tab in the MAT 5-calculator *.

2.3 t / 5.3 m

The materials used will be assigned to a class origin (tier level) based on the level and the size of the certification obtained from the material supplier or manufacturer.See the calculation procedure for additional information.

Exemplary performance

The following shows criteria for exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

- Instead of 80% in volume above Credit criteria, at least 95% of the volume of materials used, in each of the main sections listed in criteria 2 t / m 5, have a proven / sound origin. [Doubtful: criteria or requirements?]

Table 1: Main components means

Main Building Unit	Subdivision	En-SfB Elements
A	Foundation Construction	16:01 Foundation on steel (bars and strips)
		16:01 Beam Grid Foundation
		Foundation piles 17:01
	Substructure general	16:03 Basement Wall
		16:05 Basement Wall Insulation
B	Interior walls	22:02 bearing interior walls
		22:02 Massive non-bearing walls
		22:02 House separating wall
C	External walls	00:01 Curtain Wall Style
		21:01 inner leaf
		41.01 Outer leaf
		41.02 Curtain Wall Panel
		41.02 Facade Finishing
		41.04 Cavity Insulation
	Outer openings	31.02 Window frame (outer)
		31.02 Doorway (exterior)
		31.04 Door (exterior)
		31.05 Garage Doors
		31.07 Glazing (exterior)
		31.08 infilling
		31.11 Bibs
D	Roofs	47.02 Roof underlay pitched roof
		47.04 membranes
		47.06 Ballast Low (up to roof pitch of 30o)
		47.07 flat roof insulation
		47.08 Insulation pitched roof
		27.01 Support construction flat roof
		27.02 Undermounting pitched roof
	Roof finishing	47.04 Roofing flat roof
		47.05 Roof finishing sloping roof
	Roof openings	37.04 Light Street (glazing)
		37.04 Light Street (frames)

		37.04 Skylights
E	Main Frameworks	28.01 Beams
		28.02 Columns
		28.04 Lintels
F	Floor	02.13 ground floor
		13:02 Floor on solid foundation
		23:01 Floor Floor
		43.03 Floor insulation

Only the first two digits of the elements in a building are coded according to EN-SfB (eg. element group code 31: outer openings). For the further division of the elements is the NL-SfB code supplemented by a code (eg ele ment code 31.02: Outside Frames) according to the method of determination Environmental Buildings and civil engineering works.

Table 2: List of applicable materials

1	Brick (including ceramic tiles and other ceramic materials).
2	Composites and resin based materials, including fiber-reinforced composites and synthetic mortars.
3	Concrete (including in-situ and precast concrete and concrete blocks, bricks, tiles, mortars and cementitious stucco.
4	Glass
5	Plastics and rubbers (including EPDM, TPO, PVC and VET roofing membranes).
6	Metals (steel, aluminum, etc.).
7	Ornamental and building stone including slate.
8	Timber and sheet materials of wood (including MDF and OSB and cement fiberboard).
9	Drywall and plaster.
10	Bituminous materials such as roofing membranes and asphalt.
11	Other mineral-based materials such as fiber cement and calcium silicate.
12	Products made with recycled materials.
13	Insulation (envelope insulation and isolation of system components).

Compliance notes

New building

-

Renovation

For a renovation project the new and used recycled materials (see Other additions) are tested.

Expansion of existing buildings

-

Hull

-

Missing main components
When a main building component is not present in the calculation tool points for this main building section are redistributed so that only the main components present are assessed within a project.

Re-used materials
Re-used materials used in the project or rec-used aggregates are treated as source materials class 1 (Tier 1 level) according to Table 3: Source classification.

Temporary timber
Wood used temporarily on the site is outside the scope of this credit and rated in the credit MAN 3.Only the timber which permanently remains behind in the building, is to be assessed.

Pre-or post-users waste
When the materials that are part of a pre-or post-users waste stream, Table 4 can be reviewed for the EMS requirements. If however, an EMS certificate is available for new wood, this does not mean that you can speak of certified wood from sustainably managed forests. Therefore with such a certificate no points can be awarded.

Certified EMS
EMS = Environmental Management System or EMS.
Agreed is each certified environmental management system, including:

- ISO 14001;
- CSR Performance Ladder Level 3 or higher if substantiated origin of materials is part of the scope.

For other certified environmental management systems, the project is to demonstrate equivalence with one of these schemes.

ISO 14001 or CSR Performance Ladder still in process
If a company is still in the process of obtaining a certificate, but this is still not achieved, one can meet the requirements of a design certificate if it can be shown that the procedure is currently being carried out. The burden of proof is the registration or contract with a certification body, or that which shows that the procedure is started. For the delivery certificate the certificate must be obtained.

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Meeting Function
-

Bed Function

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 5.3 m	Design drawings and / or specifications in which the following is confirmed: • The place of specified elements and materials. • Details of the specified materials.
B	1.1 t / 5.3 m	A copy of the outcome of the calculation tool for MAT 5.
C	1.1 t / 5.3 m	For materials certified through an environmental management system (EMS): a letter of intent from the design team may be submitted with the confirmation that the relevant materials will be from suppliers that have an EMS certificate (or equivalent) for the production and / or extraction phase involved in their product.
D	1.3 t / 5.1 m	A copy of the relevant sections of the specification of the work stating: • that the wood will be sourced from suppliers who can deliver by TPAC approved certificates.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

F	1.1 t / 5.3 m	Revision, or "as built drawings or revision documents confirming that the building is performed according to the design drawings and specifications prepared.
G	1.1 t / 5.3 m	Copies of receipts or certificates / letters of Conformity for the relevant materials including recycled or reused materials.
H	1.1 t / 5.3 m	For materials from certified BREEAM Demolition & Dismantling project: • Reciepts • Listing of the smart demolition tool of the project (s) with the purchased material marked.
H	1.1 t / 5.3 m	A copy of the outcome of the calculation tool for MAT 5 (if there are differences in the materials used in the design).
I	1.1 t / 5.3 m	For materials that are certified by an environmental management system (EMS) one of the following documents: • Copy of the ISO 14001 certification. • Copy of the EMS certificate. • Copy of the certification document or the chain of custody certificate.
J	1.3 t / 5.1 m	For certified wood: Sale and delivery documents of the certified wood (see Responsibility timber) containing the following information: • Address of the supplier. • Contact details of the customer / receiver. • Date the document was issued.

		• Description of the product. • The quantity delivered. • Clear indication of the claim of certified timber for each product separately: x% certified.For example: • 100% FSC or PEFC 100%. • PEFC or FSC Recycled x% x% mix. • The certificate number of the supplier. Needs to be indicated only once per supplier.
K	1.3 t / 5.1 m	A copy of the chain of custody certificate from the contractor (s).

Definitions

BES 6001
Developed by BRE England certification methodology specifically aimed at the substantiated origin of materials.Depending on the certificate level, materials which are under BES 6001 certification fall into the calculator with MAT 5-tier level 1 or 2 are introduced.

Re-used materials
Materials which are separated from the waste stream, and can be used without further processing, or with only little processing, and of which the base of the material remains the same re-used (without cutting it open, the other materials to attach to clean, etc.). Above definition also applies to materials from a BREEAM-NL demolition project.

Origin classification level (tier levels)
A continuum to display used to show. The sustainability of the sources the rigor of the certification again On the basis of these points can be obtained (as shown in Table 3).

MAT 5-calculator
A calculation tool developed by BRE to the number of these credit points to be obtained to calculate. For the most recent version of the MAT 5-calculator see www.breeam.nl / help

Supply chain environmental management system (EMS)
Covers all important aspects of the process and distinguishes what is needed in the supply chain of finished products. For recycled materials is to set up a supply chain environmental management system (EMS) is not necessary.

Post-user waste stream
Waste generated by households or by commercial, industrial and institutional businesses, the role of user of the product, which may be what it is for. The product no longer used Including the return of material in the supply chain.

Pre-user waste stream
Scrap from the production process. Excluded is re-use of waste that arises in a production process and can be reused in the same production process.

Recycled materials
Materials from pre-and / or post-consumer waste that substantial need treatment before they can be reuse.

Responsible sources
Demonstrated by independent accredited certification systems.

Additional Information

Calculation Procedure
The MAT 5-credit points can be calculated using the Excel MAT 5-calculator (www.breaam.nl / hulp).In the calculation tool is an explanation.

- The score for the 13 materials. Insulation (Table 2) is calculated using the Isolation tab, this can be up to one credit point earned.
- The score for the materials 1. t / m 12. (Table 2) is calculated using the Materials tab, this can be up to 4 credit points earned.
    - ≥ 4 points 20 credit points.
    - ≥ 15 points 3 credit points.
    - ≥ 10 points 2 credit points.
    - ≥ 5 points 1 credit point.
- If not all main components applicable to the assessment, the number of points by the calculation tool adapted to the number of principal components that is present.
- The total score for MAT 5 is the sum of credit points on both parts 1. t / m 12. and 13. joint.The total score however is capped at 4 credit points, more points can not be awarded.
- For awarding points should be too. Meet the timber requirements

Instructions for calculation

- Collect per capita component (Table 1) the volumes of all applicable materials (Table 2).
- Determine which tier level (Table 3) is feasible per capita building section for at least 80% of the materials used volume.
- If it can be, by ems tier level achieved should be to determine which links in the production process should be an EMS shown Table 4 uses:
    - For tier 4 is about to have a certified EMS. The production of the final product
    - For Tier 3 should have to have a certified EMS. The production of the final product and the supply chain

Table 3: Herkomstclassificering (English: "Tier levels and compliance ')

Tier level	Points to achieve	Proof Required
1	3	Wood: FSC, PEFC, SFI. Allen including Chain of Custody.
		Use of re-used materials (see definitions). Re-used materials from a BREEAM-NL demolition project

		BES 6001:2008 certificate level 'excellent' or 'very good'.
2	2	BES 6001:2008 certificate level 'good' or 'pass'.
		Cradle2cradle platinum certification.
3	1.5	Wood: TFT.
		Certified EMS for the production of the final product and the supply chain (Table 4).
		Cradle2cradle silver certification.
		Recycled materials with certified EMS for the production of the final product (Table 4).
4	1	Certified EMS for the production of the final product (Table 4).
		Cradle2cradle source certification.

Table 4: Process in the chain which an EMS must be demonstrated

Material	Production finished	Supply chain
Brick (including ceramic tiles and other ceramic products).	Product Manufacturing.	Clay Extraction Process.
Resin-bonded materials and composites (including glass fiber reinforced composites and synthetic mortars).	Manufacture of composite products.	Production of fiberglass Production of polymers.
In-situ concrete (including ready-made mix, cement mortars and materials produced).	Production of ready-made concrete mix.	cement production, extraction and production (primary and secondary) aggregates
Precast concrete and other concrete products (including concrete blocks, gevel-/wandbekleding, concrete or cement tiles).	Manufacture of concrete.	cement production, extraction and production (primary and secondary) aggregates
Glass.	Glass production.	Sand extraction. Extraction and processing of sodium carbonate.
Plastics and rubbers (including composite polymers, EPDM, TPO, PVC and VET roofing membranes).	Production of plastics and rubbers.	Production of the final polymer.
Metals (steel, aluminum, etc.)	Production of metal products. For example, cladding, steel profiles.	Metal Fabrication: Steel produced in an electric arc furnace or basic oxygen furnace. Aluminum processing raw precious metals.

		Buyer: processing of raw bullion or production of cathodes.
Ornamental or building blocks.	Stone Manufacturing.	Quarrying.
Drywall and plaster.	Manufacture of plaster or drywall as material.	Mining of gypsum Synthetic gypsum when natural gypsum is not available.
Raw wood.	Wood harvested in a responsible manner (certified wood).	Wood harvested in a responsible manner (certified wood).
Cement-bonded particleboard.	The production of cement-bonded particleboard.	Cement Production Production of certified wood.
Sheet material For example, OSB, plywood, chipboard etc.	N, see Table 3 for the requirements for wood.	
Bituminous materials such as roofing membranes and waste	Product Manufacturing.	Bitumen Production Extraction and processing of granulate.
Other mineral-based materials including fiber cement and calcium silicates.	Product Manufacturing.	Cement Production Production of lime Extraction and processing of other minerals.
Products consisting of 100% Recycled material.	Product Manufacturing.	Feed material. When using local material no need EMS
Products consisting of less than 100% recycled material.	Product Manufacturing.	Production of each raw material that is described above. Required when using local material no EMS.
Other products.	Possible product manufacturing.	One or two primary commodities whose production or extraction process has a major impact, should be identified.
Materials disregarded: insulation, adhesives, additives and fasteners.	NA	

Table 5: Process in the chain which an EMS must be shown for the purpose of insulation

Material	Production finished	Supply chain
Foam Insulation.	Insulation Manufacturing.	Production of polymers such as polystyrene foam, MDI resin, phenolic resin or equivalent.
Rock wool, glass and cellular glass comprising less than 50% recycled material.	Product Manufacturing.	All minerals extracted from quarries or mines whose share of the product more than 20%.
Wool.	Product Manufacturing.	Degreasing wool.
Products consisting of more than	Product Manufacturing.	Feed material. Required when

50% recycled material. Does not apply to wooden buildings.		using local material no EMS.
Insulation materials based on wood including products containing recycled wood.	Product Manufacturing.	Feed material. Required when using local material no EMS.
Other reuse insulation based on Agricultural products such as straw.	Product Manufacturing.	Feed material. Required when using local material no EMS.

Checklist A5

Checklist A5 (in English) contains information for the BREEAM assessor, including an explanation of the requirements of each of the origin classes (tier levels).

BREEAM Demolition and dismantling

One developed by the Dutch Green Building Council certification scheme to create and stimulate. Sustainable scrapping the sustainability of a demolition project insight For more **information:** http://www.breeam.nl/

PEFC

PEFC is not equivalent to FSC in all cases: the Timber Procurement Assessment Committee (TPAC) assesses timber certification systems to the Dutch procurement criteria commissioned by the Ministry of Housing. If the type of wood TPAC approves for Dutch procurement criteria, it is also equivalent to BREEAM-NL.

Chain of custody (supply chain management)

With this process, the chronological history documented, the evidence of the products from forest to consumer. Wood must be traceable from the certified forest to the ready-to-eat product. All steps of transporting the timber to the sawmill, until the product reaches the consumer, should be included in an adequate inventory control system that makes it possible to separate each step of the certified product separate and identify. Chain Management Certification facilitates the procedures necessary to detect certified wood and to avoid confusion with non - avoid certified wood.Supply chain management is established and controlled by a relevant timber certification system.

Calculation of timber volumes

- Information regarding the origin, lengths and volumes of wood is available from the product manufacturer or calculator, a detailed breakdown of the quantities of materials can be provided.
- The total timber volume of wooden frames can be estimated on the basis of the total frame length of the frame (uprights and sills). This can be converted to the timber volume by total frame length of the closed frame parts (without opening windows) by 0.00653 and open multiplying by 0.01089. Estimate the total length of the frame parts with
- To calculate the total volume of wood doors with wooden frame calculate the total area of all the doors of the building and multiply by 0.02187. Consequently, the total volume of all wood doors including frame.

References

- EU Eco-Management and Audit Scheme (EMAS), http://ems.iema.net/emas , (http://ec.europa.eu/environment/emas/ .

- International Organization for Standards (ISO), http://www.iso.org/iso/en/ISOOnline.frontpage
- Convention on International Trade in Endangered Species of Wild Flora and Fauna (CITES), http://www.cites.org/ .
- EU Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan, http://www.euflegt.efi.int/portal/ .
- SGS timber tracking
- TFT Tropical Forest Trust, http://www.tft-forests.org/.
- FERN European NGO campaigning for forests, http://www.fern.org .
- ProForest, http://www.ProForest.net .
- WWF, http://wwf.panda.org/ .
- Greenpeace Ancient Forest Campaign, http://www.greenpeace.org .
- Forests Forever Campaign, http://www.forestsforever.org .
- TFT Tropical Forest Trust publication Good Wood, Good Business, http://www.forestlegality.org/tools-guides/good-wood-good-business.
- Good Wood Guide, Friends of the Earth / Flora and Fauna International, 2002 http://www.foe.co.uk/campaigns/biodiversity/resource/good_wood_guide/.
- http://www.fsc.nl or http://www.fsc.org .
- http://www.pefc.org/ .
- BES 6001, http://www.greenbooklive.com/search/scheme.jsp?id=153 .

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

MAT 7 Designing for robustness

Credit aim
Identifying and promoting measures to protect exposed parts of the building and site design, ensuring the replacement frequency is minimised.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	protection is provided to portions of the building with an increased risk of damage, for example at the location of pedestrian traffic or crowded areas where vehicle-or transport movements take place.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Inside and outside the building the areas with busy pedestrian traffic or vehicular traffic, trucks or truck transport are identified.
1.2 Suitable materials and protective measures or design solutions are provided to prevent damage. Vulnerable parts of the building traffic as mentioned by the criteria in 1.1 These are:

- Protection of floors, walls and doors against the effects of (busy) pedestrian traffic in main entrances, public spaces and passageways (corridors, lifts, stairs, doors).
- Preventing any form of internal transport with vehicles or truck transport within 1 meter of vulnerable spot inside walls or vulnerable façade areas for storage and delivery, and in hallways and kitchens.
- Protect against or prevent any danger by parked vehicles or maneuvering within 1 meter of the exterior at all parking areas and within 2 meters of delivery points.

Compliance notes

New building
-

Renovation
For renovation on an existing site, the above requirements apply to those areas that are part of the renovations or interior area around the building in question.

Expansion of existing buildings
-

Hull
-

Protective measures

Robust and appropriate protective measures for vulnerable parts of the building include:

3. Poles or pillars, sills, raised curbs at delivery and unloading points.
4. Robust construction of the outer walls to a height of 2 meters.
5. Protective sleeves to walls or in the hallways.
6. Impact guards / collision protection (for roll, pitch, pallet or shopping trolleys) on doors.
7. Durable and easy to clean flooring in areas of high traffic load (such as the main entrance, corridors and public areas).

Sales Outlets

In all premises where roll, pitch, pallet or shopping trolleys are used, vulnerable parts of the building (such as glass facades) are to be protected so that these vehicles do not come within a distance of 1 meter from the area in question.

Protection against collision by vehicles

Any measure of protection against impact by vehicles must be positioned at such a distance from the building so that it protects the building, taking due notice of the usual distance between the axis and the outside dimensions of the vehicle, in particular when unloading of goods.
In the case of traffic areas for vehicles: where the specification of a robust construction of the wall construction is concerned in order to meet the criteria additional protection should be placed in order to prevent surface damage by vehicle movements, for example, posts or protective sleeves.

Public / common areas

The material in public and general areas (especially in waiting areas and toilets) must take into account the increased risk of intentional or physical abuse as much as possible.

Offices

-

Retail

-

Industrial buildings

-

School

-

Residential

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	Design drawings which all sensitive areas / parts of the building are indicated.
B	1.1 and 1.2	Design drawings and / or specifications that confirm specified sustainability and / or robustness measures:

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 and 1.2	A report from an on-site inspection by the assessor and photographic evidence of: - Areas or parts of the building with an increased risk for damage. - Applied on site (robust) materials, preservative measures or protective finish.

Definitions
None.

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	-	√	-	√	√

MAT 8 Building Flexibility

Credit aim
The stimulation of the development of buildings with a high degree of flexibility.

Credit criteria
Up to 4 points can be awarded.

There should be substantial evidence that:

1	1 point	The score calculated by the calculation tool Building Flexibility is ≥ 33%.
2	2 points	The score calculated by the calculation tool Building Flexibility is ≥ 50%.
3	3 points	The score calculated by the calculation tool Building Flexibility is ≥ 67%.
4	4 points	The score calculated by the calculation tool Building Flexibility is ≥ 84%.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 - 4.1

Using the Building Flexibility calculation tool, a calculation of the lot allocation posibilities, adaptability and versatility are made, showing that the degree of building flexibility meets the Credit criteria.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

-

Hull

-

Offices

-

Retail

-

Industrial buildings

-

School
-

Lodging
-

Meeting
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 4.1 m	A copy of the calculation tool Building Flexibility.
B	1.1 t / 4.1 m	A copy of the relevant sections of the specification of the work and design drawings showing that the building complies with the input parameters as used in the calculation tool.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 4.1 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the building complies with the relevant design specifications.

Definitions
None.

Additional Information
None.

References

- Real Estate Standard 2003, foundation REN Netherlands.
- Flexis, irRP Geraedts, TU Delft.

07 Waste

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

WST 1 Waste management on the construction site

Credit aim
Maximize resources by promoting meaningful and effective waste management on site.

Credit criteria
There can be up to 3 points awarded.

There should be substantial evidence that:

1	1 point	the contractor undertook, or the client undertakes effort to require the contractor to minimize the waste on site.
2	2 points	addition to the above, the evidence provided demonstrates that the waste on site is separated into different waste streams.
3	3 points	addition to the above, the evidence provided demonstrates that 80% of recyclable building material is reused or recycled.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Appropriate targets are formulated for the amount of released hazardous and non-hazardous (waste) materials (indicated in tonnes) and compared with the actual (waste) material discharge.
1.2 There are established procedures for the discharge of waste to minimize, tailored to the described goals.
1.3 The amount of discharged waste is monitored and targets are reviewed at least once every two weeks.
1.4 There is a person appointed by the design/site management team to implement the above.
1.5 The main contractor is VCA certified.

2.1 The first point is achieved.
2.2 There are procedures in place to sort waste on site in main groups. At least four of the following groups are defined:

- Wood waste.
- Stony materials.
- Metal.
- Plastic.
- Glass.
- Paper and cardboard.
- Plaster.
- Insulation (per type).

2.3 The waste collector / processor is VCA certified.

3.1 The second point is achieved.

3.2 A significant portion of the recyclable waste material is not brought to the final processing. At least 80% of the weight of the recycable waste material should be:

- reused in the construction project, or
- re-used in another building project, or
- reused in a different way through responsible consumption and recycling by the supplier or by a certified recycler.
- The main contractor and the waste collector / processor have ISO 9001 certification and:

- ISO 14001 certification or CSR Performance Ladder Level 3 or higher.

Exemplary performance

The following shows criteria for exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

- All three points are earned.
- Before the start of the construction phase at least six main groups to be sorted on the building site are defined.
- The six main groups to sort out on site should be monitored during the construction phase.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

If the building is partly renovated and partly a new expansion, the entire building must be assessed to see if the credit is met. For the assessment of expansions to existing buildings where only the expansion is evaluated, only the expansions needs to meet the requirements.

Hull

-

ISO 14001 is still in process

If a company is still in the process of obtaining ISO 14001 certification, but this has not yet been reached, it can pass for a design certificate if it can be demonstrated that the ISO 14001 certification process is in effect. The burden of proof is the registration of a contract with an ISO 14001 certification body which shows that the procedure is started. For the delivery certificate, the certificate must be obtained.

Offices

-

Retail

-

Industrial buildings

-

School

-

Residential

-

Lodging

-

Meeting

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.5 m	A copy of the relevant sections of the specification of the work in which the following is confirmed: • Appropriate targets should be formulated for the amount of released hazardous and non-hazardous (waste) materials (indicated in tonnes). • The procedures established to minimize waste • The goals are reviewed at least once every two weeks. • VCA certification of the contractor.
B	2.2	A copy of the relevant sections of the specification of the work stating: ○ that the waste streams can be distinguished.
C	2.3	A copy of the relevant sections of the specification of the work in which the required VCA certification of the waste collector / processor is confirmed.
D	3.2	A copy of the relevant sections of the specification of the work in which the following is confirmed: ○ percentage of non-hazardous waste is reused or recycled. ○ established procedures for reuse and recycling.
E	3.3	A copy of the relevant sections of the specification of the work or the procedure in which the required ISO 9001 - and ISO 14001 certification of the contractor and waste collector / processor is confirmed.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

F	1.2 and 1.3	An inspection report prepared by the assessor, with photographic evidence, showing that the amount of waste material released is monitored.
G	1.1	A comparison of the total amount of construction waste with the goals.

H	1.2	A copy of the procedures for minimizing waste.
I	1.3 and 1.4	A monitoring report or report in which the following is confirmed: • The monitoring actions taken. Designated by the responsible person • The total amount of waste created by the construction project.
J	1.5	A copy of the VCA certificate from the contractor.
K	2.2	A monitoring report or report in which the amount and proportion of waste by waste stream can be confirmed.
L	2.2	An inspection report prepared by the assessor, with photographic evidence, demonstrating that the waste is sorted in the appointed main groups
M	2.3	A copy of the VCA certificate of the waste collector / processor.
N	3.2	To produce: • A monitoring report or report where for each waste stream the amount and proportion of waste that is reused, recycled or landfilled can be confirmed. • Dumping certificates of the waste collector / processor which proves quantity and shares.
O	3.3	A copy of the ISO 9001 - and ISO 14001 certificates of the main contractor and the waste collector / processor.

Definitions
None.

Additional Information

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

WST 2 Recycled aggregates

Credit aim

To recognise and encourage the use of recycled and secondary aggregates, thereby reducing the demand for virgin material and optimising material efficiency in construction.

Credit criteria

Up to 1 points can be awarded.

There should be substantial evidence that:

1	1 point	there is a significant amount of recycled or secondary aggregates applied in concrete.

Compliance requirements

The following demonstrates that the criteria are met:

1.1 The percentage of high-grade aggregate that is recycled and/or secondary aggregate, specified in each application (present) must meet the following minimum % levels (by weight or volume) to contribute to the total amount of recycled and/or secondary aggregate, as specified in table XX below.

1.2 The total amount of recycled and/or secondary aggregate specified, and meeting criterion 1, is greater than 25% (by weight or volume) of the total high-grade aggregate specified for the development. Where the minimum level in criterion 1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.

1.3 The recycled and/or secondary aggregates are EITHER:

1.4 Construction, demolition and excavation waste obtained onsite or offsite OR Secondary aggregates obtained from a non-construction post-consumer industrial by-product source (see Relevant definitions section).

Table - XX: Minimum levels (by weight and volume) of high-grade aggregate specified per application (where present) that is recycled and/or secondary aggregate

Application	Min. % one credit	Min. % Exemplary performance
Bound		
Structural frame	15%	30%
Bitumen or hydraulically bound base, binder, and surface courses for paved areas and roads	30%	75%
Building foundations	20%	35%
Concrete road surfaces	15%	45%
Unbound		
Pipe bedding	100%	N/A

Granular fill and capping (see Relevant definitions section)	100%	N/A

Exemplary performance
The following shows criteria for exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

1. The percentage of high-grade aggregate, that is recycled and/or secondary aggregate, specified in each application (present) must meet the exemplary minimum levels (by weight or volume), as defined in the table above. Where this minimum level is not met, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.
2. Where the total amount of recycled and/or secondary aggregate specified is greater than 35% (by weight or volume) of the total high-grade aggregate specified for the project. Where the minimum level in criterion1 is not met for an application, all the aggregate in that application must be considered as primary aggregate when calculating the total high grade aggregate specified.
3. The contributing secondary aggregate must not be transported more than 30 km by road transport.

Compliance notes

New building
-

Renovation
The points can be awarded if no new aggregate is used automatically.

Expansion of existing buildings
-

Hull
-

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Lodging

-

Meeting

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	An overview of: • the components in the project; • the weights or volumes of the total quantities of coarse aggregate per building element; • the weights or volumes of the quantities recycled aggregates per building element; • the percentages of recycled aggregates by building element; • the type and origin of the recycled aggregates per component.
B	1.1	A calculation showing the total quantity of recycled aggregates is more than 25% (by weight or volume) of the total amount of coarse aggregate of the total amount of concrete in the building.
C	1.1	The part of the technical provisions or technical description comprising: • The percentage of recycled aggregates by building component, in accordance with the above statement. • The type and origin of the recycled aggregates per building component, according to the above list.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1	An overview as described in the design phase, based on the components actually applied and coarse aggregates.
E	1.1	Statements by the manufacturers of the components actually applied, which included: • The percentages of recycled aggregates. • The type and origin of the recycled aggregates.

Definitions

Recycled aggregates (BRL 2506)
Granules produced during processing (crushing / screening) of stony waste. Waste materials include free when building, renovation and demolition of buildings and other structures as well as similar stony industrial

Air cooled blast furnace slag
Air cooled blast furnace slag is classified as a by-product (rather than a waste) and can therefore be used as an aggregate without the need for a quality protocol. The slag used must meet the requirements of the European and BS Aggregates Standards that apply to the end use application (e.g. bitumen bound, unbound etc.).

Granular fill and capping

Crushed masonry used as fill material for general landscaping is not considered to be high grade. This practice is now common place on construction sites due to landfill costs.

Post-consumer waste stream
Waste material generated by households or by commercial, industrial and institutional facilities in their role as end-users of the product, which can no longer be used for its intended purpose. This includes returns of material from the distribution chain. Waste materials generated during manufacturing processes are pre-consumer waste streams and are excluded. These streams include re-utilisation of materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within the same process that generated it.

Secondary aggregates
By-products of industrial processes that can be processed to produce secondary aggregates. Secondary aggregates are sub-divided into manufactured and natural, depending on their source. Recognised non-construction post-consumer or post-industrial by-products include:

1 China clay waste
2 Slate overburden
3 Pulverised Fuel Ash (PFA)
4 Ground Granulated Blast Furnace Slag (GGBFS)
5 Air-cooled blast furnace slag
6 Steel slag
7 Furnace Bottom Ash (FBA)
8 Incinerator bottom ash
9 Foundry sands
10 Recycled glass
11 Recycled plastic
12 Spent oil shale
13 Colliery spoil
14 Municipal solid waste treatment residues

Additional Information

BRL 2506
Decision 2506 BRL Waste Recycling Granules for use in concrete, road construction, land and construction work.An overview of BRL 2506 certified suppliers can be found at: http://www.bouwkwaliteit.nl/dbase/merk/output_brl.php?brlno=2506&merk=NL% 20BSB . In BRL 2506 includes requirements that a company must meet in order NL BSB ® certification, KOMO ® product certificate may perform.

References

- CROW report on application secondary material.
- Soil Quality Decree.
- BS EN 12620.
- NEN 5905.
- BS EN 206-1.
- NEN 8005.
- CUR recommendation 112.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

WST 3a Storage for recyclable waste – non residential

Credit aim

The designation of facilities used specifically for the storage of recyclable waste during the operation / use of the building, so efficiently separating recyclable waste is encouraged.

Credit criteria

A maximum of 1 point.

There should be substantial evidence that:

1	1 point	one or more spaces are reserved for the separate storage of recyclable waste.

Compliance requirements

The following demonstrates that the criteria are met:

1.1 There is a separate room / place reserved for storage of recyclable waste in the use phase.This place is:

- clearly identified or labeled;
- easily accessible from the building or in the building;
- with a water connection and drainage for cleaning purposes;
- easily accessible and accessible to collection vehicles (truck).

1.2 Dimensions of the area (s) should be sufficient for separate storage of recyclable materials during the operation / use of the building. These dimensions are:

a. At least 2 m² per 1,000 m² net floor area (GFA) for buildings <5000 m².
b. At least 10 m² NRC for buildings ≥ 5000 m².
c. Additional 2 per m² 1000 m² GFA for buildings <5000 m² where catering is provided.

Either

- Additionally least 10 m² GFA for buildings ≥ 5000 m² where catering is provided.

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

If the facilities are located in the existing building, they must be assessed on the above requirements for the total floor area of the existing building and the extension.

Hull

-

Offices

Retail

The required storage space for recyclable waste is determined by the size and number of stores that make use of the storage and the expected amount of recyclable waste from those stores. large shops, including a supermarket, should have. Their own storage Smaller tenants, for example, share a common area.

Industrial buildings

-

School

-

Lodging

-

Meeting

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	Copy of the relevant sections of the specification and drawings of the work in which the following is confirmed: • The description of the marking of at least four different waste streams. • The location of the space allocated for storage of recyclable waste. • The provision for water supply and drainage.
B	1.2	Copy of the relevant sections of the specification of work and drawings in which the following is confirmed: • storage space for general waste; • the surface area of the storage space.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	A report from an on-site inspection by the assessor and photographic evidence that: • confirms that the different areas assigned are marked. • confirms that a water supply and drainage are available.
D	1.2	A report from an on-site inspection by the assessor and photographic evidence that: • confirms the location, size and the capacity of the storage facilities.

Definitions

NRC
Usable floor area referred to in NEN 2580.

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
-	-	-	-	√	-	-

WST 3b Storage for recyclable waste - residential

Credit aim
The designation of facilities used specifically for the storage of recyclable waste during the operation / use of the building, so efficiently separating recyclable waste is encouraged.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	one or more spaces are reserved for the separate storage of recyclable waste.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Inside the housing is a separate space specifically for storage of gray waste, green waste, paper / cardboard, glass and plastics.
1.2 The space has a minimum surface area of 60 cm by 40 cm.

Note Collective waste areas are included in the Building Act.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
If the facilities are located in the existing building, they must be assessed on the above requirements for the total floor area of the existing building and the expansion.

Hull
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	Copy of the relevant sections of the specification of work and drawings in which the following is confirmed: • storage space for general waste; • the surface of the storage space.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 and 1.2	A report from an on-site inspection by the assessor and photographic evidence that: • confirms the location, size and the capacity of the storage facilities.

Definitions

Additional Information
None.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	-	√	√	√

WST 5 Compost

Credit aim
Stimulating facilities for composting of organic waste, to reduce the amount of organic waste or to make suitable for use on site.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	a vessel is present in which organic waste for composting can be stored and has sufficient storage capacity for this type of waste generated by the users of the building during the use phase.
2	1 point	The space is on the site or access is limited and a special area has been designated to store the food related compostable waste temporarily, before being ultimately composted, before it is transported to an alternate location to compost.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 A barrel is installed on site for composting organic food waste from the users and / or processes of the building.
1.2 There is ample space for storage of separated food waste and composted organic material.
1.3 At least one water connection and drainage are provided for cleaning in and around the facility.

2.1 If there are restrictions regarding available space or access to the site, the following should be demonstrated:

- There is a special separate room for the storage of food related compostable waste prior to collection and delivery to an alternate compost location.
- At least one water connection and drainage are provided for cleaning in and around the area.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
If the facilities are located in the existing building, they must be assessed on the above requirements.

Hull

-

Capacity for storage

There are no hard requirements laid down relating to the storage, since it depends on the end user and the expected quantities of organic compostable waste. The assessor will need to assess whether the provision is sufficiently appropriate given the scale of development and taking into account the expected amount of organic waste.

Collective compost facility

If, in the immediate vicinity (on street-/blocklevel) a collective compost facility that is accessible for all residents is present, the credit can be granted.

Offices

This applies only if the assessed project has a food preparation and / or serving / dining area.
If this is not applicable the credit can be filtered.

Retail

This applies only if the assessed project has a food preparation and / or serving / dining area. If this is not applicable the credit can be filtered.

Industrial buildings

This applies only if the assessed project has a food preparation and / or serving / dining area. If this is not applicable the credit can be filtered.

Lodging

-

Meeting

This applies only if the assessed project has a food preparation and / or serving / dining area. If this is not applicable the credit can be filtered.

Residential

Credit only applies to dwellings or apartments with a garden. If the service can not be designated, the credit can not be granted.

Collective compost facility

If, in the immediate vicinity (on street-/blocklevel) a for all residents accessible collective compost facility is present, the credit is granted.

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.1 m	Copy of the relevant sections of the specification of work confirming: • Specification of the composter • Location and size of the waste / compost storage • Water supply.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	A report from an on-site inspection by the assessor and photographic evidence confirming: • the compost / storage space is ready for use. • There are sufficient storage spaces / facilities. ○ there is a functioning water supply.
B	2.1	If applicable, a letter from the occupier or service provider confirming: 2. Location of off-site facility where compostable material will be stored. 3. The procedure and frequency for collecting compostable waste.

Definitions

None.

Additional Information

None.

References

None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	-	-	√	√

WST 6 Finishing elements

Credit aim
Promoting coordination with the future building users about the furnishings to be used and design of the building and thereby avoided waste of material.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	the furnishing and / or layout of the building is determined by the future building user, or - in rental situations - if the furnishing and / or design of the building is shown only in a small area.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 For rental spaces where the prospective user is not yet known, the finishing and furnishings such as carpets, wall finishes and pantries will only be shown in a presentation display .

Or

1.2 If a building is developed for a specific tenant, the tenant has chosen the furnishing and / or finish is selected or the tenant agrees with the chosen finish and / or furnishing.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull

Presentation display
The area may show an office floor or a separate office.The total floor space may not be greater than 25% of the total net area to lease in order to obtain credit.

Delivery without finishing / furnishing
If it can be shown that the building is completed without finishing / furnishing, the credit is automatically granted.

Offices

-

Retail

-

Industrial buildings

-

Lodging

-

Meeting

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	Specified design drawings and a copy of the specification in which the following is confirmed: 3. The materials used and total number of surfaces of the finish and / or furnishing.
B	1.2	If the prospective tenant is known, a letter from the client or design team confirming: 4. that the materials used and total numbers and areas of the finish and / or furnishings are specified or approved by the prospective user.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	A report from an on-site inspection by the assessor and photographic evidence confirming: 1. the finish and / or furnishing corresponds to the specifications or with the wishes of the prospective user.

Definitions

Finishes and furnishings

Under finishes and furnishings are defined as:

- Carpeting or flooring.
- Wall finishing.
- Ceiling Finish.
- Pantries, including counter tops in kitchen cabinets.
- Reception.
- Partitions.

Additional Information
None.

References
None.

08 Land use and ecology

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

LE 1 Re use of land

Credit aim

To encourage project developers, municipalities, housing corporations and other constructing parties to realise building projects at locations with a low ecological and landscape value, and to encourage the reuse of previously developed land in order to prevent the unregulated proliferation of buildings in rural areas.

Credit criteria

Up to five points can be earned because the choice of building location is a very important factor. Space is a scarce resource in the Netherlands and it is important to prevent what little space we have being completely built up. In principle, this credit encourages the development on reused land, or where this is not possible, on land that has low ecological or landscape value. If the project is developed on land of higher value then extra effort must made to ensure the minimal negative ecological impact by the development, see link with LE 3, LE 4 and LE 6. Points can only be achieved if the construction project is outside the boundaries of the EHS and / or a Natura 2000 site and / or a national park.

For the purpose of points allocation, the category from the table below that is (most) applicable to the construction project is to be used.

#	Point	Category	Description
1	1 point	A	Within a national landscape (eg green heart), on recycled land and all points achieved in LE 3, LE 4 and LE 6.
2	1 point	B	Outside a national landscape, on recycled land and all points achieved in LE 3, LE 4 and LE 6.
3	2 points	C	Within a national landscape, within urban areas and all points achieved in LE 4.
4	2 points	D	Outside a national landscape, on land with low ecological value and all points achieved in LE 4 and LE 6.
5	3 points	E	Within a national landscape, in urban areas, on recycled land and all points achieved in LE 4.
6	3 points	F	Outside a national landscape, on recycled land with low ecological value and all points achieved in LE 4 and LE 6.
7	3 points	G	Outside a national landscape, within the city limits and where this is the result of adoption / amendment of the boundaries within the past 10 years.
8	4 points	H	Outside a national landscape, in urban areas, within the city limits and where this is *not* the result of adoption / amendment of the boundaries within the past 10 years
9	5 points	I	Outside a national landscape, in urban areas, on recycled land.

Compliance requirements

The following demonstrates that the requirements are met:

1.1 t / 1.9 m

A statement in which category the construction site falls. This can be by means of a nature report in which the construction site is characterised. These shall include the following required items:

- A map showing the projected surface area of the construction project to realise, with all temporary buildings.
- A map showing the protected areas (if any) in and around the project area. For this, the card machine to be used, which can be found on the website of the Ministry of Agriculture in protected areas of Alterra: http://www.synbiosys.alterra.nl/natura2000/googlemapszoek.aspx The map must be made so that all natural areas are visible within a radius of at least one kilometer of the project area.
- A description of the current building and / or the current position to location, and a description of what happens to this building or this function as a result of the to realise construction project.
- Pictures of the construction site.

The following items should also be included if applicable:

- A municipal zoning (available on request from relevant municipality) showing that the building within the urban area is (category C, E, G t / l).

Zoning Changes for the construction project in all categories are invalid as evidence.
A zoning change for the benefit of the construction project may be used as evidence if this concerns a change of a building function into another building function such as a zoning change in the function from industry to retail.

- (Available on request from respective province) A provincial regional plan or equivalent showing what status the construction site has (category B, D and F).

Note: The nature report is performed both for LE 1 LE 3, LE 4 and LE 6.

Compliance notes

New building

-

Renovation

If for the purposes of renovation no new buildings or infrastructure is realised, 5 points can be awarded.

Expansion of existing buildings

When expanding an existing building, the percentage of the footprint applies (see reuse of land) to obtain the points for the realisation of the new part. The existing building can not be included for calculating the surface area.

Hull

-

Indirect negative impact
If an existing building or the function is moved outside the urban area in connection with the construction project. For example, there is a new building planned for the location where currently a garage is present. To make room for the new building, the garage space is moved to another location outside the current urban area. This is undesirable and in net terms has the same result as when it would be built right outside the urban area. If this is the case, it is necessary to assess the project equal to the building or land use that is to be moved.

Reusing land
At least 75% of the footprint of the proposed development on land in the past 50 years has been developed (paved ground) for industrial, commercial or social purposes.

This definition **does not** include land / soil that has nature value:

- Land that is (was) oocupied by agricultural or forestry developments.
- Land that has been used for mineral extraction or landfill where the country was subsequently restored.
- Land in built-up areas such as parks, recreation grounds, sports fields or allotments.
- Land that was previously developed but where the remains of the permanent structure or fixed surface structure have blended into the landscape over the years (to the extent that it can reasonably be considered part of the natural environment).For example, a ruin.

Temporary buildings
Temporarily buildings (during the construction period) are at or near the location count to calculate the footprint of the building project.

Offices
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Retail
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Industrial buildings
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School
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Residential
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Bed Function
-

Meeting Function
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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.9	A report describing the construction site, where the awarding of a certain category is motivated and proven. The proof consists of information that is publicly available. There are no requirements to the author of the report. The justification must meet the requirements set under the Compliance requirements.
B	1.1 t / 1.9	A site plan including the new building and all temporary buildings.
C	1.1 t / 1.9	A map of the plan area in which all nature areas within a radius of 1 km are shown.
D	1.1 t / 1.9	A description of the current building and / or function in the location (before completion of the project).
E	1.1 t / 1.9	Photographs and a description of the construction site for visual support of the aforementioned points.
F	1.1 t / 1.9	If applicable to category: the current municipal zoning and, if it is changed, the purpose of the construction project of the former zoning from before this change.
G	1.1 t / 1.9	If applicable to category: A provincial regional plan of the province (or equivalent) which shows the status the construction site has.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.9	The assessor checks whether the building is realised within the surface area of land reused and / or according to the remaining conditions that are specified during the design phase.
B	1.1 t / 1.9	The Assessor reserves the right to request evidence that the construction site stays within the limits of the zoning for more than 10 years.

Definitions

Built-up area
Space in the old municipal zoning (ie before the start of the project) is referred to as built-up area. If a zoning change is made in favor of the construction project, consulted the old zoning.

EHS
The Ecological Network, a spatial network is intended for the preservation and development of natural areas. The government has indicated that it should be, this network realised and the provinces have the task to determine this and realise.

National Landscape
These are areas with a unique combination of cultural, historical and natural elements that are typical of the Dutch landscape.

National Park
Areas (often within the EHS), which are considered the most valuable areas of the Netherlands.

Natura 2000
A European network of nature, where there is room for plants and animals to be preserved. Within Europe

Nature Reporting
A report prepared by an ecologist, in which all relevant ecological information about a building project is recorded (see Appendix 1 for an example of the contents of such a nature report). This document is drawn up and updated throughout the project by a qualified ecologist, from site selection to management of green space. Appendix 1 outlines the information in such a nature report should be included. Indicated

Recognised ecologist
For the definition of a qualified ecologist BREEAM is the definition of the Regulations (the service of the Ministry of Agriculture which permits and exemptions relating to the Flora and Fauna Act) applies.A recognised ecologist is a person who:

- at college, or university-level training course with an emphasis on (Dutch) ecology, *and / or*
- as an ecologist is working for an environmental consulting firm that is connected to the network Green Agencies *and / or*
- demonstrably actively involved in the protection of species and is affiliated with the previously existing in the Netherlands organizations (such as Das en Boom, VZZ, RAVON, BirdLife Netherlands, Butterfly Conservation, Natural History Society, IVN, NJN, IVN, EIS Netherlands, FLORON, VOFF , SOVON etc.).

Planning area
The circumference is realised in which the construction project. Temporary buildings and areas that are temporarily used, count in determining the planning area.

Overview of criteria

Category	Point	Outside national landscape	Within national landscape	Within built-up *	Country of less value (Mono-culture)	Re-use of land	Points of LE 3 achieved	Points earned LE 4	Points of LE 6 achieved
A	1		V		v	v	v	v	v
B	1	v				v	v	v	v
C	2		V	v				v	
D	2	v			v			v	v
E	3		V	v		v		v	
F	3	v			v	v		v	v
G	3	v		v					
H	4	v		v					
I	5	v		v		v			

** For category G is the zoning, indicated the village, containing less than 10 years.*

Additional Information
New construction projects are regularly realised in open, undeveloped landscapes, because it is cheaper and easier than the redevelopment of previously developed lands.This is at the expense of green and open spaces which are scarce in the Netherlands.

References

- Limitation and descriptions of nature, http://www.rijksoverheid.nl/ministeries/ez?_pageid=116, 1 & _dad = portal & _schema = PORTAL .
- Spatial Planning Act - Zoning.
- National Sustainable Urban Design Package (NPDS).
- Reference Sustainable Urban Development, http://www.npds.nl/stedenbouw/dsog/ .
- Habiforum - Knowledge Network for Sustainable Land Use, http://www.habiforum.nl/ .

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	√	√

LE 2 Contaminated land

Credit aim
The realisation of construction projects in locations with contaminated soil rather than in locations with clean soil.

Credit criteria
There can be up to 2 points awarded.

There should be substantial evidence that:

1	1 point	the construction project is realised in a location with seriously contaminated soil.
2	2 points	When the construction project is realised in a location with severely contaminated soil that is also urgent.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 From soil survey of the site it appears a serious pollution is (according to article 29 Soil Protection Act) present on the development site. The client / developer should hand over a document that proves this.
1.2 The client / developer proposes a sanitation plan / action plan, to be able to build on the to develop site. This plan should be approved by the competent authority (usually the province)
1.3 The client / developer executes the plan, and is therefore legally entitled to develop the site.

2.1 The first point is achieved.
2.2 In addition to the above requirements should indicate that the pollution is not only serious but also urgent (in accordance with Article 37 Soil Protection Act) the decision.

Compliance notes

New building
-

Renovation
In the event that no work occurs on the area during renovation , another area is to be cleaned with a comparable size to qualify for the points.

Expansion of existing buildings
-

Hull
-

Health and safety
Contaminated soils that are remediated in terms of health and safety (as opposed to make it suitable for construction project purposes), are not eligible for the point of LE 2.

Asbestos
The removal of asbestos from existing buildings does not count as remediation for these credits. If asbestos is present in the soil, the remediation of this is eligible for the point of LE 2.

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Lodge Function
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	A decision of the competent authority showing that the contamination may be called 'serious'
B	1.1 t / 1.3 m	A plan approved by the competent authority.
C	2.1	A decision of the competent authority showing that the contamination may be called 'urgent'.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t / 2.2 m	An evaluation showing that the plan is implemented as agreed.

Definitions

Competent authority

The institute is authorized to take decisions within the framework of contaminated soils and remediation plans. The competent authority shall approve remediation plans and / or plans of action for dealing with contaminated soils. Without the approval of the competent authority, a plan can not be implemented, and can be a construction project is not continued. In a case of serious contamination is usually the province of the competent authority. In some cases this is delegated, as in the Rijnmond region, where the DCMR competent authority.

Soil analysis
Soil analysis is often performed in different stages of an exploratory study to further and specific research.For the evidence in BREEAM is a research is needed in severity, urgency and location of pollution are shown.

EHS
The Ecological Network, a spatial network is intended for the preservation and development of natural areas. The government has indicated that it should be, this network realised and the provinces have the task to determine this and realise.

Contaminated soil
The function of an area determines the standards for contaminated soil. One area that will feature residential, will to stricter legal standards than an industrial area. This is reflected in the inspection performed by the competent authority.

Case of serious contamination
A pollution is severe if the volume ($m^{3)}$ and the concentration of a contaminant above a statutory fixed value (standard) come true.The standard is determined on the basis of the function of a location. For an industrial standards are higher than for a school.

National Park
Areas (often within the EHS), which are considered the most valuable areas of the Netherlands.

Natura 2000
A European network of nature, where there is room for plants and animals to be preserved. Within Europe

Plan of action
An implementation plan to make. Development on contaminated soil may The contamination can be removed, for example, and / or isolated.

Urgency or urgency
A pollution is urgent or urgent if pollution in the short-term negative impact on (1) ecology, (2) human health and / or (3) there is a risk that the contamination is spreading.

Additional Information
None.

References
- Soil Quality Decree, 2008.
- Directive Soil Maps, 2008.
- Covenant Soil premises, 2001.

Relevant laws and regulations

- Soil Protection Act, http://wetten.overheid.nl/BWBR0003994/geldigheidsdatum_22-07-2009 .
- http://www.rijksoverheid.nl/onderwerpen/bodem-en-ondergrond .
- NEN 5740: Soil - Research Strategy for exploratory research.
- BS 5707: Soil - Inspection, sampling and analysis of asbestos in soil.
- BS 5725: Soil - Guidelines for conducting research in exploratory, exploratory and further research.
- BRL SIKB: Review Guidelines for the quality of soil.
- BRL SIKB: 5000 Advice soil.
- BRL SIKB: 6000 Environmental supervision of (water) remediation and aftercare.
- BRL SIKB: 7000 Execution of (water) remediation.
- BRL 9335: Raw materials and package.

Relevant links

- Understanding measures to bring (soil) soil quality map or restore (remediation), http://www.bodemloket.nl/ .
- Map of locations

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

LE 3 Existing wildlife at the construction site

Credit aim
To encourage the adoption of measures to protect and maintain plants and animals that are present on the site during construction.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	a recognised ecologist has drawn up a nature report before the start of the construction. In addition, a recognised ecologist supervises during (specific) operations, in order to ensure that account is taken of existing plant and animal species during construction.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Before the start of the construction / site preparation a recognised ecologist prepared a nature report on which the construction site is described, based on a desk study, field visit and if necessary an inventory in the field. This means the following:

- The present plant and animal species have been inventoried.
- The potential for plant and animal species of the location is mapped, where this potential is related to the environment (regional location) of the construction site. This means that, for example, a construction site near the dunes, potentially can be of value for plant and / or animal species of dune systems.
- Part of the nature report is an ecological work protocol outlining how the contractor can realise the project with minimal or no damage to the flora and fauna. Note: The starting point is to do realise the construction project but with minimal disturbance to the flora and fauna.
- The contractor informs and trains the workers how ecological work protocols should be implemented.
- There is compliance with the legal obligations under the Flora and Fauna Act, the Nature Conservation Act, the Forest Act and the provincial compensation principle. This is confirmed by the recognised ecologist.
- To all EU regulations related to protecting and improving the ecology, will be or are met during the design and construction process.

1.2 A recognised ecologist has established that during the construction process, work takes place according to the working protocol and (the specific terms of) an exemption if granted.
and prepares a statement after completion.

Note: The nature report is prepared both for LE 1 LE 3, LE 4 and LE 6.(See Appendix 1.)

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings

-

Hull

-

Offices

-

Retail

-

Industrial buildings

-

School

-

Residential

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A copy of a drawn up report (nature report) containing: • an ecological description of the location and of the ecological potential of the site. • an overview of the possible effects of construction on local ecology. • a working protocol containing instructions for the operator to potentially mitigate / prevent negative effects.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 and 1.2	A report from a recognised ecologist attesting that: • the work has been implemented according to the working protocol. (This can be a chapter in the nature report mentioned above); • compliance with the relevant Dutch legislation relating to nature and ecology. • For homes, the developer encourages responsibility for the garden setting through the delivery of a manual outlining the main points from the nature report and are translated into understandable language for the user.

Definitions

Ecological work protocol
A document that during the execution of the construction project provides instructions to the contractor to spare, plants and animals and the possible measures for ecology (see LE 4) to perform. In a good way An ecological work protocol provides very concrete measures to this end. It is, if available, based on recognised by the Ministry of Agriculture 'code of conduct' and has to fulfill the duty of care and obligations under the Nature Conservation Act, and protecting heavily protected species (Article 2 of the Flora and Fauna Act and aim Red List species) and other rare species.

Recognised ecologist
For the definition of a qualified ecologist BREEAM is the definition of the Regulations (the service of the Ministry of Agriculture of licenses and exemptions relating to the Flora and Fauna Act) applies. A recognised ecologist is a person who:

- at college, or university-level training course with an emphasis on (Dutch) ecology, *and / or*
- as an ecologist is working for an environmental consulting firm that is connected to the network Green Agencies *and / or*
- demonstrably actively involved in the protection of species and is affiliated with the previously existing in the Netherlands organizations (such as Das en Boom, VZZ, RAVON, BirdLife Netherlands, Butterfly Conservation, Natural History Society, IVN, NJN, IVN, EIS Netherlands, FLORON, VOFF, SOVON etc.).

Nature Report
A report prepared by an ecologist, in which all relevant ecological information about the construction project is defined (see Appendix 1 for the content of such a nature report). This document is drawn up and updated throughout the project by a qualified ecologist, from site selection to management of green space. Appendix 1 is shown in outline what information in such a nature report should be included.

Duty of care
The duty of care means that human activity does not adversely affect the flora and fauna may have. The obligation applies to them all plants and animals, protected or not.In the case of protected plants or animals the duty of care as a waiver or exemption. Applies The duty of care for animals does not mean that no animals may be slain, but this, if necessary, with minimal suffering associated (source: Ministry of Agriculture).

Additional Information

Code of Conduct

- A document in which a performing party's commitment to meet the duty of care and the duty to protect. Heavily protected species of Flora and Fauna in certain activities This code of conduct should be approved. By the Ministry of Agriculture Conduct may be made by parties who perform the same types of activities. Collaborative The organization Building Netherlands states at the time that this document is drawn up, such a code of conduct.

Relevant laws and regulations

- Flora and Fauna Act (protection and conservation of native plant and animal species).

- Nature (protection and conservation of areas with specific value for the Dutch nature, see http://wetten.overheid.nl/BWBR0009641/geldigheidsdatum_13-11-2012).
- The Spatial o rdening obliges municipalities to draw up a plan.The zoning also be limited nature. Under the principle of care is to be no conflicts or other legislation with this Decision. Establishing a zoning (amendment), examined This means that a study of flora and fauna will take place to ensure that there are no legal articles violate the natural law.

References

- Ministry of Agriculture, Nature and Food for information about the Dutch nature legislation, http://www.rijksoverheid.nl/themas/landbouw-natuur-en-voedsel .

Relevant links

- The website http://www.natuurloket.nl/ you insight into the presence of protected species and information on the statutory provisions under which such animals and plants fall.
- Network Rural Agencies: for finding a qualified ecologist, http://www.netwerkgroenebureaus.nl/ ,

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	√	√	√

LE 4 Plants and animals as co-users of the plan area

Credit aim
Encouraging the adoption of design measures for the sustainable shared use of the to develop building and open space by native plant and animal species.

Credit criteria
There can be up to 2 points awarded.

There should be substantial evidence that:

1	1 point	measures are implemented in which species of Table 2 and / or 3 (of the Order in Council) of the Flora and Fauna Act and / or the Red List can make sustainable use of the building or the open space around the building.
2	1 point	in addition to the above measures, measures are also implemented which may be of significance for special or rare nature (values) on a regional scale.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 In the nature report the potential for plant and animal species of the location is mapped, where this potential is related to the environment (regional location) of the construction site. This means that, for example, a construction site near the dunes potentially can be of value for plant and / or animal species of dune systems.
1.2 The nature report should also contain a paragraph with recommendations to stimulate sustainable shared use of plant and animal species. This is achieved by the creation of the appropriate conditions for plant and animal species, i.e. create a suitable habitat.
1.3 A recognised ecologist confirms, after completion of the construction project (in the nature report), that measures are taken in which species of Table 2 and / or 3 (of the Order in Council) of the Flora and Fauna Act and / or the Red List can make sustainable use of the building or the open space around the building. Because it is a prediction of future sustainable use, it should be substantiated why the measures are expected to be successful. The ecologist will judge based on expert judgment if sufficient action is undertaken, and relates this to the ecological potential of the site. Please note: The ecologist involved will have to assess whether a point is earned on the basis of the effort made by the client / developer. This effort should be related to the ecological potential of the location (drafted in nature report for LE 3). This method is chosen because hard and quantitative requirements are difficult to establish in ecology.

2.1 The first point is achieved.
2.2 There are at least three species and / or groups of species with different habitat requirements measures.
2.3 Measures are implemented which may be of significance for special or rare nature (values) on a regional scale. This means, for example the realisation of an ecological corridor and contributing to nearby targets for Natura 2000 - or EHS areas. To achieve this credit custom advice and work is needed at the local level, and the assessment should be created by an independent and recognised ecologist

2.4 After completion of the construction project the recognised ecologist will, based on expert judgment, explain and judge whether sufficient measures are in place, and these are related to the ecological potential of the site.

Note: The nature report is performed both for LE 1 LE 3, LE 4 and LE 6.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
-

Redevelopment
Even if there is little ecological value present at a location at first glance, it makes sense to look at how we can encourage sustainable shared use of plant and animal species with a recognised ecologist

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
The credit is for homes only if communal areas or facilities are to be included during development. (common garden etc., wadis).
Not applicable to private facilities (garden, balcony).

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.2 m	A copy of the nature report prepared containing: ▪ Ecological description of the location and of the ecological potential of the site. ▪ Recommendations for creating ecological value. ▪ A letter from the developer indicating which

		recommendations of the ecologist are adopted and implemented.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

B	1.1 t / 2.2 m	Statement in which, after completion of the construction project, a recognised ecologist makes an estimate to which degree the location can be used in a sustainable way by plants and animals. From this is concluded how many points can be assigned for LE 4. This estimate is related to the ecological potential of the site.

Definitions

Recognised ecologist

For the definition of a qualified ecologist BREEAM is the definition of the Regulations (the service of the Ministry of Agriculture of licenses and exemptions relating to the Flora and Fauna Act) applies. A recognised ecologist is a person who:

- at college, or university-level training course with an emphasis on (Dutch) ecology, *and / or*
- as an ecologist is working for an environmental consulting firm that is connected to the network Green Agencies and / or
- demonstrably actively involved in the protection of species and is affiliated with the previously existing in the Netherlands organizations (such as Das en Boom, VZZ, RAVON, BirdLife Netherlands, Butterfly Conservation, Natural History Society, IVN, NJN, IVN, EIS Netherlands, FLORON, VOFF , SOVON etc.).

Habitat

The place where an organism which adheres to certain biotic (living) and abiotic (non-living) factors that a given organism may need to survive.

Nature Reporting

A report prepared by an ecologist, in which all relevant ecological information about a building project is recorded (see Appendix 1 for an example of the contents of such a nature report). This document is drawn up and updated throughout the project by a qualified ecologist, from site selection to management of green space. Shown in Appendix 1 outlines the information in such a nature report should be included.

Additional Information

The proposed methodology for whether or not to award points is not foolproof, because the (possibly subjective) assessment of an individual is crucial. However, there are reasons to do this way to allocate the points:

- Is expected by the professional and independent judgment of a professional. This applies even if ecological justifications are given in legal issues.
- The alternative, which is based on the absolute measurability of ecological value, is unrealistic and therefore not desirable.
- There is room for creativity and motivation.

- It is based on a positive attitude of the client / developer.
- The effort that is required can be measured (in the form of a nature report), and in itself extremely valuable.

Measures of significance for rare nature on a regional scale

This means, for example: the realisation of an ecological corridor or contributing to targets nearby Natura 2000 - or EHS areas. Regional scale can be interpreted more broadly than "authorized" nature. Municipal green structures for some types of 'regional' are seen from the species.

References

- Decision Red Lists flora and fauna, November 5
- Red Lists, Environment & Compendium, http://www.milieuennatuurcompendium.nl/indicatoren/nl1333-Rode-lijsten.html?l=2-8 .
- Green Network Agencies (NGB), http://www.netwerkgroenebureaus.nl/ .
- Dutch-Flemish Association for Ecology, http://www.necov.org/ .
- National Sustainable Building Package B392/S392/U392.

Relevant laws and regulations

Directive 97/11/EC.
Directive 2001/42/EC.
Environmental Management Act (EMA).
Strategic Environmental Assessment Directive.
The Birds and Habitats Directives of the European Union that indicate which species and natural areas (habitats) by the Member States should be protected. The two directives they are translated into the Nature Netherlands (Conservation Act) and the Flora and Fauna Act (Flora and Fauna Act).The Conservation Act is intended for site protection, while the Ff-law species protection aspects of the Dutch nature is concerned.

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
√	√	√	√	-	√	√

LE 6 Long-term sustainable co-use by plants and animals

Credit aim
Encouraging environmentally friendly management, maintenance and wildlife monitoring of the building and open space, to ensure sustainable shared use of the plants and animals targeted under 3 LE and LE 4.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	the client / developer further stimulates the shared use of the plants and animals as proposed in LE 3 and LE 4 by sound management in the long term.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 At least one point is gained for LE 4.

1.2 The client / developer is to hand to the future user (s) of the building, a by a qualified ecologist written (or approved) management plan for the building and open area for a period of six years. This management plan should:

- Be realistic and viable.
- provide information on who is responsible for what management (tenant, user, buyer, third party) and an ecology champion is designated (a person who pulls the cart to ensure the management plan is carried out).
- contain a monitoring and evaluation plan to assess the effectiveness of the management plan and development measures.

1.3 The management plan should be demonstrably implemented.

If the ecological management is carried out by a third party this should be approved by a qualified ecologist.
NB The management plan may be a chapter of the nature report, see LE 1 LE 3 and LE 4.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
-

Hull
-

Offices
-

Retail
-

Industrial buildings
-

School
-

Residential
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A draft management plan outline, which connects to the measures implemented to achieve points in LE 4 (can be a chapter in the nature report).
B	1.3	A statement from the client that the management plan will be implemented.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 and 1.2	The client / developer provides a copy of the management plan that meets the Compliance requirements.
D	1.3	A contract with an executive party that will perform the management plan.

Definitions

Recognised ecologist
For the definition of a qualified ecologist BREEAM is the definition of the Regulations (the service of the Ministry of Agriculture of licenses and exemptions relating to the Flora and Fauna Act) applies. A recognised ecologist is a person who:

- at college, or university-level training course with an emphasis on (Dutch) ecology, *and / or*
- as an ecologist is working for an environmental consulting firm that is connected to the network Green Bur *warning levels and / or*
- demonstrably actively involved in the protection of species and is affiliated with the previously existing in the Netherlands organizations (such as Das en Boom, VZZ, RAVON,

BirdLife Netherlands, Butterfly Conservation, Natural History Society, IVN, NJN, IVN, EIS Netherlands, FLORON, VOFF , SOVON etc.).

Nature Report

A report prepared by an ecologist, in which all relevant ecological information about the construction project is defined (see Appendix 1 for an example of the contents of such a nature report). This document is drawn up and updated throughout the project by a qualified ecologist, from site selection to management of green space. Shown in Appendix 1 outlines the information in such a nature report should be included.

Additional Information

Because the certificate is provided upon completion, it is impossible to check is going to be. Managing effectively implemented Therefore, given the points if the client / developer transfers a proper management to the users of the building. This has the effect that it is already reflected on the management. During the design phase

References

- Area-Biodiversity Action Plan (BAP), http://www.biodiversiteitactieplan.nl/ .

Offices	Retail	Industrial buildings	School	Residential	Lodging	Meeting
-	-	-	-	√	-	-

LE 9 Efficient land use

Credit aim
Promoting efficient land use by limiting the built area within the development.

Credit criteria
Up to 2 points can be awarded.

There should be substantial evidence that:

1	1 point	The Residential make efficient use of the ground surface.
2	2 points	The properties make very efficient use of the ground surface.

Compliance requirements
The following demonstrates that the criteria are met:

1.1. When the ratio "total usable area ':' total cultivated land area" for all properties on the site is jointly greater than 2.5:1.
1.2. When the ratio "total usable area ':' total cultivated land area" for all apartments on the site is jointly greater than 3:1.

2.1 When the ratio "total usable area ':' total cultivated land area" for all properties on the site is jointly greater than 3:1.
2.2 When the ratio "total usable area ':' total cultivated land area" for all apartments on the site is jointly greater than 4:1.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
-

Residential
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.2 m	Drawings or a copy of the specification confirming: • the total number of square meters built land surface. • the total number of square meters of surface area usage.
B	1.1 t / 1.2 m	Copy of calculating that shows the ratio between built and use surface.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 2.2 m	As-built drawings and specifications or confirmation that the Residential are built in accordance with the drawings and specifications in the design.

Definitions

Cultivated land area
The cultivated land area is the area within the outer perimeter of a building at ground level, where it is located. Within the site area

Additional Information
The available land for development will become increasingly expensive as the how much land is scarce. If this trend continues, it will develop into 'green' areas previously legitimacy.By making use of the available land efficient use is the need for the development of new "green" areas less.

References
NEN 2580: Surfaces and contents of buildings.

09 Pollution

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

POL 1 Refrigerant GWP - Building services

Credit aim
To contribute to a reduction in national NOx emission levels through the use of low emission heat sources in the building.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	in cooling or heat pump systems only refrigerants with a GWP less than 5 are used.
2	1 point	no refrigerants are used for climate control in the building.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The refrigerants which are used for regulating the climate in the building, have an ODP of 0 and a GWP of less than 5.

2.1 In the building, no refrigerants are used for climate control.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
If the expansion and the existing building use the same climate system, it must meet the same conditions, whether or not the existing building is part of the assessment. If the expansion is provided a private, independent climate control system, then only this has to be tested according to the Compliance requirements.

Hull
This credit can be awarded if the building is designed with a completely natural ventilation and no cooling is specified in the completion or finishing. If the building is not naturally ventilated and the design team can not discuss details of the refrigerant, the credit can not be granted.

Refrigerant charge less than 3 kg

This credit can be awarded if the total amount of refrigerants in the climate control system is less than 3 kg. The same applies to homes if the total amount of refrigerants in the climate control system is less than 1 kg.

Multi Split Systems
In the case of multi split systems, inside-/outside units or other complex systems, this credit may be granted if the total amount of the combined refrigerant less than 3 kg. If the total amounts to more than 3 kg, then all refrigerants must meet the criteria requirement. The same is true of homes as well if the total amount of the combined refrigerant is less than 1 kg.

Heat pump systems
This credit is also applicable to heat pumps.

Office Server Rooms
Refrigerants used in installations that are typical for cooling office server rooms should not be disregarded.
If server rooms are equipped with cooling, then this credit may not be met because usually the refrigerants used in these compact systems have a GWP> 5. If that's the case, then this credit can not be granted by default because alternatives can be considered.

These alternatives may include that the spatial design is revised or that the specifications that the indoor climate must meet, can be adapted to determine whether cooling is necessary. In addition to the often strict temperature requirements of producers or suppliers of server equipment, broader and yet acceptable temperature limits can be set that have no negative consequences, possible causing cooling to be unnecessary.

GWP specifications not available
If for a cooling installation or refrigerant no data is available on the GWP, no credit can be granted.

Offices
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Retail
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Industrial buildings
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School
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Residential
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Lodging
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Meeting
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the relevant sections of the specification of the work stating: • what types of refrigerants are used. • the total amount of the refrigerant used. • data from the producer in which the ODP and GWP of each refrigerant used is confirmed.
B	2.1	A copy of the relevant sections of the specification of work indicating that no use is made of refrigerants.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1	A report from an on-site inspection by the assessor and 'as built drawings in which the presence or absence of each installation is confirmed.
D	1.1	A letter from the design team or the developer confirming that the specified types of refrigerants (and total amounts) remained unchanged.
E	1.1	If changes have occurred with respect to the specified refrigerants: ○ A written confirmation of the design team in which the types of refrigerants used are indicated. ○ A written statement by the installer which shows, for each cooling installation, which refrigerants (and volumes) are applied. ○ Data from the producer in which the ODP and GWP of each refrigerant used is confirmed.
F	2.1	A report from an on-site inspection by the assessor and 'as built drawings confirming the presence or absence of each cooling installation.

Definitions

100 GWP (Global Warming Potential)
This is the contribution to the greenhouse effect expressed in CO_2 equivalents.The addition '100 'is the approval period of 100 years (ie the contribution of the refrigerant in 100 years).

Table XX List of some common refrigerant types with low GWP

R-Number	Chemical name	GWP 100-yr
R-30	Dichloromethane	8.7
R-170	Ethane	5.5

R-290	Propane	3.3
R-600	Butane	4
R-600a	Isobutane	3
R-702	Hydrogen	5.8
R-717	Ammonia	0
R-718	Water	0.2 ±0.2
R-729	Air (Nitrogen, oxygen, argon)	1
R-744	Carbon dioxide	1
R1216	Ethylene	3.7
R-1234yf	2,3,3,3-Tetrafluoropropene	4
R-1270	Propylene	1.8

Source: The United Nations Environment Programme (UNEP) '2006 Report of the Refrigeration, Air conditioning and Heat Pumps Technical Options Committee' (page 32-34), 2006: http://ozone.unep.org/

ODP (Ozone Depletion Potential)

Both CFC's and HCFC's are now tightly controlled or due to be phased out in the foreseeable future in all signatory countries to the Montreal Protocol on Substances That Deplete the Ozone Layer, BREEAM only recognises refrigerants that have an ODP of zero.Table - 52 gives current ODP figures for a range of available substances that are capable of acting as refrigerants, assessors should use this to verify the ODP of the specified refrigerant. Substances not on this list should be referred to the BREEAM office so that an appropriate figure can be established. NOTE: This table omits substances that are not typically used as refrigerants in buildings.

Table XXX - Ozone depleting potential of refrigerants

Refrigerant type	Ozone Depleting Potential	Refrigerant type	Ozone Depleting Potential
R11 (CFC-11)	1.00	R143a (HFC-143a)	0.00
R12 (CFC-12)	1.00	R32 (HCFC-32)	0.00
R113 (CFC-113)	0.80	R407C (HFC-407)	0.00
R114 (CFC-114)	1.00	R152a (HFC-152a)	0.00
R115 (CFC-115)	0.60	R404A (HFC blend)	0.00
R125 (CFC-125)	0.00	R410A (HFC blend)	0.00
Halon-1211	3.00	R413A (HFC blend)	0.00
Halon-1301	10.00	R417A (HFC blend)	0.00
Halon-2402	6.00	R500 (CFC/HFC)	0.00
Ammonia	0.00	R502 (HCFC/CFC)	0.74

R22 (HCFC-22)	0.05	R507 (HFC azeotrope)	0.33
R123 (HCFC-123)	0.02	R290 (HC290 propane)	0.00
R134a(HFC-134a)	0.00	R600 (HC600 butane)	0.00
R124 (HCFC-124)	0.02	R600a (HC600a isobutane)	0.00
R141b (HCFC-141b)	0.11	R290/R170 (HC290/HC170)	0.00
R142b (HCFC-142b)	0.07	R1270 (HC1270 propene)	0.00

References

None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

POL 2 Preventing refrigerant leaks

Credit aim
Preventing emissions of refrigerants into the atmosphere, caused by leaks in refrigeration (for air conditioning and refrigeration of goods).

Credit criteria
There can be up to 2 points awarded.

There should be substantial evidence that:

1	1 point	there are no refrigerants present. or: If there are refrigerants present, the leakage of refrigerant is detected and signaled.
2	1 point	no refrigerants are present **OR** Where refrigerants are present and it is shown that the cooling compressor is automatically turned off in case of a leak and the refrigerant is pumped to a heat exchanger or storage tank with valves.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 In the building, no refrigerants (<3 kg) were used.

Or:

1.2 Installations containing refrigerants are prepared in an average airtight space (or a mechanically ventilated installation room) and a gasleak detection system is installed for those parts of the installation with a high risk of leaks.

Or:

1.3 A system for automatic and continuous gasleak detection has been installed of which the principle is not based on the detecting or measuring the concentration of refrigerants in the air.

2.1 The first point is achieved.

2.2 The cooling system turns off automatically and refrigerants are pumped away when elevated levels of refrigerants are detected in the installation space. In general, these provisions only suffice when installations are arranged in an installation space or a controlled airtight space.

2.3 The automatic pump to a storage tank or heat exchanger is only permitted if automatic valves are also installed to hold the refrigerant after draining the system.

2.4 The value at which the alarm for the refrigerants pumping system is automatically triggered, can be set to up to 2000 ppm (0.2%), but it must also be possible to set lower values. This credit can not be granted to manual systems.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
For expansion of existing projects, containing existing air conditioning systems and refrigeration equipment for both the existing building component as the expansion, the existing systems are tested to the above requirements. If the expansion is provided with new equipment, then only those should meet the above requirements.

Hull
-

Solid refrigerants
The credit can be awarded if solid refrigerants are applied automatically.

CO_2 as a refrigerant
The credit can automatically be awarded when CO_2 is used as refrigerant.

Water as a refrigerant
The credit can automatically be awarded in the case of water as refrigerant, when the total amount is less than 3 kg refrigerant.

Multiple split units
The credit may be granted automatically if the amount of refrigerant per split unit is less than 3 kg. Even if the total of all refrigerant in split units in the building is more than 3 kg. This is based on the fact that the risk of a large leak is small, and that individual leakage will be small (<3 kg).

Heat pump systems
This credit is also applicable to heat pumps.

High risk
Parts of the installation with a high risk include, among others, the piping and the compressor. The evaporator or the condenser does not need to be assessed.

Manual detection and collection systems
Manual systems for collection and detection of refrigerant do not meet the requirements of this credit.

Offices
-

Retail
-

Industrial buildings
-

School
-

Lodging
-

Meeting

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the relevant sections of the specification of work indicating that no refrigerants are used.
B	1.2 and 1.3	A copy of the relevant sections of the specification of the work or a letter from the installation consultant in which the following is confirmed: • Type of leak detection. • Scope of the system.
C	2.1 t / 2.4 m	A copy of the relevant sections of the specification of the work or a letter from the installation consultant in which the following is confirmed: • Design of automatic leak detection system containing the operation, the type and scope; • Details of the completion of the installation space in which the cooling system is placed; The threshold value of the alarm when the automatic pumping installation is activated.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A report of the inspection on site by the assessor and photographic evidence confirming that there is no refrigeration installation.
B	1.2 and 1.3	An on-site inspection by the assessor and photographic evidence confirming that a leak detection system is installed.
C	2.1 t / 2.4 m	An on-site inspection by the assessor and photographic evidence confirming: • an automatic installation for collection of refrigerant is installed; • there is a pre-set threshold value is set for the automatic draining of the refrigerant.

Definitions

Average airtight space

A room without drafts or fresh air supply making it leaked gas could dilute (dilution can ensure that the gas is not detected).

Additional Information

None.

References

None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

POL 3 Refrigerant GWP - Cold storage

Credit aim
Reduce the contribution to climate change by encouraging the use of refrigerants with a low contribution to the greenhouse effect.

Credit criteria
There can be 1 point.

There should be substantial evidence that:

1	1 point	For storage refrigeration, refrigerants are used with a Global Warming Potential (GWP) of less than 5.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 All fluids were used for cooling have a GWP <5.

1.2 This requirement applies to all refrigerants for refrigeration storage (see definitions) belonging to the building, including:

- Walls, floors and ceiling of cold rooms.
- Amenities such as refrigerants or chilled water piping.
- Fixed refrigerators and freezers.
- Large plug-in refrigerators and freezers.

Compliance notes

New building
-

Renovation
-

Expansion of existing buildings
When the facilities are located in the existing building, these should be evaluated for the above requirements.

Hull
It is assumed that systems belonging to the building as a whole, are installed as part of the (shell) building. If this is not the case, the credit can not be granted if the GWP of refrigerants can not be demonstrated.

Household refrigerators and small plug-in coolers
The application of domestic refrigerators and small plug-in coolers can be disregarded.

Offices

-

Retail

-

Industrial buildings

-

Lodging

-

Meeting

-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A design drawing with signature of the design team that shall identify where were cooling is applied and where the cooling installations are located.
B	1.1 and 1.2	A copy of the relevant sections of the specification of the work containing the type of used refrigerants.
C	1.1 and 1.2	Data from the producer where the GWP of each refrigerant used is confirmed.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A letter from the design team or the developer confirming that the specified types of refrigerants have remained unchanged.
OR		
C	1.1 and 1.2	When changes have occurred: a. A written confirmation of the design team in which the types of refrigerants used are indicated. b. A letter from the installer which shows for each cooler which refrigerants are used. c. Data from the producer where the GWP of each refrigerant used is confirmed.

Definitions

GWP and ODP

See definitions section of POL 1 Refrigerant GWP - Building services

Refrigerated and frozen storage

The scope of this credit is mainly building-related refrigerated storage, such as in building integrated refrigeration and freezers, and refrigerators and freezers that are connected to a central cooling /

freezing system, for example catering or canteen. However, large plug-in refrigerating installations and professional refrigerators and freezers also belong to the scope of this credit.

References
None.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

POL 4 NOx Emissions from Heating Sources

Credit aim
Stimulating the application of heat system in which the NOx emission is minimized. This will reduce local air pollution.

Credit criteria
There can be up to 3 points awarded.

There should be substantial evidence that:

1	1 point	the maximum space-related dry-NOx emission is less than or equal to 70 mg / kWh supplied heat energy.
2	2 points	the maximum space-related dry-NOx emission is less than or equal to 50 mg / kWh supplied heat energy.
3	3 points	The maximum for space-related dry NOx emission is less than or equal to 35 mg / kWh supplied heat energy.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The maximum space-related dry-NOx emission (at 3% excess $O_{2)}$ is less than or equal to 70 mg / kWh supplied heat energy.

2.1 the maximum space-related dry-NOx emission (at 3% excess $O_{2)}$ is less than or equal to 50 mg / kWh supplied heat energy.

3.1 The maximum for space-related dry NOx emission (at 3% excess $O_{2)}$ is less than or equal to 35 mg / kWh supplied heat energy.

For accommodation function:

3.2 The maximum for space-related dry NOx emission (at 0% excess $O_{2)}$ is less than or equal to 100 mg / kWh supplied heat energy.

Exemplary performance
The following shows criteria for exemplary performance and make it possible to earn one innovation point for this BREEAM-NL credit:

3. One innovation point can be awarded if the evidence provided demonstrates that the maximum dry space-related NOx emissions (at 3% excess $O_{2)}$ is less than or equal to 0 mg / kWh supplied heat energy.

Compliance notes

New building
-

Renovation
When the (existing) space heating systems are located in the existing building, they must be assessed on the above requirements.

Expansion of existing buildings
The above addition to renovation also applies to extensions to existing buildings.

Hull
When the final system choice is for the buyer or tenant, the design must be assessed on a worst-case design. The credits can only be issued if the NOx emissions can be determined.

Gas Hallmark SV
Heating with natural gas according to the gas label Clean Combustion (SV) automatically fulfills the first Credit criteria. For propane and butane burning appliances this only applies to devices with fully premixed burner technology. The gas label SV applies to devices with a nominal load of up to 900 kW.

Heating with electricity
If (parts of) the building is heated with electricity from the national grid, the average NOx emissions should be based on 223 mg NOx / kWh electricity (source: BREEAM international 2013 – page 320).

Renewable energy
If electricity from renewable energy sources without emissions is used for space heating (solar, wind, etc.), there are no emissions. It can therefore be argued that there are no NOx emissions.

Green power
The purchase of green electricity for space heating is not honored by this credit, because it can not be sufficiently checked if green power has a low NOx emission.

Biomass-fired plants
For this, the actual NOx emissions should be assessed measured according to EN 14792.

District heating
District heating systems based on waste incineration generally have higher NOx emissions than those required to meet the criteria in BREEAM.

Heat and industrial waste heat
Heat provided by a heat recovery system and industrial waste heat, if locally produced in the project plot and used for space heating, no NOx emissions are attributable.

CHP
See the section with additional information to calculate the NOx emission levels associated with the application of heat and power.

Multiple heating systems
When several heating systems contribute to the heat demand, a weighted average NOx emission is calculated on the basis of the contribution of each system to the total heat demand of the building.

Offices
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Retail
-

Industrial buildings
This credit applies to the office space and premises of industrial buildings.

School
-

Residential
-

Bed Function
-

Meeting Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 3.2 m	A copy of the relevant sections of the specification of the work in which the type of heating system to install is confirmed.
B	1.1 t / 3.2 m	For each system a written statement from the producers of the product or products in which the NOx emissions is confirmed according to typetesting.
C	1.1 t / 3.2 m	If more than one system is responsible for the heating calculations of the design team are required to confirm the average NOx emission (see Compliance notes).

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

D	1.1 t / 3.2 m	A report from an on-site inspection by the assessor and photographic evidence confirming the installation of heating systems specified in the design.

Definitions

Dry NOx emission levels
The NOx-emissions (mg / kWh), which produced by the combustion of fuel with a moisture content in the flue gas of 0%.

NOx emissions
Toxic gases from the combustion of fossil fuels. Heat and sunlight NOx, ozone reacts so arises, causing serious respiratory problems.It also reacts with water, causing acid rain. This has detrimental effects on ecosystems.

Additional Information

Calculating NOx emission levels of heat and power systems (CHP) systems

If CHP systems are present or specified, only the heat-related emissions are included for this credit. The NOx emissions are allocated to heat and electricity according to the respective energy. This is done by means of the use of a NOx emission value for the supplied electrical power generation equivalent to the current value of the electricity through the network, and are allocated to the remaining NOx for the heat supply. Only the heat-related component refers to this credit. The following formula is used to determine this:

X = (A - B) / C

2. where: X = NOx emissions per unit of heat supplied (mg / kWh heat).
3. A = NOx emissions per unit of electricity generated (mg / kWh electricity), for example, the NOx emitted by the CHP plant per unit of electricity generated. This value must be supplied by the installer / supplier of the installation.
4. B = NOx emissions per unit of electricity supplied by the grid (mg / kWh electricity). This may be based on 223 mg NOx per kWh of electricity.
5. C = heat-to-power ratio of the CHP plant.

The above methodology determines the net NOx emissions generated by cogeneration electricity compared to the centrally generated electricity and allocates this quantity to the heat.If X is negative, then it can be taken out easily that X is zero.

Calculating NOx emission levels of electrically driven heat pump systems

Heat pumps use electricity to generate heat.Therefore it should be with the electricity consumption of the heat pump. Electric heat pump systems at the reference NOx emissions from electricity from the national grid multiplied The resulting total NOx emissions should be the No heat produced. Then allocated

When calculating the NOx emissions of a heat pump must be. SCOP measured in accordance with BS EN 14825 used

: In a SCOP of 3.8 and a reference NOx emission for grid electricity of 223 mg / kWh NOx emission is

NOx emission = 223/3, 8 = 58.7 mg / kWh (based on that can be awarded 1 point).

Conversion Factors

- Suppliers should be used to deliver in mg / kWh. The dry-NOx emission requestedIf this is impossible, the following conversion factors used to calculate the emissions data from ppm, mg / MJ, mg / m^3 or wet NOx.These conservative conversion factors with relatively low returns is assumed, which can affect the score to achieve. Downward pressure
- Figures in mg / m^3 should be 0, 857 to obtain mg / kWh. Emission figures multipliedAn additional conversion may be required for emission figures are not calculated at 3% excess oxygen (see Excess Oxygen Correction).
- Figures in parts per million (ppm) should be treated with 1, 76 in order to obtain in mg / kWh. Emission figures are multipliedAn additional conversion may be required for emission figures are not calculated at 3% excess oxygen (see Excess Oxygen Correction).
- Figures in mg / MJ should be 3.6 to obtain mg / kWh (1 kWh = 3, 6 MJ). Emission figures multipliedAn additional conversion may be required for emission figures are not calculated at 3% excess oxygen (see Excess Oxygen Correction).

- These requirements are based on dry NOx values - as used by most manufacturers.If, however, wet NOx emissions figures provided they can be converted to dry NOx by multiplying the wet NOx emissions by 1.75.

Excess Oxygen Correction

If a NOx emission figure should then be judged by what percentage the oxygen excess emission is measured. EstablishedThe greater the zuurstofo Vermaat in the flue gases, the more the NOx thins.Therefore, all NOx emission data be converted to 3% excess oxygen ($O_{2)}$.

The NOx-emission at 3% excess oxygen is calculated as follows:

NOx emissions (at 3% $O_{2)}$ NOx emissions (measured by $O_{2\%)}$ x conversion factor c.

Conversion factor c = (17.9) / (20.9 - x).

Where x =% excess oxygen (not air excess) and 20.9 is the percentage of oxygen in the air.

References

- CV-SV: 2001: Gaskeurcriteria; criteria for gas inspection / cv-label for gas fired boilers with a nominal load of 900 kW.
- Decision type test heaters air pollutants nitrogen oxides dated July 11, 1995.
- Bees B: Decision emission standards for combustion Environment B.
- Decision emission requirements sized combustion plants (BEMS).
- NOx: BS EN 14792: Stationary source emissions - Determination of mass concentration of nitrogen oxides (NOx) - Reference method - Chemiluminescence.
- ECN-C-05-015: NOx Emissions from small sources, update of the emissions in 2000 and 2010.February 2005. Including appendices and attachments option to document 2010/20 dated 13 March 2006.
- Figures and tables in 2007, SenterNovem.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	√	√	√

POL 6 Surface Water run-off

Credit aim
To avoid, reduce and delay the discharge of rainfall to public sewers and watercourses, therefore minimising the risk of localised flooding on and off site, watercourse pollution and other environmental damage.

Credit criteria
A maximum of 3 point.

There should be substantial evidence that:

1	1 point	effective treatment at the site itself, such as a sustainable urban wastewater system or oil separators, is specified for areas that are (can be) a source of surface water pollution.
2	1 point	sustainable water storage and infiltration measures are specified to ensure that the peak rate of run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site.
3	1 point	sustainable water storage and infiltration measures are specified to ensure that the run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 Specification of sustainable urban wastewater systems or source control systems such as permeable surfaces or infiltration trenches or drains for rainwater runoff that are located in areas with a relatively low risk of pollution of watercourses.
1.2 Specification of oil separators (or similar systems) in surface water drainage systems in areas with a high risk of contamination or spillage of substances such as gasoline and oil (see Additions to Compliance requirements for a list of sites).
1.3 Confirmation that the competent authority agrees to the proposals.
1.4 A current drainage plan of the site will be made available to the users of the building / location.

2.1 Where drainage measures are specified to ensure that the peak rate run-off from the site to the watercourses (natural or municipal) is no greater for the developed site than it was for the pre-development site. This should comply at the 100 year D=60 return period events.
2.2 Calculations include an allowance for climate change for the next 50 years. The minimum allowance for climate change is an increase of 20% peak rate water run-off.

3.1 The post development run-off volume, over the development lifetime, is no greater than it would have been prior to the assessed site's development.
3.2 Any additional predicted volume of run-off for the 100 year D= 6 hour event must be prevented from leaving the site by using infiltration or other Sustainable Urban Drainage (SuDS) techniques.
3.3 Calculations include an allowance for climate change for the next 50 years. The minimum allowance for climate change is an increase of 20% water run-off.

Compliance notes

New building

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Renovation

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Expansion of existing buildings

See the Compliance notes for expansion development in existing locations.

Hull

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Areas that are a source of pollution

For the purpose of this credit areas that pose a risk of contamination of waterways are: areas with vehicle maneuvering, parking, waste collection devices, delivery, storage or industrial sites.

Areas where oil separators are required

The following areas (if present) require oil separators in surface water drainage systems:

1. Parking greater than 800 m ^{2} or with 50 or more parking spaces.
2. Smaller parking spaces with run off to a sensitive natural area.
3. Areas where trucks are parked or maneuvered.
4. Vehicle Maintenance Areas.
5. Roads.
6. Industrial areas where oil is stored or used.
7. Service stations.

Sustainable urban water storage and infiltration systems

A series of management modes and control systems designed to perform surface run off in a more sustainable manner than some conventional techniques.
Included are:

- Storage Ponds.
- Wadis.
- Reed fields.
- Permeable paving: in areas where local geological and hydrological conditions allow, for example, paved surfaces on a permeable layer on a gravel bed to store the water to where it can penetrate the soil. For less permeable soils, the gravel layer can be deeper and this can bring the water to an infiltration installation, although this is not possible in some areas.
- Drain water from roofs is collected as part of a rain water collection system.
- Drain water from roofs is passed on to an infiltration facility or other storage device such as tanks, ponds, wadis etc.
- Green roofs.

Expansion development in existing locations

If an expansion of an existing site is assessed it shall be tested for both areas within the construction zone that pose a risk of pollution as well as any area outside that is influenced by the new work, such as drainage to or from the proposed development.

Adequate level of treatment
In all cases, the assessor should determine whether the proposed surface water drainage strategy is appropriate for the daily use of the site.

Treatmet of rainwater run-off
This credit is not intended for the treatment of rainwater run-off unless there is a risk of significant contamination.

Underground / covered areas
If it can be demonstrated that there is no drainage or rinsing installation that can lead water from inside the underground or covered areas to natural waterways, these areas meet the requirements.

Roof installations
Installations on the roof should be assessed if there is a risk of substances like gasoline or oil. Refrigerants are not assessed in this credit as they pose a risk of contamination of the air and not of waterways.

No threatened by pollution areas
If it can be demonstrated that there are no areas that pose a pollution risk, such as parking, delivery, maneuvering or maintenance installations (including individual parking spaces), external waste storage or other hard places and there are no facilities provided on the roof, the requirements of this credit are met.

Permeable paving
If it can be demonstrated that a permeable pavement designed to hold sludge and to break down oil is used, then this satisfies the requirements of the credit for parking lots and roads.

Drainage Plan
A comprehensive and up to date drainage plan of the location, on which all drains are accurately indicated, should be made and handed over to the new user. If there is no internal expertise to do so, a qualified drainage company can be used.

Workshop
Workshops should be assessed on the basis of the above criteria. This is because in some cases any kind of vehicle maintenance may form part of a showroom or some other type of retail space.

Offices
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Retail
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Industrial buildings
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School
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Residential
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Lodging

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Meeting

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Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 and 1.2	A proposed plan for the site with explanations in areas with low and high risk.
B	1.1 and 1.2	A copy of the specifications or the design plan with the specified type of pollution control.
C	1.3	Confirmation that the competent authority agrees to the proposals.
D	1.4	A letter from the design team confirming that a copy of the drainage plan will be made and given to the user of the building.
E	2.1 t/m 3.2	Data from a qualified consultant / hydrologist with relevant work experience and / or qualifications.
F	2.1 t/m 3.2	Location drawings and a copy of the specification of the advisory report confirms that: • The type and storage volume (l) of the dampening measures for runoff water. • Total surface pavements (m 2). • Peak run off speed (l / s) for the design flow. • Additional space included in the system for climate change.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

G	1.1 and 1.2	A report from an on-site inspection by the assessor and photographic evidence confirming that sustainable urban wastewater systems, source control or separators are used.
H	1.1 and 1.2	A copy of the drainage plan.
I	2.1 t/m 3.2	Report of an inspection of the site by the assessor with photographic evidence confirming: • Installation of dampening measures for runoff water. • No changes in proof that is provided in the evaluation of the design phase.

Definitions

Competent authority

This refers to the body responsible for the authorization and determining the conditions for the disposal of roof and surface water to watercourses.

Areas with a low risk
These are areas where the risk of contamination or spillage of substances such as gasoline and oil is limited.For the purposes of this credit may roofs and small parking spaces are considered. As areas of low risk

Infiltration Facilities
An underground structure designed to encourage. Infiltration of surface water into the ground In general, infiltration shallow and wide, such as a layer below permeable pavements, or deeper structures. Deeper, point source infiltration facilities should be avoided for drainage of roads and parking lots, but shallow structures that provide sufficient infiltration in a broad way (infiltration trenches and permeable paving), are not required. Separators

Types of oil separators
Class 1 separators
These are designed in order to achieve less than 5 mg / l of oil under standard test conditions, a concentration. They should be used if the separator very small oil droplets, such as rainwater runoff from parking lots, must remove.

Class 2 separators
These are designed in order to achieve less than 100 mg / l oil under standard test conditions, a concentration. They are suitable for drains where a lower jellyfish iteitseis apply and / or to absorb large spills.
Both classes can "fully persistent 'or' omloop'afscheider are.

Fully retaining separators
Treating the current that is delivered by the drainage system which is normally equal to the current which is generated by a rainfall intensity of 50 mm / hour.

Omloopafscheiders
Completely cover all the streams which are generated by rain intensities of up to 5 mm / hour. Currents above this speed can walk around the separator. These separators are used if it is an acceptable risk not to treat. Large flows completely
The references contain more detailed guidance on the selection and design of a suitable type separator.

Additional Information
None.

References
- Data on rainfall are available through KNMI Operational Data Centre (Kodac), https://data.knmi.nl/portal-webapp/KNMI-Datacentrum.html # .
- NEN 6702: Technical principles for building structures - TGB 1990 - Taxes and deformations.
- NPR 6703: Water Accumulation - Additional calculation rules and simplifications for the load case rainwater in NEN 6702.
- NVA, Dutch Association for Water, http://www.waternetwerk.nl/ .
- UvW Association of Water Boards, http://www.uvw.nl .
- VNG, Association of Dutch Municipalities, http://www.vng.nl .
- NEN-EN 858-1 and -2: Separator systems for light liquids (eg oil and petrol).
- BS 7089: Oil separators and sludge traps - type classification, requirements and test methods.

- BS 7067: Gullies - Definitions, nominal dimensions and functional requirements.
- BS EN 1253: Parts 1-5 Drains and gutters for buildings.
- BS EN 14654: Approach control and cleaning of the outer sewage.
- BS EN 1433: Drainage channels for vehicular and pedestrian areas.

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

POL 7 Reduction of night time light pollution

Credit aim
Ensure that outdoor lighting is arranged in such a way that the right areas are illuminated, light facing up is minimized and light pollution, energy consumption and nuisance to adjacent lots is minimised.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	During the design of the lighting, the outside lighting, facade lighting en lighting for advertisements, the guidelines of the committee Light Pollution of the Dutch Foundation for Illumination are taken into account.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 The design for outdoor lighting should be designed in accordance with the following guidelines of the committee Lichthinder of NSVV (Dutch Foundation on Illumination):

a. Lichthinder Part 2 Outdoor lighting.
b. Lichthinder Part 3 Illumination of buildings and objects outside.
c. Lichthinder Part 4 Advertising lighting.

1.2 All exterior lighting (except security lighting) can be automatically switched off between 23.00 and 7.00. This can be realised by means of a timer on the relevant hour.

1.3 If security lighting is needed and used between 23:00 and 7:00 pm, it must be dimmed during these hours according to the guidelines of the NSVV and BS EN 12464-2, for example by the use of an automatic switch to lower the light level from 23.00 hours or earlier.

Compliance notes

New building
-

Renovation
For renovation projects any new lighting as well as existing lighting that remains, is to be tested against the requirements.

Expansion of existing buildings
When assessing only the expansion, only the expansion is to be assessed. If both the new and existing buildings are to be assessed as a whole, both the existing part and the new part are to be assessed as described under renovation.

Hull
-

No outdoor lighting
If there is no outdoor lighting, advertising lighting or lighting for illumination of the building is present, the points are awarded by default.

Safety Lighting
Flashing lights that are used for the safe maneuvering of vehicles, may be ignored for the assessment.

Spotlights, signal lights
The guidelines require that a curfew is in effect for all non-essential exterior lighting. Included are spotlights, signal lights and all other lighting not needed for security reasons.

Essential lighting between 23:00 and 7:00 pm
If necessary lighting is used between 23:00 and 7:00, for example, 24-hour operations, those should be automatically dimmed during these hours according to the guidelines of the NSVV and EN 12464-2. It is also possible to apply this lighting level to be applied as default.

Special safety
All light fixtures that are described above and are necessary for safety reasons, may be excluded. In the event that the safety and BREEAM requirements do not match, the assessor provides evidence that in these cases such requirements apply to the building.

Offices
-

Retail
-

Industrial buildings
-

School
-

Meeting Function
-

Bed Function
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1 t / 1.3 m	A signed copy of the site plan which indicates: 4. which parts of the building and of the area (from outside) are illuminated. 5. where the surrounding buildings is.
B	1.1 t / 1.3 m	A copy of the relevant sections of the specification of the work or the lighting design which states:

		• That the lighting design meets the NSVV guidelines. • That there are switches for all outdoor lighting.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

C	1.1 t / 1.3 m	A report from an on-site inspection by the assessor and photographic evidence confirming that the lighting and measures have been implemented according to the lighting plan.
D	1.1 t / 1.3 m	A written declaration from the design team or main contractor confirming that the installation of the lighting is carried out in accordance with the design and that no changes are made in conflict with the supplied design.

Definitions

Upward Light Ratio - ULR
The relative upward flux in relation to the total amount of light emitted, for the purpose of minimizing the armature upwards by a quantity of light emitted directly.

Outdoor lighting
Lighting paths, roads, input / output, parking lots, garages and other outdoor areas that fall within the plot of the building, including the exterior of back paths and courtyards of homes. Also, advertising lighting and buildings delusion lighting (illuminance of outside walls) are subject to validation.

Additional Information

References

- General directive on light pollution, Part 1: General and limits for sports lighting (HI-101), NSVV committee light pollution. It is only the part "General" apply.
- General directive on light pollution, Part 2: Outdoor lighting (HI-102), NSVV committee Lichthinder.
- General directive on light pollution, Part 3: Illumination of buildings and objects (HI-104), NSVV committee Lichthinder.
- General directive on light pollution, Part 4: Advertising Lighting (HI-105), NSVV committee Lichthinder.
- BS EN 12464: Light and lighting - Workplace lighting - Part 2: Workplaces outdoors

Offices	Retail	Industrial buildings	School	Residential	Meeting Function	Bed Function
√	√	√	√	-	√	√

POL 8 Noise attenuation

Credit aim
Reducing the chance that sound of the project constitutes nuisance for nearby noise sensitive buildings during the use phase.

Credit criteria
A maximum of 1 point.

There should be substantial evidence that:

1	1 point	sound of the project during the use phase does not give rise to complaints about noise from existing noise-sensitive buildings or natural areas in the vicinity of the project.

Compliance requirements
The following demonstrates that the criteria are met:

1.1 There are, or will be, existing noise-sensitive areas or buildings within 800 meters of the tested project. If no noise sensitive areas or buildings are or will be present in the vicinity of the project to test, then the credit can be assigned by default.
1.2 In accordance with the Manual measuring and calculating industrial noise (HMRI) a sound study is conducted into the expected long-term average assessment level (LAr, LT) and the maximum sound level (LAmax) in respect to the source of the normative noise sensitive locations. Both the noise level at the location of the facade and the inner level should be determined. The sound research should be carried out by a suitably qualified acoustic consultant of a qualified agency.
1.3 When the sound level as a result of the premises or building is less than or equal to the values from Table 1, the point may be assigned.
1.4 When the sound level as a result of the premises or building is higher than the values in Table 1, source-based measures must be taken.

Table 1

	07:00-19:00	19.00-23.00 hours	23.00-07.00 hours
LAr, LT on the facade of sensitive buildings	45 dB (A)	40 dB (A)	35 dB (A)
LAr, LT in and on adjoining sensitive buildings	30 dB (A)	25 dB (A)	20 dB (A)
LAmax on the facade of sensitive buildings	65 dB (A)	60 dB (A)	55 dB (A)
LAmax in and on adjoining sensitive buildings	50 dB (A)	45 dB (A)	40 dB (A)

Compliance notes

New building

-

Renovation

-

Expansion of existing buildings
-

Hull
If the use of the building is not known, the assessment should be based on the maximum worst-case design scenario.

Part of a larger project
If the building is part of a larger project where noise-sensitive locations exist or are being developed, an acoustic research is needed to assess whether the assessed building does not cause any problems in the future.

Rated building itself is sound sensitive location
If the building itself is a sound sensitive location, then an acoustic survey is carried out regardless of the distance to other noise-sensitive locations.

Directive does not apply
If according to a qualified acoustic agency, the HMRI guideline is not applicable, an assessment based on the likelihood of noise complaints is used for the assessment of this credit.

Scope of the acoustic survey
In the acoustic study, all noise sources in and around the building in question should be included. The exceptions in the Activities Decree, Section 2.8, are applicable.

Construction noise and noise during construction
Noise during construction is not covered by this credit (see above under Scope of the acoustic survey), it is judged in MAN 2.

Offices
-

Retail
-

Industrial buildings
-

School
-

Lodging
-

Meeting
-

Schedule of evidence required - Design Stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A copy of the site plan showing: • All existing and planned noise-sensitive buildings on and near the development site. • The planned sound sources of the building to assess. • The distance of these buildings in regards to the building to assess.
B	1.2 and 1.3	A copy of the acoustic investigation carried out in accordance with the HMRI with the demonstrated qualifications of the acoustician. Or: A copy of the acoustic investigation carried out in accordance with the HMRI with the demonstrated qualifications of the acoustician.
C	1.4	If applicable, the acoustic study with recommendations for noise abatement measures. One of the following proofs: ○ A design with signature containing a specification of noise abatement measures *OR* • A formal letter from the client or the design team that, if applicable, the noise-reducing measures prescribed by the qualified acoustician will be installed.

Schedule of evidence required - Post construction stage

Proof below is intended to support the explanation of accountability of the project.

A	1.1	A report from an on-site inspection by the assessor and photographic evidence in which are laid down: • All existing and planned noise-sensitive buildings on and near the development site. • Planned sound sources of the building to assess. • Distance from these buildings in regard to the building to assess.
B	1.4	If applicable: • An on-site inspection by the assessor and photographic evidence confirming that the noise abatement measures are applied effectively (and correctly). • A formal letter from the acoustician stating that all noise-reducing measures have been made effectively and appropriately.

Definitions

Sound Sensitive
Noise sensitive locations and areas are defined in the Noise Abatement Act (Wgh) and the Decree on noise (BGH).

HMRI
Manual Industrial Noise Measurement and Computing.

Additional Information

None.

References

- Manual measuring and calculating industrial noise. Ministry of Housing, 1999.
- ISO 1996-1:2003: Acoustics - Description, measurement and assessment of environmental noise - Part 1: Basic quantities and assessment procedures.
- ISO 1996-2: Acoustics - Description, measurement and assessment of environmental noise - Part 2: Determination of environmental noise levels.
- ISO 1996-3:1987: Acoustics - Description and measurement of environmental noise - Part 3: Application to noise limits.
- Noise Abatement Act: is incorporated herein EC Directive 2002/49/EC on the assessment and treatment of noise.
- EC Directive 2000/14/EC on the noise by equipment for outdoor use.
- Decision of 19 October 2007, no 07.001133 down general rules for devices (Decree on general rules for environmental management).

Attachments

Nature Reporting

It is wise to ask all the evidence and background information for gaining points on the component land use and e cologie a document.Below, it is proposed in which components such reporting end should come. Is also indicated in which part of the credit applies. In the chapter is more described in detail what information should be included for the burden of proof.This appendix shows the relationship between the different topics and chapters.

Chapter Contents	Applies to
Description of the construction site before work started.	LE 1, LE 2, LE 3, LE 4 and LE 6
The effects of construction work (temporary effects) and the presence and use of the new building (permanent effects) on the ecological values (protected species and natural general).	LE 3
Proposal by the ecologist how the negative effects can be prevented and / or mitigated (mitigate) the design (interior measures), the realisation phase and / or the management phase.	LE 3, LE 4, LE 6
Proposal how ecological value can be created (and generally protected during design (interior measures), realisation, management phase).	LE 4, LE 6
An ecological work protocol with (1) evidence of the contractor to minimize adverse effects on flora and fauna during the execution and (2) instructions on how the proposals 3 and 4 can be effectively implemented.	LE 3, LE 4
A report of a visit to the construction site, to make sure work is in accordance with the recommendations of the ecologist.	LE 3, LE 4
A management plan with instructions for administration, monitoring, evaluation and adjustment.	LE 6
A contract with a local partner.	LE 8

Technical checklist A2

Project Name:	
Registration:	
Date:	
Entered by:	
Organization	
Function:	

1.Safe access

This section aims to show that the contractor in a safe and appropriate manner provides access on and around the construction site. To The following items show this:

Ref	Criteria requirement	√	Proof	Validation
a	A convenient and safe access to the building site is provided, wherein at least the following criteria is met: - Provision of sufficient parking at or near the site, tailored to the expected number of employees and visitors to the site. Or: - A public transportation hub with an average rate of under 30 minutes at 500 m distance. Or: - Shuttle services to a major public transport organized by the main contractor. - Good lighting. And: Suitable fencing. And: Smooth road surface and in the access to the site (no tripping risk). - All entrances clean and mud-free. - Fence or scaffolding evening well lit (if necessary). And: All scaffolding with scaffold nets.These nets are well maintained.		See copy of parking and the number of employees expected. Or: Check timetables for public and shuttle services. Spot check.	
b	A convenient and safe access to the reception site and all areas where visitors can come is provided, in which the following criteria are met:		Spot check, check the list of dangers is complete.	

	- Footpaths are clearly marked with lines and if necessary ramps. - All hazards are clearly published on the site at the entrance to the construction site.			
c	The inputs and outputs of the site are marked with signage from any possible supply route for suppliers and visitors.		Spot check.	
d	A construction site reception is clearly indicated. Or: All visitors and deliveries are accompanied by a person at the front desk.		Check the signage on arrival. Request a copy of the release procedure for inspection.	
e	Mail delivery is via an alternative address. Should there be mail delivery on the site is provided, the mailbox of the site placed on the street side, so that the postman does not the construction site.		Spot check.	
f	Where people work at the construction site who speak another language or where people live who speak a different language, all signs (eg warning signs and information boards) published in several languages.		Check is present in the staff register and in the vicinity of a minority culture. When there is a minority culture, check if there are signs present in that language.	
g	All traffic signs / road signs on and around the site are clearly visible. Where the view of a road sign / signpost is prohibited, the same plate / same signpost moved to an easily visible.		Spot check.	
h	If a construction site causes severe traffic congestion, in a delivery point should be located at some distance from the construction site. Present Deliveries can then be done with smaller vehicles.		See the procedures on site.	

2. A good neighbor

This section aims to show that the contractor in a respectful way, taking into account the local residents. To The following items show this:

Ref	Criteria requirement	√	Proof	Validation
a	Notifying letters are / will be before the work sent to all residents. And: There is a commitment by the main contractor for completion by thanking them for their patience neighbors in writing and to provide a feedback. Form		See the letter sent to a list of recipients. A copy of the commitment or a copy of a form letter that is always sent at the end of a project must be provided. A copy of the feedback form together with the procedure for processing and implementing	

			changes in future projects.	
b	If the location of the site restrictions regarding working hours and noisy work should be. Working hours adapted This may, for example the following locations: - Residential. - Schools. - Hospitals. - Major public transport hubs. - City centers. - Shopping. - Nature.		It should be a letter of intent, policy, agreement etc. a copy submitted	
c	The site boundary is clearly marked and safe and appropriate environment and in the environment, for example: - The color of the fence is tuned to the environment. - Pedestrians can walk safely, and if necessary, protected by the construction site. - Warning signs for pedestrians and road users are well lit. - The immediate area surrounding the site is neat and clean.		Spot check and provide photos.	
d	There is a simple, accessible complaints procedure in force. And: There is evidence that responded. Directly on complaints		View the complaint / procedure. And: Ensure that all complaints are answered in a timely manner.	
e	The local population is informed by a clearly visible billboards: - on the progress of the project; - the contact details of the contractor.		Spot check.	
f	When working on the construction site with lighting should be. These foreclosed to the surrounding environment		It should be noted from the temporary work including the lights. Provided with a copy It should specify either the light shield, or the main contractor must indicate how the light shielding works, or he must show that glare is not applicable.	
g	The site staff is discouraged to use local amenities. Use in his work clothes For example, by: - to set. canteen - different pause times to schedule. - to offer. showers / washrooms - to offer. lockers - to request leave. PBM on site		Spot check. Check procedures with the main performer.	
h	There is a volume limit when using the radio or radios are prohibited, such as noise sensitive locations (see 2b).		Check that the restriction / prohibition of force and how the restriction / prohibition is maintained.	

3. Environmentally Responsible

This section aims to show that the contractor the impact of the construction site on the environment has investigated and measures taken to mitigate this effect. To The following items show this:

Ref	Criteria requirement	√	Proof	Validation
a	The effects of light pollution are reduced and all the lights are focused and not pollute the environment.(Also upward light pollution is prevented.)		Spot check.	
b	At the construction site, energy efficiency measures implemented.Examples of this are: - Lighting with low energy consumption. - Switching off equipment which is not in use. - Installing thermostats. - Installing timers. - Choice for equipment with energy efficiency.		Spot check.	
c	A mitigation strategy applies to the construction site. The strategy should indicate what impact the location has to be in terms of the environment and how any adverse effects minimized.		See the mitigation strategy.	
d	Water-saving measures are available on site and be checked regularly.	<0 }	See the procedures on site.	
e	Renewable energy sources on site are considered.		Spot check.	
f	Equipment is available for fuel and / or oil to absorb.		Spot check. Check whether the equipment located where leaks can occur to ensure a quick response. Certainly	
g	Additional water storage (reservoir) is available to dispose of the site. Large amounts of water during heavy rainfall		Spot check.	
h	Materials and equipment should be neatly stored and if necessary left ermd / covered.There is also plenty of room to store in an enclosed area to prevent loss or theft and to protect against weather. Them new materials		Spot check. Conto Learn where space is available, and if it is used properly.	

4. E safe and responsible environment

This section aims to show that the contractor manages the construction site in a clean and safe way to ensure the welfare of its employees and to minimize the risks. Their health and safetyShow that the following items:

Ref	Criteria requirement	√	Proof	Validation
a	There are plenty of suitable facilities on site for both employees and visitors present. The numbers are matched to the expected number of employees and visitors. The following facilities should be provided at least: - Separate men's and ladies. - Usable showers and changing rooms. - Lockers in the drying room. - Designated smoking area (does not necessarily have to be covered).		Spot check.	
b	The site facilities are clean and well maintained.These		Spot check.	

	are at least the following facilities: - Areas around canteen, site office and dumpsters. - Toilets. - Designated smoking areas.			
c	Private and / or visible facilities on site are visually screened.These are at least the following facilities: - Areas around the canteen, site office and dumpsters. - Toilets. - Designated smoking areas.		Spot check.	
d	Clean PPE is always available for use by visitors.		Check this also brought in company policies and procedures and ensure that the policy in practice.	
e	The following health and safety procedures are in place: - All site workers, including non-native workers are well informed regarding health and safety measures.The information from the V & S plan is available in several languages on the information. - Measures have been taken in respect of workers' exposure to the sun. - All site workers are provided with a photo ID.This card is at all times presentable. - All accidents and near misses are reported. - There are plenty of first aiders and first aid facilities available on site.		Check this also brought in company policies and procedures and ensure that the policy in practice. Check the first aid book on minor accidents. Check the list of first aiders and check the availability for a first aid kit.	
f	At several places on the construction site signs are present with information about the nearest police station and nearest hospital.This information boards should hang at least the following places: - The reception. - The canteen. - The site office.		Ask managers, workers and reception staff whether they are aware of this information or at least know where to find it. Make sure told this at launch is.	
g	There is an inspection performed by an inspector of the occupational health service or other competent authority.		Make a copy of the inspection report.	
h	The exits on the site and in the under construction building are well marked, and there is a clear procedure for emergency evacuation site, and fire drills are held.		Spot check and ask for written proof of a fire drill.	

Technical checklist A3

Project Name:	
Registration:	
Date:	
Entered by:	
Organization	
Function:	

a Monitoring, reporting and targets for CO_2 emissions resulting from energy use by the activities on site.

Criteria requirement	√	Evidence / reference
Appropriate targets for energy use will be / have been made and hung on the construction site (the targets can annually or monthly, or per project). The objectives are based on energy consumption of previous, similar projects or based on estimates in the calculation phase.		
The ontwerp-/bouwplaatsteam will appoint someone / has appointed a person responsible for monitoring and data collection.		
Regarding the measurement and monitoring of energy consumption should be at least the following should be done: ▪ Monthly measurements of energy. ▪ Make an analysis of the energy relative to the objectives. ▪ Display Meter and objectives graphic and publishing on the information on the site.		
The information from the monitoring is to be used in order to make the total number of kg of CO_2 for the project. An estimateFor the conversion factors should be used the information in the handbook CO_2 Performance Ladder published by SKAO.		
Comments • BREEAM does not require targets to be met but encourages companies to be set, monitor and report on these matters to goals. • Under energy, energy means all types: electricity, gas, oil, etc.		

b. Monitor and report on CO_2 or energy arising from commercial transport to and from the site.

Criteria requirement	√	Evidence / reference
A monitoring system on site is / are in place to monitor and track deliveries. This system takes the following when / is tracking: • Material Deliveries of major elements such as defined in MAT 5;		

• Earthworks; • Waste management; It is not necessary to separately determine. Supply of each type of transport and the distance There is a report to be submitted which assumptions are supported by the transport and distances with respect to site delivery / takeaway d of main components, earthworks and waste management.Well that and the number of transport movements and the conveyor to be monitored, so that may be the CO_2 emissions from the transport movements to and from the site. An estimate		
The ontwerp-/locatiemanagementteam will appoint someone / has appointed a person responsible for monitoring and data collection.		
The information from the monitoring is to be used in order to make the total number of kg of CO_2 for the project. An estimate The information must be converted by means of the tables at the end of this checklist.		

c. Monitoring, reporting on and set targets for water consumption arising from the activities on site.		
Criteria requirement	√	**Evidence / reference**
Appropriate objectives for water use will be / have been made and hung on the construction site (the targets can annually or monthly or per project). The objectives are based on water use of previous, similar projects or based on estimates in the calculation phase.		
The ontwerp-/bouwplaatsteam will appoint someone / has appointed a person responsible for monitoring and data collection.		
Regarding the measurement and monitoring of water should be at least the following should be done: • Monthly measurements of water. • Make an analysis of water use in relation to the objectives. • Display Meter and objectives graphic and publishing on the information on the site.		
Comments • BREEAM does not require targets to be met but encourages companies to be set, monitor and report on these matters to goals.		

d. Applying best practice measures to prevent air pollution (dust) and noise pollution arising from the activities of the construction site.		
Criteria requirement	√	**Evidence / reference**
The site uses measures relating to minimize lucht-/stofvervuiling and noise. This includes the following measures as appropriate:		

This information is / is passed to the site workers.		

Part	Action	Carried out (Y / N)
Air Quality	Goal: avoid (fine) dust or other air pollution on site and nearby.	
A	Minimize (fine) dust from materials by the use of covers, lids, storage (containers), control and humidification.	
B	Minimize (fine) dust from transport and transport through, for example, water spray if this is practical.	
C	Avoid the (re) burning of materials on site.	
D	Place dust screens where by material processing released many (fine) dust.	
Noise and vibration	Purpose: the impact of noise and vibration in the surrounding minimize.	
A	Plan activities that cause a lot of noise at times of the day when they will cause the least disruption to the environment.	
B	Use acoustic shields.	
C	Use noise barriers in activities where shock and / or explosions occur.	
D	Avoid transport through residential areas.	

e. Applying best practice measures to prevent the pollution of ground and surface water by activities on the site.

Criteria requirement	√	Evidence / reference
The site uses the best practice measures for minimizing water pollution. This includes the following measures as appropriate:		
This information is / is passed to the site workers.		

Part	Action	Carried out (Y / N)
Water	Purpose: prevent water pollution by construction activities.	
A	Draw a drainage plan for the site. Mark the places where the water runs off to make. Risks transparent (Schedule may change during construction.)	
B	If applicable, plan activities so that they do not occur in periods of heavy rainfall. Consider weather and periods of the year.	
C	Minimize the length and steepness of slopes.	
D	Provide a protective ground cover to stabilize / hold on slopes, channels and gullies. Ground For example, by jute mats.	
E	Care as soon as possible for planting.	
F	Prevent erosion / washout of land by lagoons, silt fences or water treatment.	
G	Separate dirty and clean water discharge.	
H	Ensure adequate drainage.	

I	Ensure that activities that could cause water pollution, a shielded place place, so that rivers, surface water is not contaminated.	
Hazardous substances	Goal: avoid polluting local water by dangerous substances.	
A	Ensure adequate secondary leakage collection for fuel and oil storage. Eg for lubricating or hydraulic oil.	
B	Ensure adequate training of employees for handling fuels and chemicals and how to respond in case of leakage.	
C	Provide an impervious base where refueling or liquids are processed.	
D	Provide puncture and cleaning equipment. And train employees in its use.	
E	Provide plumbing for all employees.	

f. The contractor works with environmentally friendly materials.

Criteria requirement	√	Evidence / reference
The contractor works on an environmentally friendly material policy, which applies to the purchase of building materials that will be used. On site This policy includes / promote: • Use of local materials (where possible). • Use of responsibly sourced materials (eg MAT 5). • Reuse of material. • Use of material that can be good. Recycled • Reduce waste to a minimum and recycle. • Use of non-toxic materials (for example, HEA 9) and the cooling means (e.g., POL 1), which have a low GWP. • Use of material that has little impact on the environment. • Use of sustainable materials.		
On completion are indicative examples to demonstrate. Implement this policy		

g. The contractor works with an environmental management system.

Criteria requirement	√	Evidence / reference
The contractor works with an Environmental Management System that includes the main work. This Environmental Management System must be certified by a third party, according ISO14001/EMAS or an equivalent standard.		

Information for assessor

Monitoring of transport CO_2

The following tables are based on the Guidelines for Company Reporting on Greenhouse Gas Emissions (Guidelines for companies to report greenhouse gas emissions) and COPERT II emission factors, and can be used to convert supply data to complete the information collected number of kg CO_2.

Table 1: Standard fuel conversion factors for road transport

Used fuel	Total number of units used	Unit	x	Kg CO_2 per unit	Total kg CO_2
Gasoline		liter	x	2.30	
Diesel (incl. low sulfur)		liter	x	2.63	
Compressed natural gas		kg	x	2.65	
Liquefied Petroleum gas		liter	x	1.49	

Source: National Atmospheric Emissions Inventory for 2003 (National Atmospheric Emission Inventory for 2003), developed by Netcen (2005). UK Greenhouse Gas Inventory for 2003 (Greenhouse Gas Inventory Britain for 2003), developed by Netcen (2005), Digest of UK Energy Statistics DTI 2004 (Summary of energy statistics in Britain in 2004) and carbon factors for fuels UKPIA (2004).

Table 2: Standard gas conversion factors for road transport

Size and displacement car	Total units traveled	Unit	x	Kg CO_2 per unit	Total kg CO_2
Small petrol car, motor max 1.4 liters		km	x	0.16	
Middle Gasoline Car, motor max from 1.4 to 2.1 liters		km	x	0.19	
Large gasoline car engine more than 2.1 liters		km	x	0.22	
Average petrol car		km	x	0.18	

Source: Nae (Netcen, 2005), based on data from DfT combined with factors from TRL as functions of the average speed of vehicles as derived from test data of test cycles under real conditions.

Table 3: Standard diesel conversion factors for road transport

Size and displacement car	Total units traveled	Unit	x	Kg CO_2 per unit	Total kg CO_2
Small diesel car, engine less than 2.0 liters		km	x	0.16	
Large diesel car engine over 2.0-2.1 liters		km	x	0.19	
Average Diesel Car		km	x	0.17	

Source: Nae (Netcen, 2005), based on data from DfT combined with factors from TRL as functions of the average speed of vehicles as derived from test data of test cycles under real conditions.

Table 4: Conversion factors for road freight

Type of truck	Total number of miles traveled	x	Liters of fuel per km	x	Type of fuel	Fuel conversion factor	Total kg CO_2
Truck with trailer loose		x	0.35	x	Gasoline	2.30	
					Diesel	2.63	
					Lpg	1.49	
Truck with trailer fixed		x	0.40	x	Gasoline	2.30	
					Diesel	2.63	
					Lpg	1.49	

Source: Guidelines for Company Reporting on Greenhouse Gas Emissions (Guidelines for companies to report greenhouse gas emissions), DEFRA. Continuing Survey of Road Goods Transport (Continuous overview of freight transport by road) 2001.

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The average NOx emissions from power in the Netherlands is 357.22 mg / kWh

Application / feature	Additional requirements / tools	Credits available	Credits earned
Cooling Supply			
If the building on a strategy for free cooling has the need for conventional mechanical compression refrigeration takes away, and the thermal comfort requirements for credit HEA 10 are achieved.	Where the building, at least one of the following free-cooling strategies are used: • Night-time cooling (requires a high thermal mass of the material). • Cooling with soil pipes. • Displacement ventilation. • Ground Water cooling. • Cooling surface. • Evaporative cooling, direct or indirect. • Desiccant (desiccant), dehumidification and evaporative cooling from waste heat. • The building does not require refrigeration (it is naturally ventilated).	1	
Wamtevoorziening			
Construction of walls, floors, roof, windows, doors, etc. The average R-value [K / (W / m $^{2)}$] for walls, floors and roofs is 20% higher than the minimum Bouwbesluiteis. The average U-value [W / m ^{2} / K] for windows and doors in the facade is 20% lower than the Bouwbesluiteis. If there are no national regulations exist then use the reference: walls = 0.35 W / m ^{2} K, floors = 0.25 W / m ^{2} K, roofs = 0.25 W / m ^{2} K And: Glazing - less than 95% of the windows consist of double or triple glazing with low-emission coating (low-E) (no other coatings) and the glass surface is ≤ 50% of all exterior walls.	Shading and thermal mass are not included in the score, because the CO_2 reduction per project should be. Calculated separately This credit is believed that the advantage of heat is larger, and that cooling and light is not affected by the application of insulating glass. Other than low-emission coatings (low-E) are not allowed because they often affect the availability of daylight.	1	
Ventilation			
All air ducts and air handling units are certified and meet the best standards for air tightness. Or: No mechanical ventilation is provided (apart from the requirements of the applicable building regulations).	For example, the air ducts meet EN13779 [5] class B, the air handling units comply with EN 1886 [6] class L1.	1	

Power fans			
Specific electric power of fans of all air handling units is <1 W / l / s. Or: No mechanical ventilation (apart from the requirements of the applicable building regulations).		1	
Lighting			
Energy-efficient light sources.	Not less than 90% of the light connectors, is ≤ 3.3 W / m ^{2} / 100Lux (equivalent to T5 (16 mm diameter) of 3-phosphor-fluorescent tube, high frequency ballast, or better).	1	
Light switches.	Daylight sensors. Or: Presence detectors, which use at least 90% of the floor cover.	1	
Application renewable energy			
At least 5% of the total demand for electricity generated by renewable energy sources on site.	If the building at least one of the following applications for renewable energy use: ▪ Freestanding or roof-mounted wind turbines. ▪ Solar water heater. ▪ Photovoltaic panels. ▪ Heat and cold. ▪ Heat pump systems. ▪ Geothermal energy. ▪ Biomass, biogas. ▪ Fuel cells (based on hydrogen produced from renewable energy sources). ▪ Residual heat obtained from other technical processes that otherwise would be discharged and delivered by a district heating network (if the heat is not specifically generated for the network). *In heat pump systems with soil as a source, the seasonal coefficient of performance (COP) of the heat pumps are at least 2.5.*	1	
At least 5% of the heat demand for space heating and hot water is generated by renewable energy sources on site.		1	
Efficiency of heating and cooling			
Least 90% of the space heating and hot water is provided by a source (exclsuief electric resistance heating) with a seasonal efficiency of at least 90% of a measured full load efficiency of at least 95%. Or: At least 70% of the space heating and hot water is supplied by a	The implication is that oil and coal received no points here, as they can not achieve efficiency. Mentioned For heat pump or heating through biofuel, see above renewables.	1	

cogeneration plant with high efficiency.	Cogeneration with high efficiency must at least meet the standards in the EU CHP Directive or the Dutch legal translation of this Directive.		
Remainder			
If an air-tightness test shows that the air permeability is ≤ 50% of the Building Act Requirements. In the absence of Building requirements should be. 5 m^3 / h / m^2 @ 50Pa held as maximum		1	
	Total (max)	**10**	